Research Article

Return of Fertility after Discontinuation of Contraception According Type of Contraception, Duration of Use, Age and Body Mass Index

Kembalinya Kesuburan setelah Penghentian Alat Kontrasepsi Berdasarkan Jenis Kontrasepsi, Lama Pemakaian, Usia dan Indeks Massa Tubuh

Quinita M. J. Noronha[1], Hafi Nurinasari[1,3], Uki R. Budihastuti[1,2], Darto[1,2]

[1]Department of Obstetrics and Gynecology
Faculty of Medicine Universitas Sebelas Maret
[2]Dr. Moewardi Regional Hospital
[3]Sebelas Maret University Hospital
Surakarta

Abstract

Objective: To determine the relationship between the type of contraception, duration of use, BMI, and age on the return of fertility.

Methods: This was an analytic observational study with a cross-sectional design. The subjects in this study was 123 multigravida mothers who had met the inclusion criteria, namely with a history of regular intercourse and the exclusion criteria in this study were multigravida mothers with a history of abortion and failure of the family planning method. Data were collected by direct interviews and medical record data. Data were analyzed using Chi-square test and Logistic Regression test.

Result: The results of the Chi-square analysis showed a relationship between the type of contraception (p=0.001;OR=1.29) and age (p=0.031;OR=4.69) with the return of fertility. However, there was no correlation between the duration of use (p=0.964;OR=0.97) and BMI (p=0.246;OR=0.50) with the return of fertility. In the logistic regression test, there was no partial effect of the type of contraception (p=0.997;OR=0.22) and age (p=0.058;OR=0.01).

Conclusion: Based on the results of the analysis, it can be concluded that there is a relationship between the type of contraception and age with the return of fertility after family planning, where non-hormonal contraceptives and <30 years of age return to fertility faster, namely <1 year, but there is no relationship between duration of use and BMI with the return of fertility after family planning.

Keywords: contraception, family planning, fertility.

Abstrak

Tujuan: *Mengetahui hubungan jenis kontrasepsi, lama pemakaian, IMT, dan usia terhadap kembalinya kesuburan.*

Metode: *Penelitian ini merupakan penelitian observasional analitik dengan desain potong lintang. Subjek penelitian ini adalah ibu multigravida yang telah memenuhi kriteria inklusi yaitu dengan riwayat senggama teratur dan bersedia menjadi responden serta kriteria ekslusi dalam penelitian ini adalah ibu multigravida dengan riwayat abortus dan kegagalan metode KB. Besar subjek dalam penelitian ini sebanyak 123 orang. Pengambilan data dilakukan dengan wawancara langsung dan melihat data rekam medis. Analisis data dilakukan uji statistik Chi-square dan uji Regresi Logistik.*

Hasil: *Hasil analisis dengan Chi-square, menunjukan adanya hubungan jenis kontrasepsi (p = 0,001; OR = 1,29) dan usia (p=0,031; OR = 4,69) dengan kembalinya kesuburan. Namun, tidak terdapat hubungan lama pemakaian (p= 0,964; OR =0,97) dan IMT (p= 0,246; OR =0,50) dengan kembalinya kesuburan. Pada uji regresi logistik tidak terdapat pengaruh parsial dari jenis kontrasepsi (p=0,997; OR =0,22) dan usia (p=0,058; OR=0,01).*

Kesimpulan: *Berdasarkan hasil analisis yang dilakukan dapat disimpulkan terdapat hubungan jenis kontrasepsi dan usia dengan kembalinya kesuburan pasca KB, dimana pada jenis kontrasepsi non hormonal dan usia < 30 tahun lebih cepat kembali subur yaitu < 1 tahun, namun tidak terdapat hubungan lama pemakaian dan dengan kembalinya kesuburan pasca KB.*

Kata kunci: *keluarga berencana, kesuburan, kontrasepsi.*

Correspondence author. Quinita M. J. Noronha. Department of Obstetrics and Gynecology
Faculty of Medicine Universitas Sebelas Maret. Surakarta. Email: quinita20maria@gmail.com

Received: February, 2021 Accepted: December, 2021 Published: January, 2022

INTRODUCTION

The Family Planning Program is a government program in tackling population growth in Indonesia. This program aims to prevent or delay pregnancy. In the implementation of the Family Planning program, there are several methods used to prevent or delay pregnancy, namely the natural and modern family planning method using contraceptives[1]. The concern of women who use or are considering using contraceptives is the effect of contraception on future fertility because about 15% of couples of childbearing age experience infertility. Many women are concerned about the use of oral contraceptives which can cause fertility problems after discontinuation of use and believe that oral contraceptives can cause secondary amenorrhea associated with anovulation and reduced reproductive fertility. Post-pill amenorrhea is amenorrhea that occurs more than 1 year after discontinuation of combined oral contraceptives[2]. An important property that should be possessed by reversible contraceptives is that they do not affect future fertility. Delay and decreased fertility after discontinuation of contraception raises user dissatisfaction and reduces interest in using contraception[3].

Return to fertility after discontinuation of oral contraceptives has different effects between nulliparous and multigravida. In nulliparous, it reached 42 months, and in multigravida 30 months after discontinuation. The delayed infertility is due to the suppression of reproductive hormones in the hypothalamus and pituitary[4]. Return to fertility after discontinuation of Depo Medroxyprogesterone Acetate (DMPA) is thought to have a longer duration than other contraceptives[5]. Normally, fertility will return 4 months after using DMPA. Delayed return to fertility after using DMPA is not caused by damage or genetic abnormalities of the organ, but due to the continuous release of DMPA after injection[6]. After stopping contraception, fertility is not distrubed[7].

Lifestyle is a risk factor for infertility. Women who have a Body Mass Index (BMI) of more than 29 Kg / m^2 and less than 19 Kg / m^2, tend to take a longer time to get pregnant[8]. Obesity can impact the decreased ability to get pregnant. Obesity can affect the oocyte, endometrium, and embryo preimplantation[9]. Age can also affect the quality of the oocytes produced. The decrease in the number of follicles occurs with increasing age[10]. Female fertility decreases at the age of 32 years, greatly decrease after the age of 37 years[11].

The effectiveness of using oral contraceptives is very high when used regularly and correctly[12]. The effectiveness of injection contraception reaches 99% and in implant contraception the failure rate is 0.3%-1.0% per year[13]. In the use of non-hormonal contraceptives, it is known that the effectiveness is quite high when used correctly the use of IUD contraceptives the failure rate is 0.8 per 100 people each year[14]. The effectiveness of condoms is up to 98% when used correctly and consistently, while using condoms the effectiveness is 85%[1].

Until now, the use of hormonal contraceptives is more attractive to contraceptive acceptors because it is easier to use. Along with the increasing number of contraceptive users, the effect of contraception on fertility is still a concern for women of childbearing age. The ideal contraception is one with minimal side effects, high effectiveness, and rapid return to fertility[15]. From the description above, the return to fertility after discontinuation of contraception is a problem that needs attention. Previous research that has been conducted in Indonesia has compared types of injectable and oral contraceptives with the return to fertility after discontinuation. However, no research has been done on the factors of age and Body Mass Index (BMI) which can affect the return of fertility after using contraceptives. Therefore, the researchers wanted to know the relationship between the type of contraception, the length of time used, the age, and the Body Mass Index (BMI) on the return of fertility after family planning. By knowing the relationship between the type of contraception, the duration of use, age, and Body Mass Index (BMI) on the return of fertility, it is hoped that it can help consider the selection and placement of contraceptives.

METHODS

This study was an analytic observational study with a cross-sectional study design. This study was conducted by direct interviews with respondents and looking at medical record data. The data that has been obtained were analyzed using IBM SPSS Statistics for Windows version 25.0. This study was conducted in the Pakem Health Center working area in August - October 2020.

The subjects in this study were multigravida

pregnant woman at Pakem Health Center in Yogyakarta who met the inclusion criteria, namely post-family planning multigravida pregnant women with a history of regular intercourse and willing to be a respondent and meet the exclusion criteria, namely multigravida post-family planning mothers with a history of irregular intercourse, a history of abortion and pregnancy due to failure of the contraception method.

The subjects in this study were selected through a non-probability sampling method using a purposive sampling method. Data obtained by interviews and looking at medical record data. In this study, respondents were divided into two groups, namely being able to return to fertility in <1 year and ≥ 1 year. The data obtained were analyzed statistically using the chi-square test which aims to determine the relationship between the type of contraception, duration of use, age, and Body Mass Index (BMI) on the return of fertility.

RESULTS

Table 1. Characteristics of the Subjects and Univariate Analysis Table

Characteristics	Frequency	%
Type of Contraception		
Non Hormonal	40	32.5
Hormonal	83	67.5
Age (years)		
< 30	39	31.7
≥ 30	84	68.3
Education		
< High School	26	21.1
≥ High School	97	78.9
Body Mass Index (kg/m²)		
20 – 28	83	67.5
≤ 19 or ≥ 29	40	32.5
Duration of use (years)		
≤ 1	19	15.4
> 1	104	84.6
Return to fertility (years)		
≤ 1	104	84.6
> 1	19	15.4

Most of the subjects were ≥ 30 years old, most of the subjects' educational status was > Senior High School, most of the subjects used hormonal contraception, most of the subjects had a body mass of 20 Kg / m^2 - 28 Kg / m^2, most of the subjects used contraception> 1 year, and most of the subjects returned to fertile ≤ 1 year.

Table 2. Bivariate Analysis Table of Relationship Type of Contraception, Age, Duration of Use, and BMI to Return of Fertility

Variable	Return to Fertility				Total		OR	*P-value*
	≤ 1 years		≤ 1 years					
	N	%	N	%	N	%		
Type of Contraception							1.24	1.24
Non Hormonal	40	32.5	0	0.0	40	32.5		
Hormonal	64	52	19	15,4	83	67.5		
Age (years)							4.69	4.69
< 30	37	30.1	2	1,6	39	31,7		
≥ 30	67	54.5	17	13,8	84	68.3		
BMI (kg/m²)							0.50	0.50
20 – 28	68	55.3	15	12.2	83	67.5		
≤ 19 or ≥ 29	36	29.3	4	3,3	40	32.5		
Duration of use (years)							0.97	0.97
≤ 1	16	13.0	3	2.4	19	15.4		
> 1	88	71.5	16	13.0	104	84.6		

The results of the Chi-Square statistical test on the relationship between the type of contraception and the return of fertility, the p-value is 0.001 (p <0.05). The p-value <0.05 in the analysis test shows that the hypothesis is accepted and there is a significant relationship between the type of contraception and the return of fertility after family planning.

The results of the Chi-Square statistical test for the age variable with the return of fertility in Table 2 obtained a p-value of 0.031 (p <0.05). The analysis test shows that the hypothesis is accepted and there is a significant relationship between age and the return of fertility after family planning. Chi-Square statistical test for the variable Body Mass Index (BMI) with the return of post-birth control fertility, obtained a p-value of 0.246 (p> 0.05). The p value> 0.05 in the analysis test shows that the hypothesis is rejected, where there is no significant relationship

between Body Mass Index (BMI) and the return of fertility after family planning. In the statistical test, the correlation between the duration of using contraceptives and the return of fertility using Fisher's test was obtained a one-way significance value of 0.597 (p> 0.05). P value> 0.05, so there is no significant relationship between the duration of using contraceptives and the return of fertility.

Table 3. Multivariate Analysis Table of Relationship Age, Type of Contraception, and BMI to Return of Fertility

Variable	*P-value*	OR	B
Age (< 30 years)	0.058	0.01	-19.89
Type of Contraception (Non Hormonal)	0.997	0.22	-1.50
BMI (≤ 19 Kg/m^2 or ≥ 29 Kg/m^2)	0.529	1.49	0.40
Constant	0.035	0.29	-1.21

The results of the logistic regression test showed that the p-value for the variable age was 0.058, the p-value for the variable type of contraception was 0.997, and the p-value for the BMI variable was 0.529. From the results obtained, the variables age, type of contraception, and body mass index did not have a partial effect on the return of fertility. So it can be said that age (<30 years and ≥ 30 years) and the type of contraception (non-hormonal and hormonal) influence the return of fertility simultaneously, where the constant value (B = -1.21) shows if the age is <30 years with type non-hormonal contraception, it is possible to return to fertility ≤ 1 year. The value of B in the age variable (B = -19.89) shows that if the age is <30 years, the return of fertility is ≤ 1 year. The variable type of contraception (value B = -1.50) shows that when using non-hormonal contraceptives, the return of fertility is ≤ 1 year. Whereas the BMI variable (value B = 0.40) shows if BMI ≤ 19 Kg / m^2 or ≥ 29 Kg / m^2, then the return of fertility is> 1 year.

DISCUSSION

The results of the chi-square analysis regarding the relationship between the type of contraception and the return of fertility after birth control, the value of p = 0.001, p-value <0.05, indicates that there is a significant relationship between the type of contraception and the return of fertility. This research is in line differences in fertility restoration rates after family planning, The data show that the likelihood of getting pregnant is strongly influenced by the type of contraception. In this study it was shown that the rate of return to fertility after discontinuation of the IUD and oral contraceptives was shorter than that of implants and injections[7]. The bioavailability of oral contraceptives in the blood must be completely cleared to restore fertility after discontinuation of oral contraceptives. Link between impaired fertility and use of oral contraceptives is the use of high doses of oral contraceptive formulations. Thus, it can be concluded that the use of oral contraceptives can return to fertility more quickly since low dose contraception regimen is more frequently used nowadays [3,16]. This study is not in line which states that there is no significant effect of the type of contraception and the duration of contraception with the return of fertility[3].

In the study it is found that there was a significant relationship between age and the return of fertility after birth control with a p-value = 0.031. The age of users is related to the return of fertility because as a woman ages, the number of oocytes produced decreases, and the quality decreases[11]. Entering the age of 35, female fertility will decrease and decrease drastically at the age of 37 years.

Based on data analysis with chi-square, it was found that p-value = 0.246, p value> 0.05 in the analysis test showed that the hypothesis was rejected and the null hypothesis was accepted, namely there was no relationship between Body Mass Index (BMI) and the return of fertility after family planning. In infertile patients, AMH is positively correlated with BMI, especially in patients under 35 years of age, normal body weight, and normal ovarian reserve. Also, the appearance of excessive mild obesity appears to be associated with higher AMH values. This study is in correspondence which found no relationship between body mass index (BMI) and AMH serum level. This discrepancy in the results of these studies could be due to the heterogeneity of the populations analyzed[17]. On the other hand, where there is a relationship between body mass index (BMI) and female infertility. The function of the female reproductive organs is influenced by nutritional status, this is because to reach sexual maturity and increase fertility requires a good nutritional status[18].

In this study it is known that there was no significant relationship between the length of time using contraceptives and the return of fertility after family planning, where p-value = 0.964, p value> 0.05 in the analysis test showed that the hypothesis was rejected and the null hypothesis was accepted. The duration of contraceptive use does not affect the likelihood of becoming pregnant after contraception is stopped. Therefore, women do not need to be afraid of using contraceptives for a long time, because it will not affect fertility in the future[7]. Research related to the relationship between the length of time using DMPA injection contraceptive with the return of menstruation, where there was no relationship between the length of time using DMPA injection with the return of menstruation after cessation of use, the length of return of menstruation was influenced by several factors. There is no correlation between long-term use of injecting contraceptive of DMPA and reproductive reversibility[6]. In this study it was stated that there was an effect of the duration of IUD contraceptive use on the fertility of its users[5].

In table 3, the results of the analysis using logistic regression test, where the p-value of the age variable is 0.058 (p> 0.05), the p-value of the Contraception Type variable is 0.997 (p> 0.05) and the Body Mass Index variable p-value is 0.529 (p> 0.05) which means that age, type of contraception and Body Mass Index (BMI) do not have a partial effect on the return of fertility and the variables of age and type of contraception have a simultaneous effect. When using non-hormonal contraceptives and aged <30 years, fertility returns ≤ 1 year. Whereas at BMI ≤ 19 Kg / m^2 or ≥ 29 Kg / m^2, the possibility of returning to fertility is> 1 year.

CONCLUSIONS

Based on the research above, it can be concluded that there is a relationship between the type of contraception and age on the return to fertility after birth control where the non-hormonal contraceptives and age <30 years return to fertility (<1 year) . There is no significant relationship between the duration of contraceptive use and BMI with the return of fertility.

REFERENCES

1. WHO. Family Planning/Contraception [Internet]. WHO. 2018https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception
2. Priyanka S. Secondary Amenorrhea: Causes, Management And Outcome Using Algorithmic Approach. IOSR J Dent Med Sci. 2017;16(05):87–91.
3. Girum T, Wasie A. Return of fertility after discontinuation of contraception: a systematic review and meta-analysis. Contracept Reprod Med. 2018;3(1):1–9.
4. Jensen JT, Creinin MD. Speroff & Darney's Clinical Guide to Contraception. 6 th. Creinin MD, Speroff L, editors. Philadelphia: Wolters Kluwer. 2020.
5. Peipert JF, Zhao Q, Schreiber CA, Teal S, Turok DK, Natavio M, et al. Intrauterine device use, sexually transmitted infections, and fertility: a prospective cohort study. Am J Obstet Gynecol. 2021;225(2):157.e1-157.e9.
6. 6. Hidayah N, Khadijah S, Wijayanti R. Advances in Health Science Research, volume 6 2nd Sari Mulia International Conference on Health and Sciences (SMICHS 2017). Atl Press. 2017;6(Smichs):1–11.
7. Gayatri M, Utomo B, Budiharsana M. How Soon Can You Expect to Get Pregnant after Discontinuing Reversible Contraceptive Method?A Survival Analysis of the 2017 Indonesia Demographic and Health Survey Data. Indian J Public Heal Res Dev. 2020;11(1):310.
8. Soebijanto S. Konsensus Penanganan Infertilitas. Himpunan Endokrinologi Reproduksi dan Infertilitas Indonesia. 2013: 5–15 .
9. Broughton DE, Moley KH. Obesity and female infertility: potential mediators of obesity's impact. Fertil Steril.2017;107(4):840–7.http://dx.doi.org/10.1016/j.fertnstert.2017.01.017
10. Quinn MM, Cedars MI. Declining Fertility with Reproductive Aging: How to Protect Your Patient's Fertility by Knowing the Milestones. Obstet Gynecol Clin North Am. 2018;45(4):575–83.
11. Alteri A, Pisaturo V, Nogueira D, D'Angelo A. Elective egg freezing without medical indications. Acta Obstet Gynecol Scand. 2019;98(5):647–52.
12. Liddelow C, Mullan B, Boyes M. Adherence to the oral contraceptive pill: the roles of health literacy and knowledge. Heal Psychol Behav Med. 2020;8(1):587–600.
13. Ramdhan RC, Simonds E, Wilson C, Loukas M, Oskouian RJ, Tubbs RS. Complications of Subcutaneous Contraception: A Review. Cureus. 2018;10(1):1–10.
14. Adeyemi-Fowode OA, Bercaw-Pratt JL. Intrauterine Devices: Effective Contraception with Noncontraceptive Benefits for Adolescents. J Pediatr Adolesc Gynecol. 2019;32(5):S2–6. https://doi.org/10.1016/j.jpag.2019.07.001.
15. Suzin ME, Schenker JG. Contraceptive Practice in Adolescent. In: Panchal S, editor. Human Reproduction and Gynecological Endocrinology. 1 th. Bangladesh: Jaypee Brothers Medical Publishers; 2019:390.
16. Landersoe SK, Birch Petersen K, Sørensen AL, Larsen EC, Martinussen T, Lunding SA, et al. Ovarian reserve markers after discontinuing long-term use of combined oral contraceptives. Reprod Biomed Online. 2020;40(1):176–86.
17. Albu D, Albu A. The relationship between anti-Müllerian hormone serum level and body mass index in a large cohort of infertile patients. Endocrine. 2019;63(1):157–63. http://dx.doi.org/10.1007/s12020-018-1756-4
18. Indarwati I, Budihastuti UR, Dewi YLR. Analysis of Factors Influencing Female Infertility. J Matern Child Heal. 2017;02(02):150–61.