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Family Planning Depot-medroxy Progesterone Acetate (DMPA) as an Effective Method of Contraception: A Prospective and Comparative Study- at District Hospital, Ludhiana

[1]Priyanka Soni and [2]Mukesh Sharma

[1,2]Department of Obstetrics and Gynecology, Jaishree Hospital And Research Center, Agar Malwa, Madhya Pradesh 465441, India

[2]Department of surgery, Civil Hospital Nalkheda Agar Malwa Madhya Pradesh 465445, India

ABSTRACT

India is the world's second most populous country after China, with a population estimated to reach 1.53 billion by 2050, making it the most populous country in history1. The government of India is constantly working to reduce the birth rate through various initiatives, yet awareness and ignorance about contraception remain high, resulting in the failure of these programs. To study the acceptance, efficacy, patient compliance of DMPA and to compare it with one other method of contraception – IUCD. The present study was conducted as a prospective comparative study on women presenting to obstetrics and Gynaecology Department, Lord Mahavir civil Hospital, Ludhiana during the study period of 18 months i.e. from 1st December 2020 to 31st May 2022. In DMPA, 2(0.7%) patients had Failure and in IUCD, 11(3.7%) patients had Failure. Association of Failure with Group was statistically significant (p=0.012). In DMPA, 41(13.7%) patients had irregular bleeding. In IUCD, 95(31.7%) patients had irregular bleeding. Association of Irregular bleeding with Group was statistically significant (p=0.001Ten individuals (3.3%) in the DMPA felt family pressure. 61 individuals (20.3%) with IUCD experienced family pressure. There was a statistically significant correlation between family pressure and group (p=0.001). Depot-Medroxyprogesterone Acetate (DMPA) has been shown to be an extremely effective and dependable way of contraception. Its long-acting characteristics, with administration required only every three months, makes it a practical choice for women looking for an alternative to daily oral contraception. DMPA's excellent efficiency in preventing conception, combined with its reversible nature, makes it an appropriate choice for women of varied reproductive ages.

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Key Words
DMPA, Depot-Medroxy progesterone and contraceptive side effects

Corresponding Author
Mukesh Sharma,
Department of surgery, Civil Hospital Nalkheda Agar Malwa Madhya Pradesh 465445, Inda

Author Designation
[1]Consultant
[2]Doctor

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INTRODUCTION

India is the world's second most populous country after China, with a population estimated to reach 1.53 billion by 2050, making it the most populous country in history1. The government of India is constantly working to reduce the birth rate through various initiatives, yet awareness and ignorance about contraception remain high, resulting in the failure of these programs. Another issue is the daily and ongoing use of contraception, which is not acceptable in some communities and individuals. So, the use of long-term contraception frees people from the daily use of pills or any other approach[1].

One of the most pressing issues confronting developing countries is irregular population growth, which poses a serious threat to the world community and a significant impediment to national social and economic progress[2]. It is estimated that one-fourth of the world's 910000 pregnancies are unwanted, with 150000 cases ending in abortion, 500 of which are fatal. As a result, one of the ways to attain a healthy family and society is through population control and the availability of safe and effective contraception[2]. In 1952, India became the first country to implement the National Family Planning Program to curb population increase[3]. To promote contraception compliance and satisfy unmet contraceptive needs, recipients are given a "cafeteria approach" with a "basket of choices"[4]. Although hormonal contraceptives are the most successful technique of birth spacing, they are not without drawbacks and users are often dissatisfied[5].

Long-term injectable contraception has been shown to improve compliance and the unpleasant effects are reduced, making it more acceptable in society. Several injectable contraceptives have been marketed under different brand names. Upjohn created Depo-provera, which was originally investigated in clinical trials in the 1960s[6]. DMPA is a progesterone-only injectable administered deep intramuscularly at three-month intervals (one dose equals one vial of 150 mg DMPA aqueous suspension). DMPA is a safe and highly effective contraceptive method. This approach can also be utilized by breast-feeding women in which estrogen-containing contraception is inappropriate, as well as throughout the post-partum period[7]. Modern intrauterine devices can also be advised but they cause bleeding problems and, in that context, postpartum women are mostly anaemic so DMPA by causing amenorrhoea/oligomenorrhoea reserves haemoglobin level[8]. Studies by WHO on over 3-million-woman months of DMPA use give reassurance that DMPA presents no overall risks for cancer, congenital malformation or infertility[7].

Depo-Provera is a contraceptive that is widely used by 90 million women in 130 countries due to its great effectiveness and ease of usage. However, it causes certain variations in menstrual bleeding patterns[9]. Furthermore, whereas oral combination tablets are used by 100 million women worldwide, correct consumption has been recorded in approximately 50-55% of consumers[9]. Lee and Jezewski conducted a study in 2007 and found that women's dissatisfaction with oral contraception and concern of forgetting to use it on a daily basis leads to a decrease in their intake. As a result, the optimum one-month combination hormonal approach includes an injection followed by a consistent bleeding pattern and does not require daily consumption or consumption during sexual encounters[10]. The perfect use failure rate of 0.3% is lower in comparison to 0.8% of IUCD[11].

Every individual's pleasure is one of the aspects that shapes their views and opinions about a method and determines their proclivity to use contraceptive methods[12]. Many factors influence whether or not people use hormonal contraception, including their knowledge, information, needs, expectations, lifestyle, age, religion, understanding of themselves and others, anxiety and concerns. Choosing the wrong method might lead to disappointment and undesirable effects, such as an unexpected pregnancy. Previous research suggested that 300 million couples were unsatisfied with their own contraceptive strategy[13].

MATERIALS AND METHODS

The present study was conducted as a prospective comparative study on women presenting to obstetrics and Gynaecology Department, Lord Mahavir civil Hospital, Ludhiana during the study period of 18 months i.e. from 1st December 2020 to 31st May 2022.
Study design.

This was a prospective and comparative study in which the effectiveness of DMPA was studied and compared with the contraceptive method (IUCD).

Study area: LORD MAHAVIR CIVIL HOSPITAL, Ludhiana.

Study population: All women coming in the obstetrics and gynecology department for check- up.

Study design: A prospective and comparative study.
Study duration: 1.5 years

Sample size: 600

Sample size has been calculated with help of Epi Info (TM) 3.5.3. EPI INFO which is a trademark of the Centers for Disease Control and Prevention (CDC). For statistical analysis data was entered into a Microsoft excel spreadsheet and then analyzed by SPSS 27.0 and Graph Pad Prism version 5. Data was summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Unpaired proportions are compared by Chi-square test

or Fischer's exact test, as appropriate. P-value ≤0.05 was considered for statistically significant.

Inclusion criteria:

- Female patients age 18 years and above in post-delivery and post abortal period.
- Patients who have given a written informed consent and willing to report for regular follow-up.
- Patients who cannot use / have medical contraindications to oestrogen containing method.
- Patients desiring along-term, reversible, highly efficacious, non-coitus dependent, private contraceptive method.
- Patients not suffering from any chronic illness or any Contraindication of use of Progesterone.

Exclusion criteria:

- Patients who will not give consent for enrolment or regular follow-up are excluded from the study.
- Breast feeding women < 6 weeks postpartum.
- Unexplained vaginal bleeding.
- Breast cancer.
- History of myocardial infarction, ischemic heart disease or stroke.
- Cirrhosis(severe-decompensated)
- Liver tumours –adenoma or hepatoma
- Hypertension(>160systolicor>100diastolic)
- Diabetes with nephropathy / retinopathy / neuropathy.
- Other vascular disease or diabetes of >20 years duration.
- Anti-phospholipid antibodies and severe thrombocytopenia.
- Rheumatoid Arthritis-Immunosuppressive therapy.
- Migraine with aura at any age.

RESULTS

Among the DMPA patients, 187 (62.3%) had NVD and 113 (37.7%) had LSCS. Among IUCD patients, 206 (36.7%) had NVD and 94 (31.3%) had LSCS. The group and mode of delivery did not significantly correlate (p=0.1).15% of DMPA patients experienced irregular bleeding. 283 individuals, or 94.3%, in IUCD experienced irregular bleeding. There was a statistically significant correlation between the group and irregular bleeding (p=0.001). 2 patients (0.7%) in DMPA had failure. 11 individuals (3.7%) in IUCD had failure. Failure was not statistically significantly correlated with group (p=0.012). 41 individuals (13.7%) with DMPA experienced irregular bleeding. 95 individuals (31.7%) with IUCD experienced irregular bleeding (Table 1).

There was a statistically significant correlation between the group and irregular bleeding (p=0.001). Ten individuals (3.3%) in the DMPA felt family pressure. 61 individuals (20.3%) with IUCD experienced family pressure. There was a statistically significant correlation between family pressure and group (p=0.001). Thirty individuals (10%) in the DMPA group desired a permanent method. Of the patients in IUCD, 25 (8.3%) desired a permanent method. The Wanted permanent method's correlation with Group did not reach statistical significance (p=0.49) (Fig. 1 and 2).

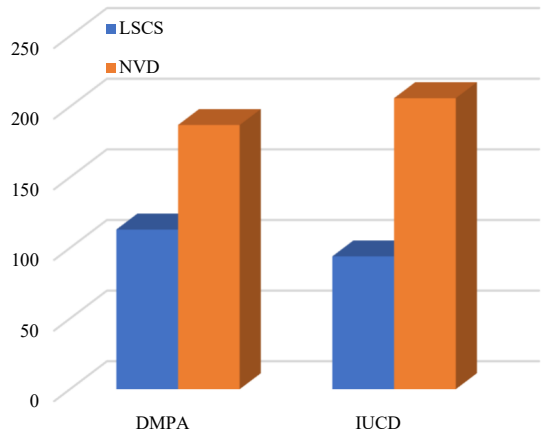

Fig. 1: Mode of delivery

Table 1: Association between Mode of delivery, irregular bleeding and Reason for decline within 9 months for all parameters

	DMPA (n = 300)		IUCD (n = 300)			
Parameter	Frequency	%	Frequency	%	χ^2	p-value
Mode of delivery						
LSCS	113	37.7	94	31.3	2.6	0.1
NVD	187	62.3	206	68.7		
Irregular bleeding						
Yes	15	5	283	94.3	47.8	0.001
No	285	95	17	5.7		
Reason for decline within 9 months						
Failure	2	0.7	11	3.7	6.4	0.012
Irregular bleeding	41	13.7	95	31.7	27.7	0.001
Amenorrhea	212	70.7	0	0	327.8	0.001
Family pressure	10	3.3	61	20.3	41.5	0.001
Wanted permanent method	30	10	25	8.3	0.5	0.49
Parity						
1	82	27.3	77	25.7	10.02	0.08
2	100	33.3	105	35		
3	81	27	80	26.7		
≥4	37	12.3	28	12.7		

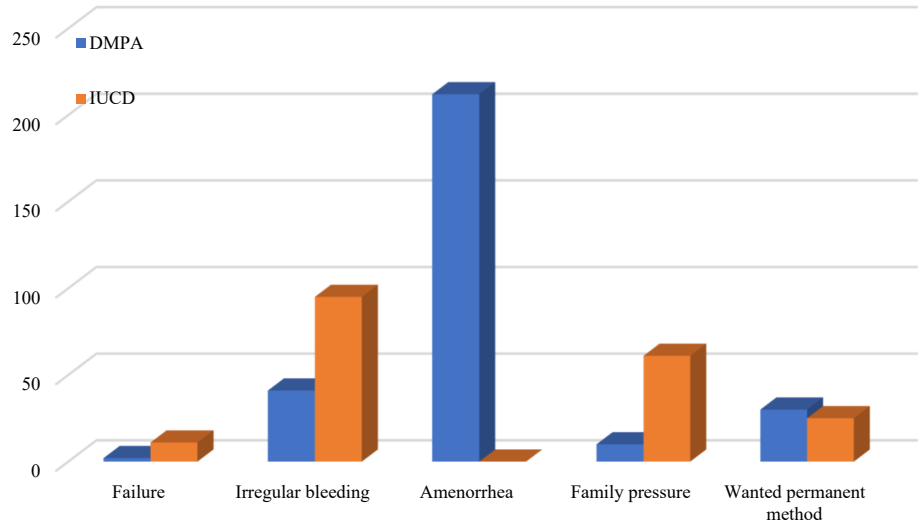

Fig. 2: Reason for decline within 9 months

DISCUSSION

We conducted this study to assess the acceptance, efficacy as well as patient compliance of DMPA and to compare it with IUCD. This was a prospective and comparative study in which the effectiveness of DMPA was studied and compared with the contraceptive method (IUCD). LORD MAHAVIR CIVIL HOSPITAL, Ludhiana. The study duration was 1.5 years and atotal of 600 females fulfilling inclusion criteria were included and of them 300 women were randomly allocated into study group and given DMPA and remaining 300 women were using IUCD.

Parity: IUCD as well as DMPA are suitable for parous women. DMPA is given to women in whom oestrogen containing contraceptive is contraindicated. It can also be given to breast feeding women as it has no effect on quality, quantity as well as composition of breast milk.

We found that, majority number of females patients was second parity in PPIUCD group [105(35.0%)] compared to DMPA group [100 (33.3%)] which was statistically significant (p=0.08). The mean parity in a study of Ezegwui *et al*.[14] was 5.52±2.02. In a study of Burman *et al*.[15] majority of women were primiparous in both the group with no significant difference between the groups (p>0.05).

Mode of delivery: We showed that, majority number of patients had NVD in IUCD group [206 (68.7%)] compared to DMPA group [187 (62.3%)] and it was not statistically significant (p=0.10). Sadeghi-Bazargani et al.[16] documented that history of cesarean section was associated with menstrual irregularities after a month of DMPA injection.

Effect on bleeding: In our study, higher number of female patients had incidence of irregular bleeding in PPIUCD group [283 (94.3%0] compared to effect on lactation in DMPA group [25 (8.3%)] but this was statistically significant (p=0.001). We observed that, family pressure and failure rate were significantly higher in IUCD group as compared to DMPA group leading to their discontinuation (p<0.05). However, majority number of female patients' amenorrhea was in DMPA group [212 (70.7%)] compared to Irregular bleeding in IUCD group [95 (31.7%)]which was statistically significant (p=0.001).

Mane et al.[17] documented discontinuationof DMPA after 2nd injection in 49.9%, 39.2% discontinued due to amenorrhea, 10.7% discontinued due to irregular bleeding. Patients who had received first dose at 6 weeks of postpartum period and those who received between 6 weeks to one year showed lactation in 84.16% and non-lactation in 15.84%. 28.71% lactating patients had taken injection at 6weeks of post-partum period and 71.29% had taken between 6 weeks to 1 year. Ezegwui *et al*.[18] found that contraception with Depot Medroxyprogesterone Acetate (Depo provera) is quite effective though not without side effects that may cause discontinuation amongst acceptors. Although women using this 3-month progestin-only injectable often experience irregular bleeding and spotting (initially), long-term DMPA use typically results in amenorrhea. Many users, including adolescents, choose DMPA because of its convenience--nearly 100% contraceptive effectiveness is achieved with 4 injections per year. Sadeghi-Bazargani *et al*.[16] found that in part of a vast longitudinal multi-centric research program being conducted about menstrual complications of DMPA in northwestern Iran, they studied the satisfaction and personal ideas of 411 amenorrheatic DMPA users aboutbleeding loss and amenorrhea caused by DMPA

and effect of these ideas on its acceptability. 57.5% of women very satisfied with amenorrhea caused by DMPA compared with 5.7% of those very dissatisfied with it, continued to use DMPA at least for six months.

CONCLUSION

Depot-Medroxyprogesterone Acetate (DMPA) has proven to be a highly effective and reliable method of contraception. Its long-acting nature, with administration required only every three months, provides a convenient option for women seeking an alternative to daily oral contraceptives. The high efficacy of DMPA in preventing pregnancy, coupled with its reversible nature, makes it a suitable choice for women of various reproductive ages. However, the potential side effects, such as menstrual irregularities and bone density reduction, warrant consideration and should be discussed with healthcare providers. Continued education and counseling can help in optimizing its use, ensuring that women make informed decisions about their contraceptive options. Overall, DMPA remains a valuable tool in family planning and reproductive health management.

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