



Factors Related to Weight Gain in DMPA (Depo Medroxy Progesterone Acetate) Acceptors

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ABSTRACT

In Indonesia, injectable contraceptives are contraceptives that are in demand, about 34.3% of which are used by women of childbearing age. One of the shortcomings of DMPA hormonal injectable contraceptives is weight gain due to the presence of hormones that facilitate the change of carbohydrates and sugar into fat and stimulate the appetite control center in the hypothalamus which causes acceptors to eat more than usual. This study is to analyze the factors associated with weight gain in DMPA acceptors at TPMB "R" Cijeruk Bogor West Java 2023. The research design used with *Cross Sectional*. The population in this study were DMPA user mothers at TPMB "R" Cijeruk Bogor West Java Year 2023. The sampling technique used *Purposive Sampling*. The sample amounted to 129 people. Univariate and Bivariate data analysis That the age factor, length of use, physical activity, and eating habits with a p value <0.05, while the diabetes history factor with a p value > 0.05. There is a significant relationship between the factors of age, length of use, physical activity, and eating habits with weight gain in DMPA acceptors, and there is no relationship between history of diabetes with weight gain. **For** acceptors can maintain and control body weight by exercising.

Keywords: Acceptor, contraceptive, DMPA, weight

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INTRODUCTION

Indonesia is one of the most populous countries in the world. Family planning prevalence and fertility rates are important indicators in population and family planning programs (Sitorus and Siahaan 2018). Contraceptive use is one of the efforts in family planning to control fertility and suppress population growth effectively.¹

Data from WHO 2018 users of injectable contraceptives are around 35.3%, pills 30.5%, IUDs 15.2%, Implants 7.3%, and 11.7% other contraceptives. The United States is the largest number of injectable contraceptive users at around 30%. and in Indonesia, injectable contraception is one of the most popular contraceptives and is in great demand at 34.3% because Indonesia is the fourth most populous country in the world after China, India, and the United States, so the government is trying to anticipate the rapid population growth rate in various ways, one of which is with this family planning program, which uses the most modern contraceptive method is injection.²

Some side effects that can be caused by the use of contraceptives such as, Menstrual Disorders make changes in the menstrual cycle, which can be longer or shorter, During menstruation, the blood released can be too much, or too little. Sometimes only spotting appears, no menstruation at all, less effective, the appearance of weight problems, cannot guarantee protection against disease transmission, impaired fertility problems. Side effects and complications of contraceptives vary from method to method and from acceptor to acceptor. Improper handling of side effects and complications of contraceptives can also lead to undesirable consequences such as dropping out of the family planning program.³

Some side effects that can also occur are side effects on DMPA injectable birth control acceptors such as weight gain, menstrual disorders in the form of amenorrhea, spotting and menorrhagia and dizziness or headaches. One of the side effects that mothers complain about is weight gain, this weight gain is likely due to the progesterone hormone facilitating the change of carbohydrates and sugar into fat, so that fat under the skin increases, besides the progesterone hormone also causes increased appetite and decreased physical activity, as a result of the use of injections can cause weight gain. Some of these side effects on weight gain can be influenced by other factors such as duration of use, age, employment status or physical activity, history of hereditary or genetic diseases such as diabetes/blood sugar levels.⁴

BKKBN data (2020) West Java Province in 2018 the number of active participants using family planning was 1,029,212 people including 93,051 IUD users, 17,798 MOW, 6,654 MOP, 22,884 condoms, 79,773 implants, 562,771 injections and 244,867 pill users. The data obtained in Bogor

district in 2018 is that 130,869 people actively follow family planning, including IUDs as many as 2,486 people, MOW 856 people, MOP 64 people, condoms 1,120 people, implants / implants 6,501, injections 74,400 people, pills 45,442 people.⁵

The purpose of this study was to analyze the factors associated with weight gain in DMPA acceptors at TPMB "R" Cijeruk bogor West Java in 2023."

METHOD

This type of research is *cross sectional*. The sampling technique in this study was *purposive sampling* by considering the inclusion criteria and exclusion criteria with a total sample of 129 respondents at TPMB "R" Cijeruk, Bogor Regency, West Answer, carried out in July 2023. The research instrument used a questionnaire sheet with 6 variables. The analysis was carried out using the *Chi Square* statistical test.

RESULTS

Table 1
Frequency Distribution of Weight Gain in DMPA Acceptors

Variables	Weight Gain				Total	
	Up > Normal		Normal Rise		f	%
	f	%	f	%		
Age						
20-35 Years	50	38,8	32	24,8	82	100
>35 Years	38	29,5	9	24,8	47	100
Length of Use						
1-2 Years	62	48,1	20	15,5	82	100
>2 Years	26	20,2	21	16,3	47	100
Physical Activity						
Lightweight	63	48,8	21	16,3	84	100
Weight	25	19,7	20	15,8	45	100
History of Diabetes						
< 3 children	37	28,7	22	17,1	59	100
>3 children	51	39,57	19	14,7	70	100
Eating Habits						
Regular	26	20,2	21	16,3	47	100
Irregular	62	48,1	20	15,5	82	100

Based on table 1, it is known that respondents who experienced weight gain > than normal in the age group 20-35 years (63.6%). group of respondents who experienced weight gain in acceptors with a length of use of KB DMPA 1-2 years (48.1%). group of respondents who experienced weight gain in acceptors with the category of Light Physical Activity (48.8%). in the group of respondents who experienced weight gain with acceptors who did not have a history of DM (39.57%). group of

respondents who experienced weight gain in acceptors with irregular eating habits (48.1%).

Table 2 Relationship between age and weight gain in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023

Variables	Up >Normal		Weight Gain Normal Rise		Total n	Total %	p Value	OR
	n	%	n	%				
Age								
20-35 Th	50	38,8	32	24,8	82	100	0,30	0,370
>35 Th	38	29,5	9	24,8	47	100		
Total	88	68,2	41	31,8	129	100		

In table 2, there is a relationship between age and weight gain in DMPA injecting acceptors with a p value of 0.30 ($p < 0.050$) with an OR value of 0.370, which means that respondents aged 20-35 years have a risk of 0.370 times experiencing weight gain compared to respondents aged > 35 years.

Table 3 Relationship between Length of Use and Weight Gain in DMPA Acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023

Variables	Up >Normal		Weight Gain Normal Rise		Total n	Total %	P Value	OR
	n	%	n	%				
Length of Use								
1-2 Years	62	48,1	20	15,5	82	100	0,020	2,504
>2 Years	26	20,2	21	16,3	47	100		
Total	88	68,2	41	31,8	129	100		

Based on table 3 that there is a relationship between length of use and weight gain $pvalue = 0.020$. OR value 2.540 which means that respondents with a length of use of 1- 2 years have a risk of 2.540 times experiencing weight gain compared to respondents whose length of use is > 2 years.

Table 4 Relationship between Physical Activity and Weight Gain in DMPA Acceptors at TPMB 'R'Cijeruk Bogor West Java Year 2023

Variables	Weight Gain						P Value	OR
	Up >Normal		Normal Rise		Total			
	n	%	n	%	n	%		
PhysicalActivity								
Lightweight	63	48,8	21	16,3	84	100	0,030	2,540
Weight	25	19,7	20	15,8	45	100		
Total	88	68,2	41	31,8	129	100		

Based on table 4 that there is a relationship between Physical Activity with weight gain with a *pvalue* = 0.030 and an OR value of 2.540 which means that respondents with Light Physical Activity have a risk of 2.540 times experiencing weight gain compared to respondents who have heavy physical activity.

Table 5 Relationship between Diabetes History and Weight Gain in DMPA Acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023

Variables	Weight Gain						P Value
	Up >Normal		Normal Rise		Total		
	n	%	n	%	n	%	
History ofDM							
There is	37	28,7	22	17,1	59	100	0,257
None	51	39,57	19	14,7	70	100	
Total	88	68,2	41	31,8	129	100	

Based on table 5 that there is no relationship between the history of diabetes with weight gain in DMPA injecting acceptors at TPMB 'R' Cijeruk Bogor West Java 2023. *pvalue* =0.257.

Table 6 Relationship between Eating Habits and Weight Gain in DMPA Acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023

Variables	Weight Gain						P Value	OR
	Up >Normal		Normal Rise		Total			
	n	%	n	%	n	%		
Eating habits								
Regular	26	20,2	21	16,3	47	100	0,020	0,422
Uninterrupted	62	48,1	20	15,5,	82	100		
Total	88	68,2	41	31,8	129	100		

Based on table 6 that there is a relationship between length of use with an increase in body weight, the $pvalue = 0.020$ with an OR value of 0.422, which means that respondents with irregular eating habits have a risk of 0.42 times experiencing weight gain compared to respondents who eat regularly.

DISCUSSION

1. Relationship between Age and Weight Gain in DMPA Acceptors

The results of statistical tests found that in the group of respondents who experienced weight gain in DMPA acceptors were those aged 20-35 years (63.6%), obtained the results of the calculation of $pvalue = 0.020 > \alpha = 0.05$, it can be concluded that in this study there is no relationship between age and weight gain in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023.

This study is in line with a 2019 sumatri study that the proportion who experienced an increase in body weight was 43 respondents (84.3%), while respondents who did not experience an increase in body weight despite using injectable contraceptives were 15 respondents (51.7%), it is assumed that the use of 3-month injectable contraceptives affects weight gain. This is due to 3-month injectable contraceptives stimulating the appetite control center in the hypothalamus which can cause acceptors to eat more than usual, so that they have the potential to experience an increase in body weight.⁶

Research by Aziz et al 2018 also stated that of the 100 respondents, 70 respondents with ages between 20-35 years, there were 59% of respondents who experienced weight gain, while of the 30 respondents aged > 35 years, there were 18% of respondents who experienced weight gain. The statistical test results obtained $pvalue 0.017$ means that there is a statistically significant relationship between age and weight gain in family planning acceptors. The results of the analysis obtained OR value = 0.280 means that respondents who have 20-35 years of age are likely to experience weight gain by 0.280 times compared to age > 35 years.⁷

According to Raidanti (2019) about the three-month injectable kb program *depo medroxi progesterone acetate* (DMPA) on weight gain at the Tanah Abang Jakarta health center in 2019. The statistical test results obtained $pvalue 0.000$, it can be concluded that there is a relationship between age and weight gain. According to research⁸ about factors that relate to weight gain in injectable contraceptive acceptors at the bataan health center, bataan sub-district, mandailing natal district. The results of statistical tests obtained $pvalue 0.000$, it can be concluded that there is a relationship between age and an increase in body weight in injectable contraceptive acceptors at the bataan health center in the bataan sub-district of mandailing natal district.⁹

Age is one of the factors for someone to become a contraceptive acceptor, because age is related to reproductive potential. At the age of 20-35 years this is the age of reproduction where in this age phase to span pregnancy not terminate pregnancy, so effective contraception is needed, and most of this age mother mnegalmai significant weight gain. This happens because the age of 20-35 years is a productive age. As a person gets older, they tend to lose muscle especially if they are less active which will result in a reduced level of calorie burning.

2. Relationship between Length of Use and Weight Gain in DMPA Acceptors

The results of the study of weight gain in DMPA acceptors found the most statistical test results occurred in respondents with a long use of Kb DMPA 1-2 years 65 acceptors (63.6%) experienced an increase. obtained the results of the calculation of $p\text{ value} = 0.017 < \alpha = 0.05$, it can be concluded that there is a relationship between the length of use with an increase in body weight in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023.

The results of this study are in line with Berliani et al in Nenny (2022). About the relationship between length of use with an increase in body weight of 3-month injectable birth control acceptors in Karang Anyar village, the results of this study obtained a $p\text{ value}$ of $0.000 < \alpha = 0.05$, it was concluded that there was a significant relationship between length of use and weight gain.¹⁰

This research is also in line with Sembiring, *et al* (2019) about the factors associated with increased body weight in injectable contraceptive acceptors at the batahan health center, batahan sub-district, mandailing natal district. The results of the statistical test obtained a $p\text{ value}$ of $0.000 < \alpha = 0.05$, it can be concluded that there is a relationship between length of use with an increase in body weight in injectable contraceptive acceptors at the batahan health center in the batahan sub-district of mandailing natal district.¹¹

According to Qibtiah & Lisca (2022) Length of use there is also a relationship between the use of birth control and the incidence of weight gain in hormonal acceptors weight gain in users of injectable type contraceptive methods usually ranges between 2.3kg-2.9 Kg.¹²

Length of use is also one of the risk factors for weight gain in 3-month injections. In the results of researchers Physical activity is the movement of body movements produced by skeletal muscles that require an expenditure of energy. To carry out activities, humans need a certain amount of energy if the energy provided by food is not enough, then energy is obtained from the breakdown of fat in the body. In doing physical activity there is still an increase in acceptors who do light, medium and heavy physical activity even with different amounts.¹² There is a relationship between low physical activity and the

incidence of weight gain. Individuals with low activity have a greater risk of increasing body weight than people who are active in exercising regularly.¹³

The length of DMPA use plays a major role in increasing the weight of respondents in the study results in a period of 1-2 years of use, but there are acceptors whose weight remains or does not increase, this is because respondents who do not experience an increase are able to maintain eating habits and maintain their weight with routine activities.

3. Relationship between Physical Activity and Weight Gain in DMPA Acceptors

The results of the study of weight gain in DMPA acceptors found the results of statistical tests of respondents who experienced weight gain were mostly included in the category of light physical activity (65.1%), obtained the results of the calculation of $p\text{ value} = 0.024 < \alpha = 0.05$, it can be concluded that this study there is a relationship between physical activity and weight gain in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023.

The results of this study are in line with other factors related to weight gain in the use of 1-month and 3-month injections with the results of statistical tests of 53 respondents with 3-month injections, the results of the analysis obtained a $p\text{ value} = 0.000 < \alpha = 0.05$, thus there is a relationship between physical activity and weight gain.¹⁴ The results of this study are also in line with research conducted by Sembiring, 2019 with the results of statistical tests using the *Chi-square* test obtained the results of the calculation of $p\text{ value} = 0.007 < \alpha = 0.05$, it can be concluded that there is a relationship between physical activity with an increase in maternal weight.¹¹

The results of research on the relationship between physical exercise (aerobic) with an increase in the weight of hormonal acceptor mothers in the gymnastics studio of Pringsewu district. With the results of statistical tests using *Chi-square* obtained $p\text{ value} = 0.001 < \alpha = 0.05$, it can be concluded that there is a relationship between physical activity with an increase in maternal weight.¹⁵

Physical activity is the most important part to keep our body healthy and to help our body burn fat, but excessive physical activity also makes the body very tired so that it will be hungry faster due to excessive energy expenditure, hence the importance of maintaining physical activity and balanced eating habits.

4. Relationship between Diabetes History and Weight Gain in DMPA Acceptors

The results of the study of weight gain in DMPA acceptors with a history of diabetes found statistical test results that most DMPA acceptors had no history of diabetes (54.3%), with $p\text{ value} = 0.218 < \alpha = 0.05$, it can be concluded that this study has no relationship between a history of diabetes and weight

gain in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java Year 2023.

This research is not in line with Sitirahma (2019). The results of the study of 51 respondents who used injectable contraceptives consisting of 1 and 3 months injectable users, in 3-month injectable users there were 21 respondents with blood glucose levels below 126mg/dl (normal) and there were 9 respondents with blood glucose levels above 126mg/dl (hyperglycemia) the results of the *chi-square* test obtained a *p value* of 0.025 $< \alpha = 0.05$ so that there was a significant relationship between the use of injectable hormonal contraceptives and blood glucose levels. Respondents who experienced an increase in blood glucose levels had an average age above 40 years and a length of use above 15 years, this is in accordance with the theory that explains that age and length of use of hormonal contraceptives are also closely related to the increase in blood glucose levels.¹⁶

In the results of the Diabetes History researcher is a condition where blood sugar levels are elevated or above normal limits. Blood sugar level is the amount of sugar or glucose in the blood. Even though it is always changing, blood sugar levels need to be kept within normal limits so that no disturbances occur in the body. Sometimes weight gain can occur because in a family there is a domination trait in terms of reducing the physical form of offspring. According to the study, there is a significant relationship between family history of dm and family dm status in Aseptor Kb.¹⁷ In people who experience continuous weight gain will experience obesity and are increasingly prone to increased blood sugar levels as a result of narrowing of blood vessels by fat activity. The length of use of injectable birth control also affects the increase in blood glucose of injectable birth control acceptors.¹⁸ Various kinds of effects while caused by DMPA such as weight gain, hypertension cholesterol deposits and even diabetes due to the increase in the number of progesterone and estrogen hormones, DMPA is one of the triggers of glucose metabolism disorders in the body. This glucose metabolism disorder arises due to the use of contraceptive hormones where the hormones contained can affect the work of insulin in sugar metabolism so that it can increase blood glucose levels.⁷

The use of estrogen and progesterone hormones will stimulate an increase in the amount of progesterone and estrogen where in the body with androgenic effects. Progesterone hormone basically has a function in influencing appetite, excess progesterone hormone will stimulate the appetite control center in the hypothalamus which causes the acceptor to eat more than usual, so that the appetite will increase and result in eating more which can ultimately lead to weight gain. Excessive weight gain can also lead to diabetes. The use of contraceptives over a long period of time can also lead to pancreatic disorders. The use of hormonal contraceptives can have an abnormal effect on glucose metabolism in the body.

5. Relationship between Eating Habits and Weight Gain in DMPA Acceptors

The results of research on weight gain in DMPA acceptors with eating habits found the results of statistical tests of respondents with irregular eating habits (63.6%). And regular (36.4%) With a *p value of* $0.017 < \alpha = 0.05$, it can be concluded that this study has a relationship between eating habits and weight gain in DMPA acceptors at TPMB 'R' Cijeruk Bogor West Java in 2023.

This study is in line with manda 2020 research on factors associated with weight gain in the use of 1-month and 3-month injections, with the results of statistical tests of 53 respondents injecting 3 months of analysis results obtained a *p value of* $0.001 < 0.05$ thus this study is related to weight gain, the diet of each individual is not always the same depending on the reaction of the acceptor's body, and depending on the body's metabolism, besides that economic status affects this such as a diet in urban areas that is high in calories. 0.05 thus this study is related to weight gain, the diet of each individual is not always the same depending on the reaction of the acceptor's body, and depending on the body's metabolism, besides that economic status affects in this case such as a diet in urban areas that is high in calories and high in fat because urban people tend to be busy, and usually prefer fast food or junkfood.¹⁹

According to some studies, weight gain is caused by an increase in appetite due to the progesterone hormone contained in DMPA contraceptives stimulating the appetite control center in the hypothalamus.⁷ The increase in body weight obtained has varying values due to many other factors that affect weight gain that were not observed in this study.²⁰

On the results of researchers Eating habits or is the most important behavior that can affect the state of nutrition. Regulating diet is the most important factor that must be considered by a person, this is because if a poor and excessive diet, it will make weight gain continue and cause someone to become obese. Adjusting the diet in question is by paying attention to the nutritional content and also the amount of intake that enters, so that the calories in the body do not accumulate and cause the body to have unhealthy fat deposits.²¹ For example, the high intake of carbohydrates in a person while carbohydrates have high sugar levels that can trigger additional body weight in the body, some carbohydrates in the blood circulation in the form of glucose. Some are in muscle tissue and some become in the muscle tissue and liver to form glycogen and the rest becomes fat stores which will function as energy reserves in the body.²²

In addition, the hormone in the 3-month injectable KB triggers the hypothalamus hunger reaction, causing contraceptive users to eat more often and this triggers weight gain. In the results of the study of mothers who used 3-month injectable birth control, the average mother who used this

birth control experienced an increase in her weight due to the progesterone hormone which caused an increase in appetite.²³

Regular eating habits. Then it is likely due to the hormone progesterone facilitates the change of carbohydrates and sugar into fat, so that the fat under the skin increases, in addition to the hormone progesterone also causes increased appetite and decreased physical activity, as a result of the use of injections can cause weight gain.²⁴

Regulating eating habits or diet is the most important factor that must be considered by a person, because if habits are bad and excessive, it will make weight gain continue and cause someone to become obese. Regulating the meaning of kebiasaan referred to here is by paying attention to the nutritional content and also the amount of intake that enters, so that the calories in the body do not accumulate and cause the body to have unhealthy fat deposits and accommodate the weight that continues to grow, therefore the importance of maintaining the habit of eating regularly and not excessively.

CONCLUSION

There was an association between age, duration of use, physical activity and eating habits. There is no association between history of diabetes and weight gain in DMPA acceptors.

REFERENCES

1. Devi S, Fatchiya A, Susanto D. Kapasitas Kader dalam Penyuluhan Keluarga Berencana di Kota Palembang, Provinsi Sumatera Selatan. *J Penyul.* 2016;12(2):144. doi:10.25015/penyuluhan.v12i2.11223
2. Nurmalita Sari MH, Sopiani A, Irawati A. Factors Relating to the Interest of Use MKJP (IUD and Implant) in the Village of Perigi Mekar, Ciseeng, Bogor. *J Midwifery Sci Basic Appl Res.* 2020;2(1):27-32. doi:10.31983/jomisbar.v2i1.5968
3. Ratna I, Irdyanti I. Perbedaan Pengaruh Penggunaan Alat Kontrasepsi Iud Dan Suntik Terhadap Siklus Haid Perempuan Di Kecamatan Marpoyan Damai Pekanbaru. *Marwah J Perempuan, Agama dan Jender.* 2012;11(2):1. doi:10.24014/marwah.v11i2.507
4. Andriani D, Hartinah D. Hubungan Periode Penggunaan Alat Kontrasepsi Suntik 3 Bulan Dengan Siklus Menstruasi. *J Ilmu Keperawatan dan Kebidanan.* 2018;9(2):177. doi:10.26751/jikk.v9i2.439
5. od_15957_jml_peserta_keluarga_berencana_kb_aktif__metode_kb.

6. Sumantri AW. Hubungan Kenaikan Berat Badan Dengan Lama Pemakaian Kontrasepsi Suntik 3 Bulan Relationship Of Weight Increase Of Agency With Long Use Of 3 Pendahuluan Permasalahan kependudukan telah menjadi masalah penting bagi pemerintah dan para pakar kependudukan di. *J Kesehat Saelmakers Perdana*. 2019;2:131-138.
7. Aziz H, Dinengsih S, Choirunnisa R. Faktor - Faktor Yang Berhubungan Dengan Kenaikan Berat Badan Akseptor KB di Klinik Medisca Cimanggis Depok Jawa Barat Tahun 2020. *J Ilm Kesehat dan Kebidanan*. 2020;IX(2). <https://smrh.e-journal.id/Jkk/article/view/113/73>
8. Sembiring JB, Suroyo RB, Asnita L. Faktor-Faktor Yang Berhubungan Dengan Peningkatan Berat Badan Pada Akseptor Kontrasepsi Suntik Di Puskesmas Batahan Kecamatan Batahan Kabupaten Mandailing Natal. 2019;17(1). doi:<https://doi.org/10.30787/gaster.v17i1.328>
9. Ratika Febriani Ir. Analisis Perubahan Berat Badan Pada Pemakaian Kb Suntik Depo Medroksi Progesteron Asetat (Dmpa) Departemen Fisiologi Fakultas Kedokteran Universitas Muhammadiyah Palembang 1 DOI : <https://doi.org/10.36729/jam.v5i1.320> Semua Negara di dunia , baik Negara. 2020;5:113-121.
10. Neny Trisanti Mandasari. Hubungan Lama Pemakaian Kb Suntik 3 Bulan Dengan Perubahan Berat Badan. 2022;(8.5.2017):2003-2005.
11. Sembiring JB. Faktor - Faktor Yang Berhubungan Dengan Peningkatan Berat Badan Pada Akseptor Kontrasepsi Suntik Di Puskesmas Batahan Kecamatan Batahan Kabupaten Mandailing Natal. *Gaster*. 2019;17(1):36. doi:10.30787/gaster.v17i1.328
12. Qibtiah M, Lisca SM. Hubungan Aktivitas Fisik , Lama Penggunaan KB dan Jenis KB Terhadap Kenaikan Berat Badan Pada Akseptor KB Hormonal. 2022;03:119-125.
13. Marlina, S I. Faktor - Faktor Yang Mempengaruhi Kenaikan Berat Badan Pada Pemakaian Alat Kontrasepsi Suntik Depo Progestindi Rumah Sakit Umum Daerah Haji Makassar Tahun 2015. *J Ilm Media Bidan*. 2016;1(02):75-84.
14. Sulastriningsih. Faktor Faktor Yang Berhubungan Dengan Kenaikan Berat Bada Pada Akseptor Kb Suntik Tiga Bulan Di Tpmb Bidan K. *J Ilm Kesehat Bpi*. 2021;5(2):28-33.
15. Fitriana F, Isnaini M, Setiani S. Hubungan Latihan Fisik (Aerobik) dengan Peningkatan Berat Badan Ibu Akseptor KB Hormonal di Sanggarsenam Kabupaten Pringsewu. *J Ilm Keperawatan Sai Betik*. 2018;14(1):11. doi:10.26630/jkep.v14i1.1001
16. Karimang S, Abeng TDE, Silolonga WN. Faktor Yang Berhubungan Dengan Penggunaan Kontrasepsi Suntik 3 Bulan Di wilayah Puskesmas Tagulandang Kabupaten Sitiro. *J Keperawatan*. 2020;8(1):10. doi:10.35790/jkp.v8i1.28407

17. fafelia rozyka meysetri, aprima yona amir dkk. Jurnal Kesehatan Saintika Meditory. 2021;4(February):29-35.
18. Kadek Dwi Ariesti Journal CH. pengaruh lamanya penggunaan kb suntikdmpa terhadap peningkatan kedar gula darah akseptork suntik di kota kupang. 2019;3(September):98-102.
19. Mandasari P. Faktor-Faktor yang Berhubungan dengan Penggunaan KB Suntik pada Ibu Usia Kurang dari 20 Tahun. Cendekia Med. 2020;5(1):43-50. doi:10.52235/cendekiamedika.v5i1.6
20. Selviani M, Musfiroh S, Ningsih PM. Hubungan Antara Kb Suntik Dmpa Dengan Kenaikan Berat Badan Di Pmb Hj. Nani Rohayani, Sst, M. Kes. Kota Cirebon Tahun 2019. Midwife's Res. Published online 2022. <http://journal.stikesmuhrb.ac.id/index.php/Midwife/article/view/184%0Ahttps://journal.stikesmuhrb.ac.id/index.php/MIDWIFE/article/download/184/101>
21. Kemenkes R, Direktorat P dan PM. 5 Pola Makan Penyebab Obesitas. Jakarta. 2022.
22. Rahmandita AP, Adriani M. Perbedaan Tingkat Konsumsi dan Aktivitas Fisik pada Wanita (20-54 Tahun) Obesitas Sentral dan Non Sentral. Amerta Nutr. 2017;1(4):266. doi:10.20473/amnt.v1i4.7124
23. Muayah, Sari M. Faktor-Faktor Yang Berhubungan Dengan Kenaikan Berat Badan Pada Penggunaan KB Suntik 1 Bulan Dan 3 Bulan. J Ilm Bidan. 2022;6(1):14-23. <https://e-journal.ibi.or.id/index.php/jib/article/view/345/104>
24. Dina Raidanti Wahidin. Efek Kb Suntik 3 Bulan (Dmpa) Terhadap Berat Badan.; 2016