

Research Article

Depo Medroxyprogesterone Acetate (DMPA): Long-Term Effects on Menstrual Cycle Disorders

Depo Medroksiprogesteron Asetat (DMPA): Efek Penggunaan Jangka Panjang terhadap Gangguan Menstruasi

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Abstract

Objective: To determine the effect of the duration of using Depo Medroxyprogesterone Acetate (DMPA) on the Menstrual Cycle

Methods: This research is an analytical study of 102 patients who used DMPA for less than 1 year and more than 1 year and then analyzed the types of menstrual disorders experienced while using DMPA contraception at RSIA Masyita Makassar Tahun 2022. Data collection was carried out by direct observation at RSIA. Masyita was then arranged in a checklist that has been prepared. Data is processed using SPSS version 25.0.

Results: There is a significant effect between the length of use of Depo Medroxyprogesterone Acetate (DMPA) and the Menstrual Cycle ($p=0.000$).

Conclusion: There are long-term effects of using DMPA on menstrual cycle disorders, the most common being hypermenorrhea. These results showed that the use of Depo Medroxyprogesterone Acetate (DMPA) for > 1 year has shown many effects on Menstrual Disorders and can be used by midwives to providing knowledge and counseling to patients who will to use DMPA regarding the side effects and risks of using longer contraceptives.

Keywords: Depo Medroxyprogesterone Acetate (DMPA), duration of use, menstrual cycle.

Abstrak

Objektif: Untuk mengetahui pengaruh lama penggunaan Depo Medroksiprogesteron Asetat (DMPA) terhadap siklus menstruasi.

Metode: Penelitian ini merupakan jenis penelitian analitik terhadap 102 pasien yang menggunakan DMPA kurang dari 1 tahun dan lebih dari 1 tahun kemudian dianalisis jenis gangguan menstruasi yang dialami selama menggunakan kontrasepsi DMPA di RSIA Masyita Makassar. Pengumpulan data dilakukan dengan metode observasi langsung di RSIA Tahun 2022. Masyita kemudian disusun dalam checklist yang telah disiapkan. Data diolah menggunakan SPSS versi 25.0.

Hasil: Ada pengaruh yang signifikan antara lama penggunaan Depo Medroksiprogesteron Asetat (DMPA) dengan siklus menstruasi ($p=0,000$).

Kesimpulan: Adanya Efek dari Jangka Panjang Penggunaan DMPA terhadap gangguan siklus Mentsruasi yang terbanyak yaitu Hipermenore. Hasil ini menunjukkan bahwa Penggunaan Depo Medroksiprogesteron Asetat (DMPA) selama > 1 tahun telah menunjukkan banyak efek pada gangguan menstruasi dan selanjutnya dapat digunakan oleh bidan dalam memberikan pengetahuan dan konseling kepada pasien yang akan menggunakan DMPA mengenai efek samping dan resiko penggunaan kontrasepsi yang lebih lama.

Kata kunci: Depo Medroksiprogesteron Asetat (DMPA), lama pemakaian, siklus menstruasi.

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INTRODUCTION

Family planning is one of the government's strategies to reduce maternal mortality, especially for mothers with 4T conditions; giving birth too young (under the age of 20 years), giving birth too often, giving birth too close and giving birth too old (over the age of 35 years).¹The achievement of KB participation continues to increase from time to time, in 2016 it showed that the number of KB participants in Indonesia was around 74.8% of KB users.²Around 49.7% of women in Indonesia chose hormonal injection contraception as their contraceptive method, including the Depo Medroxyprogesterone Acetate (DMPA) type.³

The type of contraception that is most widely used in the world today is the DMPA injection⁴. DMPA ranks highest in the selection of contraceptives to prevent pregnancy. DMPA is known as the most effective contraceptive, where the pregnancy rate of using DMPA is only 0.3% in the first year of use.^{5,6}and is a contraceptive option that can be recommended for women who wish to delay pregnancy⁶.

Side effects of a contraceptive method are factors that need to be considered in determining the decision to continue using the contraceptive method. Changes in the menstrual cycle are one of the side effects that are often complained of by Depo Medroxyprogesterone Acetate (DMPA) injectable birth control acceptors, the normal menstrual pattern becomes amenorrhea, regular bleeding, spotting, changes in frequency, duration and amount.⁷

A study conducted⁸ in 2020 stated that there was a difference in the average length of the shortest and longest menstrual cycle days in the 1-month hormonal injection (combination) and 3-month hormonal injection (DMPA) groups (p -value < 0.001). Where clinically the shortest and longest menstrual cycles was found in the 3-month hormonal injection contraception (DMPA) group compared to 1-month hormonal injection contraception (combined) (60 vs 28) and (90 vs 35).

Other studies⁹ regarding the side effects of using DMPA found that 22 acceptors (44%) experienced severe side effects and most of the side effects were experienced after using DMPA injectable contraception for more than 3 months to 1 year (60%). There is a positive and significant relationship between duration of use of DMPA injection contraception and the incidence of side effects ($p = 0.000 < 0.05$). From this study it can

be concluded that the occurrence of side effects is strongly influenced by the duration of using DMPA injectable birth control.

The results of another study related to DMPA contraception found a relationship between the use of hormonal contraception and menstrual cycle disorders, acceptors of progestin hormonal contraceptives have a 1.6 times greater risk of experiencing menstrual cycle abnormalities than combined hormonal contraceptive acceptors. Most of the progestin hormonal contraceptive respondents 36 (85.7%) and more than half of the combined hormonal contraceptive respondents 20 (52.6%) experienced menstrual cycle abnormalities.¹⁰

The results of the preliminary survey showed number of users of Cyclofem and DMPA hormonal contraception, namely 589 acceptors where DMPA was quite high in the last 5 months from January to May 2022, namely 296 acceptors (Depo Progestin) and direct interview results from 10 women using contraception, 6 of them experienced problems and complaints in the menstrual cycle. Some mothers also chose to drop out when experiencing this problem. The results of the study also stated that most mothers experienced menstrual cycle disorders, namely amenorrhea^{6,11}. Therefore researchers are interested in seeing how "The Influence of Old Use of Depo Medroxyprogesterone Acetate (DMPA) on Menstrual Cycle Disorders at RSIA Masyita Makassar".

METHODS

This research is a type of analytic observational research with a cross sectional design. The research variable is the independent variable, the duration of DMPA injection contraception use and the dependent variable, menstrual cycle disorders.¹² This research was conducted at RSIA Masyita Makassar Tahun 2022. Inclusion criteria are DMPA acceptors who do not experience history of hormonal diseases and disorders and Exclusion criteria are Cyclofem acceptors and DMPA acceptors who are not willing to be respondents. The study was conducted from October to December 2022. Sampling in this study used Total Sampling, 102 DMPA acceptor respondents consisting of a group with a duration of use < 1 year and a group with a duration of use > 1 year using the direct observation method at RSIA Masyita then compiled in a checklist that had been prepared. Menstrual disorders variable,

mother's data, information on menstrual disorders experienced by the mother whether there are no complaints, amenorrhea, polymenorrhea, hypermenorrhea, hypomenorrhea, metroragia or spots. Furthermore, it is presented in the form of cross tabulation, the duration of DMPA use has an effect on menstrual cycle disorders. Data analysis using (frequency distribution), bivariate (Mann-Whitney U).¹² The research data were analyzed using the Statistical Product and Service Solutions (SPSS) version 25.0 statistical test.

RESULTS

Univariate analysis

Frequency Distribution of DMPA Duration and Menstrual Disorders at RSIA Masyita Makassar in 2022.

Table 1. Frequency Distribution

Variable	Frequency	%
Age Characteristics		
<20	5	4.9
20-35	68	66.7
>35	29	28.4
Educational Characteristics		
Elementary	2	2.0
Junior high school	41	40.2
Senior high school	56	54.9
Bachelor	3	2.9
Job Characteristics		
IRT	96	94.1
Businessman	6	5.9
Government officials	0	0
Balance		
≤2	93	91.2
>2	9	8.8
Length of Use (year)		
<1	40	39.2
>1	62	60.8
Types of Menstrual Disorders		
No abnormalities	31	30.4
Polimenore	5	4.9
Amenorrhea	8	7.8
Hypermenorrhea	20	19.6
Metroragia	9	8.8
Spotting	15	14.7
Hypomenorrhea	14	13.7
Disturbance Category		
Normal	28	27.5
Abnormal	74	72.5

Bivariate Analysis

Effect of duration use of DMPA on Menstrual Disorder Category at RSIA Masyita.

Table 2. The Effect of the Duration use of DMPA on Menstrual Disorders at RSIA Masyita Makassar in 2022

Length of Use (year)	Menstrual Disorders category				Total		P-value (mark)
	Normal		Abnormal		F	%	
<1	F 26	% 92.9	F 14	% 18.9	40	39.2	0.000
>1	F 2	% 7.1	F 60	% 81.1	62	60.8	

Multivariate Analysis

The Effect of DMPA Use on Types of Menstrual Disorders at RSIA Masyita.

Table 3. The Effect of Duration of DMPA Use on Menstrual Disorders at RSIA Masyita Makassar in 2022

Length of Use (year)	Types of Menstrual Disorders												Total		P-value		
	No abnormalities		Polim-nore		Ame-norrhea		Hyperme-norrhea		Metroragia		Spotting		Hypome-norrhea			F	%
	F	%	F	%	F	%	F	%	F	%	F	%	F	%			
<1	28	90.3	1	20.0	3	37.5	1	5.0	2	22.2	4	26.7	1	7.1	40	39.2	0.000
>1	3	9.7	4	80.0	5	62.5	19	95.0	7	77.8	11	73.3	13	92.9	62	60.8	

Menstrual Disorders category

This study showed that acceptors who used DMPA <1 year were more in the category of

normal menstrual disorders, with total of 92.9%, compared to those who were not normal, of 18.9%. Even though it is used <1 year, there are also categories of abnormal menstrual disorders.

This happens on average to acceptors who have used DMPA for almost 12 months and normally new DMPA acceptors. Meanwhile, only 7.1% of acceptors who used DMPA more than 1 year were included in the normal menstrual category and 81.1% were included in the abnormal category. Hormonal factors greatly affect menstrual disorders experienced by DMPA acceptors so that acceptors are still found even though they have been using it for more than 1 year but there are no complaints related to menstruation, in this case it is still in normal condition.

Types of Menstrual Disorders

This study showed that acceptors who used DMPA in less than 1 year at most, about 90.3% of the total respondents who did not experience menstrual disorders or disorders, while acceptors who had used DMPA more 1 year experienced the most types of menstrual disorders Hypermenorrhea, with total of 95.0% and only about 9.7% did not experience menstrual disorders or menstrual disorders. This indicates that DMPA acceptors experienced menstrual cycle disturbances in more than 7 days.

DISCUSSION

A study by Westhoff discussed the contraceptive effectiveness of DMPA, long-term safety in relation to cardiovascular risk, gynecological and breast malignancies, and osteopenia. Moreover, it discussed clinical comparison of hormonal contraceptives. This research is in line with the research on the effect of duration of DMPA use on menstrual cycle disorders because one of the most frequent complaint from the results of this study is menstrual cycle disorders Amenorrhea. Researchers have further studied the effect of duration of DMPA use on each Menstrual Cycle disorder. Disorders of the menstrual cycle according to.¹³ There are several types, namely polymenorrhea, amenorrhea, hypermenorrhea, metrorrhagia spotting and hypomenorrhea. From the results of the study it was found that the most common type of menstrual disorder experienced was Hypermenorrhea, namely menstrual disorders where menstruation occurs for more than 7 days or the duration is longer.

The study entitled Effect of long-term progestin treatment on endometrial blood vessels in cycling normal rats.¹⁴ This study used a mouse model

to look at the effects of long-term exposure to progesterone on the endometrium and vascular structure. Normal mice were given Silastic implants containing medroxyprogesterone acetate (MPA) or levonorgestrel (LNG) and dissected after 1, 3 or 6 weeks. This study demonstrated changes in the microvascular structure of the endometrium after long-term progestin use. There were significant effects of MPA and LNG administration on normal cycle mouse endometrium, including changes in blood vessel density, stromal cell density, epithelial cell height, and VEGF immunoreactivity. Further studies are needed to investigate the physiological mechanisms by which progestin influences endometrial microvascular changes and endometrial bleeding. This study shows that the use of DMPA which only contains progestin hormones can affect the endometrium and bleeding that occurs in the endometrium with the emergence of various complaints of menstrual disorders experienced by DMPA acceptors after more than 1 year of use. This is the basis for researchers to look at the side effects of prolonged DMPA use on menstrual cycle disorders. In theory we know that the menstrual process mostly involves the endometrium in women, physiological changes occur in the endometrium when women experience menstruation. With the mechanism evoked by the two hormones above against endometrial cells, this study showed that the use of DMPA which only contains progestin hormones can affect the endometrium and bleeding that occurs in the endometrium with the emergence of various complaints of menstrual disorders experienced by DMPA acceptors after more than 1 year of use.¹⁵

The study entitled Weight gain and menstrual abnormalities between Depoprovera and Noristerat users¹¹. This study used the following methods: A retrospective comparative study conducted over 3 years and involving 237 subjects who saw comparators using injectable hormonal contraceptives (DMPA or Noristerat). This study consisted of 2 groups; the group that used DMPA contraception for 3.6 and 12 months and the group that used Noristerat type contraception which had used it for 2.4 and 12 months. Then the effects of weight gain, length and pattern of menstrual cycles are examined as well as the side effects. The results showed that 10% of DMPA users did not experience changes in menstrual patterns and only 7% of Noristerat users did not experience changes in menstrual patterns whereas 60% of DMPA users experienced amenorrhea

and only 57% of Noristerat users experienced amenorrhea at the end of the one year period indicating an increase in the number of mothers experiencing amenorrhea. Amenorrhea is one of the most common menstrual disorders and the most common reason for contraceptive drop out. The results of this study were different because the most common type of menstrual disorder is hypermenorrhea compared to Amenorrhea with the use of DMPA for 0.1 year. Researchers used this information as a basis to determine the duration of DMPA use, by looking at more than 1 year and in this study took the samples at intervals of 1, 3 and 6 months. The results of this study also provide information and show how DMPA has more influence on the menstrual cycle, namely Hypermenorrhea.

The study entitled The Effect of Long Term Depo Medroxyprogesterone Acetate (DMPA) on Serum and Plasma Nitric Oxide (NO) Levels in Female Wistar Rats (*Rattus norvegicus*)¹⁶ carried. This study explains that DMPA use in the long term inhibits the protection of estrogen as a vasoprotective molecule that can increase NO production in blood vessels. The results showed that there was a significant difference in the mean serum NO levels between the control group and the group that was given DMPA at the 8th week. The results of this study were continued on higher research subjects, namely humans, it turned out that the use of DMPA in humans more than 1 year showed significant changes in menstrual disorders. We know that Nitric Oxide is a vasodilator substance that plays a role in blood vessels so that NO is very closely related to human blood vessels. Nitric oxide (NO) levels in the endothelium increases during the follicular phase of the menstrual cycle concomitant with increases in 17β estradiol and decreases during the postovulatory progesterone phase, when the progesterone phase is high.¹⁷ The vasoprotective effects of NO are endothelial cell proliferation, protection of endothelial cells from apoptosis, and inhibition of cell inflammation.¹⁸

Relationship between long-term use of Depo Medroxyprogesterone Acetate (DMPA) and changes in blood pressure at RSIA Masyita Makassar. This research is an analytic survey research with a case-control study approach where this research was conducted by first measuring the sample's blood pressure and then retrospectively tracing the history of blood pressure measurement results while being a DMPA injection acceptor. This research was

conducted at RSIA Masyita Makassar.

The results of this study are in line with the results of research that was also conducted at RSIA Masyita Makassar. There are quite a lot of users or acceptors of DMPA hormonal contraception in Masyita in 2022 and are increasing. This study also provides showed that the use of DMPA for more than one year has shown the effect of an increased blood pressure and the effect of menstrual disturbances experienced by acceptors who use DMPA for more than 1 year.

An article of the Effect of DMPA Injecting KB on Menstrual Cycle Disorders in KB Acceptors¹⁹ by Lilis Candra Yanti, Annisa Lamaindi in the Scientific Journal of Health Sandi Husada Year 2021 showed the effect of prolonged use of DMPA contraception on complaints of menstrual disorders. Longer use of DMPA contraception can affect menstrual cycle changes. An analytic observational study with a total sample of 35 research subjects using DMPA with a duration of use of DMPA on 5 years of data conducted in the Work Area of the Health Center.

The results of this study are limited to the influence of regular and irregular menstrual cycles. This is the material for comparison in this study because it is proven that more women experience irregular menstruation. This research was developed because it not only saw the effect of regular and irregular menstrual cycles but also saw the types of menstrual disorders experienced by acceptors after using DMPA both for more than 1 year and less than 1 year with a total sample of 102 research subjects.

CONCLUSION

The use of Depo Medroxyprogesterone Acetate (DMPA) for more than 1 year showed that acceptors experienced more menstrual disorder and hypermenorrhea compared to acceptors who only used it for less than 1 year. These results indicate that the use of Depo Medroxyprogesterone Acetate (DMPA) for more than 1 year has shown to cause menstrual disturbance. This can further be used by midwives in providing knowledge and counseling to patients who will use DMPA regarding side effects and risks in longer use contraception.

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