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## The Description of Lipid Profile on Injectable DMPA Contraception Acceptors in Public Health Center Banjarsengon, Jember District



Ririn Handayani<sup>1</sup>, Rizki Fitrianingtyas<sup>2</sup>

<sup>1,2</sup>Departement of Nursing, STIKes dr. Soebandi Jember, Indonesia

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### Abstract

Injectable DMPA contraception can cause changes in lipoprotein metabolism. Changes in fat metabolism occur because of the hormonal influence of progesterone, causing disruption of the balance of lipid profiles in the body. The change in serum lipid profile (triglyceride, total cholesterol, HDL and LDL) in long-term use of DMPA is a risk factor for atherosclerosis and cardiovascular disease. The purpose of this study was to look at the description of the lipid profile at 3 months injection acceptors. The design of the study was descriptive. The population in this study was 76, the number of samples that met the inclusion and exclusion criteria in this study was 30. Examination of the lipid profile was carried out with an enzymatic colorimetric (cholesterol oxidase method / CHOD PAP). The results of lipid profile examination showed that 13.33% had high cholesterol levels, 3.33% had high triglyceride levels, 13.33% had high HDL levels, 20% had high LDL levels and 3.33% have very high LDL levels. The conclusion of this study was long term use of DMPA injection contraception could cause changes in the lipid profile, so it is recommended for acceptors who want to use contraception in the long term to use MKJP as an option so as not to affect the fat profile in the body.

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✉ Correspondence Address:

STIKes dr. Soebandi Jember – East Java, Indonesia

Email: [zahraaina12@gmail.com](mailto:zahraaina12@gmail.com)

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## INTRODUCTION

The family planning program (KB) is an effort to regulate birth spacing, determine the ideal distance and age to prepare for childbirth, regulate pregnancy spacing, through promotional activities, care and assistance in accordance with reproductive rights in order to create a quality family (PP RI No. 87 Year 2014). The targets in implementing the family planning program are fertile age couples (PUS). What is called Fertile Age Couples (PUS) is a husband and wife whose wife is between 15 and 49 years old (BKKBN, 2011).

The number of active FP participants in 2017 was 63.22%, while those who never used FP was 18.63%. Based on the pattern in choosing the type of contraception, the majority of active contraceptives chose injections and pills as contraceptives, even more dominant (more than 80%) compared to other methods; injections (62.77%) and pills (17.24%) (Kemenkes RI, 2018).

According to data from the Family Health Section, the number of couples of childbearing ages in the Jember Regency area in 2016 was recorded at 411,230 people. Of the total PUS, the coverage of new family planning participants was 38,114 or 9.3% and active family planning participants reached 353,403 people (85.9%). While the coverage of family planning participants according to the type / contraceptive used in 2016, the highest percentage of contraceptive use by participants was injection contraceptive at 51.6% and the least used contraceptives were MOP (1.1%), vaginal medicine (1,1%) and MOW (1.2%) (DINKES, 2017).

DMPA (Depot Medroxy Progesterone Asetate) injectable contraceptives can cause changes in lipoprotein metabolism, an increase in body mass can occur due to different fat profiles under normal conditions. DMPA (Depot Medroxy Progesterone Asetate) will increase serum fat so that it will have an impact on weight gain (Bakry and Abdullah, 2008). Similar study also shows the same thing, namely study on the effect of using hormonal contraception on weight gain shows that injection contraceptive use significantly increases the risk of weight gain (Yuniastuti, 2011).

To improve family planning and reproductive health services, the government established a PKBPK (Population, Family Planning & Development Program) program with the target of implementing the Population, Family Planning and Family Development programs at all regional levels.

Population and family planning development policies and strategies can be pursued by improving access and quality of family planning services that are evenly distributed in every region and community group and through 8 Population Development and Family Planning strategies. One of the 8 strategies states that improving family planning services is carried out by using MKJP to reduce the risk of drop-out and use of non-MKJP by providing continuous information for the sustainability of family planning participation and with indicators of increasing use of MKJP. (HOGSI, 2018)

Yadav (2011), in his study on the effect of long-term use of DMPA on lipid metabolism in 60 women in Nepal who had used it for more than 2 years showed that the levels of triglycerides, total cholesterol and Low Densities Lipoprotein (LDL) were higher than non-acceptors, while the levels of High Densities Lipoprotein (HDL) decreased. Because of this, it can be concluded that DMPA can cause changes in lipid metabolism which can increase the risk of cardiovascular disease (heart disease). Changes in fat metabolism occur due to the influence of the hormonal progesterone, which causes disruption of the balance of the lipid profile in the body.

Changes in serum lipid profiles (triglycerides, total cholesterol, HDL and LDL) on long-term use of DMPA are a risk factor for atherosclerosis (fat accumulation in the artery walls) and cardiovascular disease. Increased levels of triglycerides, total cholesterol, LDL and decreased HDL and increased excess body weight are the diagnostic criteria for metabolic syndrome that can increase the incidence of type II and cardiovascular diabetes mellitus. Therefore, lipid profile is the best predictor of metabolic syndrome.

From a preliminary study that has been conducted by studyers of 10 3 months injection family planning acceptors, 7 of them used injectable contraception for 3 months for more than 3 years. Therefore, studyers are interested in knowing the description of the lipid profile of injection users with DMPA (Depo Medroxy Progesterone Acetate) in the working area of the Banjar Sengon Community Health Center, Jember Regency.

## METHODS

This type of study was a quantitative descriptive study. The analysis used distribution, frequency and percentage. The variable was the

description of the lipid profile of users who inject DMPA (Depo Medroxy Progesterone Acetate). The population in this study was all 3 months injection family planning (DMPA) acceptors at Integrated Healthcare Center Alamanda, Jumerto Village in the working area of the Banjar Sengon Health Center, Jember Regency. The number of samples that met the inclusion and exclusion criteria was 30 respondents.

Prior to conducting the study, this study has received approval from the ethical clearance of STIKES dr. Soebandi Jember. The data collection process was carried out by taking a sample of the respondent's blood and then measuring the lipid profile using the enzymatic colorimetric method (CHOD PAP).

**RESULT**

**Table 1 Frequency Distribution of Duration of Use of 3-Month Injectable KB (DMPA)**

No.	Duration of KB usage	amount	Frequency (%)
1	<1 year	6	20
2	1-3 Years	9	30
3	> 3 Years	15	50
	amount	30	100

Based on Table 1, it can be seen that there are 6 respondents (20%) who accept DMPA injection with a duration of use <1 year, 9 respondents (30%) who use 1-3 years (30%) and those using > 3 years are 15 respondents (50%).

Based on Table 2, it can be seen that the 3 months injection family planning acceptors who have cholesterol levels within the high limit are as many as 4 respondents (13.33%), there is 1 respondent (3.33%) who has triglyceride levels in the high limit category, while for levels There are 9 HDL respondents (30%) who have low HDL categories and 4 respondents (13.33) who have high HDL categories, for LDL levels that have been checked there are 14 respondents (46.6%) with LDL levels near optimal, 6 respondents (20%) had high LDL levels and 1 respondent (3.33) had high LDL categories.

**DISCUSSION**

Most of the respondents in this study were acceptors of 3-month injection with a duration of more than 3 years of use, as much as 50%. Several

**Table 2 Lipid Profiles of 3-month injection family planning (DMPA) acceptors**

No.	Checking type	amount	Frequency (%)
1	CHOLESTEROL		
	Desired < 200	26	86.67
	High Limit (200-239)	4	13.33
	Height > 239	0	0.00
2	TRIGLICERIDE		
	Normal < 150	29	96.67
	High Limit (150-199)	1	3.33
	High (200-499)	0	0.00
	Very High > 500	0	0.00
3	HDL		
	Low < 40	9	30.00
	Height > 60	4	13.33
	Normal	17	56.67
4	LDL		
	Optimal < 100	9	30.00
	Approaching Optimal (100-129)	14	46.67
	High limit (130-159)	6	20.00
	High (160-189)	1	3.33
	Very high > 500	0	0
	amount	30	100

studies have reported a decrease in total cholesterol (TC), triglyceride (TG), and low-density lipoprotein (LDL-C) cholesterol in DMPA users (Yadav, 2011). According to (Dilshad et al., 2016) the side effects of excessive progesterone content in the cardiovascular system can cause changes in cholesterol levels. Changes in cholesterol levels will increase with age, duration of use of contraception and weight gain. According to studyers, cholesterol levels in respondents varied due to differences in the length of time using contraception.

Of the 30 respondents, there were 4 respondents (13.33%) who had cholesterol levels within the high limit. The results of this study are in accordance with the results of study conducted by Wulandari (2019) which states that the longer use of injectable contraceptives for 3 months indicates a tendency for cholesterol levels to be above normal. Most of 12 respondents (48%) had normal cholesterol levels and 7 respondents (28%) had cholesterol levels that were above normal for 3 months for 3 months for 3-6 years. While the duration of use of contraception with a usage period of ≥ 6 years, as many as 6 respondents (24%) had cholesterol levels above normal.

Long-term and regular use of injectable contraceptives for 3 months can result in the accumulation and influence of the accumulation of these hormones which can cause fat metabolism to increase (Utami, 2015). One of the disadvantages of using DMPA injection contraceptive is that there is a change in serum lipids where cholesterol levels increase in long-term use (Saifuddin, 2006).

In addition to an increase in cholesterol levels, there was 1 respondent (3.33%) who had triglyceride levels in the high limit category. The results of this study are in accordance with the results of study conducted by Hartiti (2010) which states that the longer the use of DPMA Injectable KB, the higher the water content in the blood as indicated by the increase in body weight and the longer using DPMA Injectable KB the fat levels in the blood are also increased which is indicated by increased levels of triglycerides in the blood. Triglycerides play a role in risk factors for atherosclerosis and coronary heart disease (CHD) when accompanied by decreased HDL levels.

A similar study was also conducted by Sanger, et al (2008) regarding the effect of DMPA on the lipid profile showing that triglyceride levels decreased at 1 month after giving DMPA but not significantly, after 3 months of DMPA administration there was a significant decrease in triglyceride levels and at 6, 9, 12 months the triglyceride levels increased again but it was not statistically significant. In this study, the results showed an average increase in triglyceride levels at 6 months after DMPA administration (94.60 mg / dl).

So, the study concluded that the possible increase in triglyceride levels in this study was also due to the use of 3 months injection contraception for a long period of time. To anticipate some problems related to the side effects of long-term use of DMPA, especially those related to the lipid profile, respondents should be advised to use long-term contraceptive methods as an alternative to delaying pregnancy and routine lipid profile checks on all DMPA acceptors of contraception in the long term are necessary. .

Many experts argue that the use of DMPA does not cause changes in lipid metabolism, but in fact many studies have found changes in serum lipid profiles (total cholesterol, HDL, LDL, triglycerides) in long-term use of DMPA (Sanger, 2008). In this study also found changes in HDL and LDL in the respondents who had been sampled.

For HDL levels, it was found that 9 respondents (30%) had low HDL categories and 4 respondents (13.33) who had high HDL categories, while 14 respondents (46.6%) had LDL levels with high HDL levels. category close to optimal, 6 respondents (20%) who had high LDL levels and 1 respondent (3.33) had high LDL categories.

Based on study conducted by Bakry (2009), he examined DMPA acceptors, before contraceptive use and after 1, 6, 7, 12 and 13 months of use, it was found that progestins can induce a decrease in all lipid components by about 30% and tend to increase Low Density Lipoproteins. (LDL), and reduce High Density Lipoprotein (HDL) by about 15%. These findings may indicate a disadvantage for long-term 3-month injection family planning (DMPA) acceptors.

According to the theory the effect of glucocorticoids on DMPA is to increase lipolysis. Lipolysis (hydrolysis) is the process of breaking down triglycerides through diacylglycerols into monoacylglycerols and finally to free fatty acids and glycerol. Furthermore, large amounts of free fatty acids are carried to the liver, thereby increasing hepatic triglyceride synthesis and increasing the secretion of Very Low Densities Lipoprotein (VLDL) by the liver. In a state of insulin resistance, VLDL increases in the circulation and will increase LDL because most of the LDL is formed from VLDL (Botham, KM and Mayes, 2009).

The results of study from Fransisca (2020) stated that the LDL level in the DMPA acceptor with a duration of use of more than 3 years was higher than that of the depo medroxyprogesterone acetate acceptor with a duration of use less than 3 years. Although it is not statistically significant.

The more LDL in the plasma, the less HDL levels. HDL functions to transport free cholesterol from blood vessels and other tissues to the liver and then the liver excretes it through bile so it is also known as cleaning cells. So, it can be concluded that the more LDL increases, the more HDL it clears the cholesterol carried by LDL, causing a decrease in HDL levels in the blood (Botham, KM and Mayes, 2009).

A decrease in HDL levels in the blood accompanied by an increase in LDL levels can cause dyslipidemia. Dyslipidemia is a condition that occurs when the levels of fat in the bloodstream are too high or too low and dyslipidemia is a risk factor for the development of atherosclerosis.

Atherosclerosis will result in blockage and accumulation of fat or blood clots (Gde Ary Putra Kamajaya, AA Wiradewi Lestari, 2016).

This study was conducted at the time of the Covid 19 pandemic, so there is a limitation in this study, which is the minimum number of samples because some respondents refused to become samples due to the Covid 19 pandemic and The location of the study was moved to one of the Integrated Healthcare Center which was initially carried out in 1 village due to PSBB conditions and an increase in the number of Covid 19 cases in the Jember district, the Public Health Center limited or minimized contact with patients to minimize the presence of Covid 19 transmission by narrowing the study area.

## CONCLUSION

From the results of this study, it was found that 4 months of injection family planning acceptors who had cholesterol levels in the high limit were 4 respondents (13.33%), 1 respondent (3.33%) had triglyceride levels in the high limit category, while HDL levels contained 9 respondents (30%) who have low HDL category and 4 respondents (13.33%) who have high HDL category, for LDL levels that have been checked there are 14 respondents (46.6%) with LDL levels near optimal, 6 respondents (20%) had high LDL levels and 1 respondent (3.33) had high LDL categories.

The variations in the results of examining the lipid profile in this study were influenced by various factors, one of which was the use of 3 months injection contraceptives for a long period of time.

## SUGGESTION

To anticipate some problems related to the side effects of long-term use of DMPA, especially related to the lipid profile, it is better if the related health facilities provide facilities for providing MKJP for respondents and encourage respondents to use long-term contraceptive methods as an alternative to delaying pregnancy and need to do profile checks lipids routinely against all long-term DMPA contraceptive acceptors.

Suggestions for further study are to conduct study on a similar topic with a larger number of samples and provide therapy to overcome changes in lipid profiles as a preventive measure for health workers.

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