



Hormonal Contraception and Menstrual Change

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Hormonal contraception is one of the many popular contraceptive alternatives to family planning programs. This program sets the birth time of a child to realize family quality. However, no contraceptive is 100% perfect. For hormonal contraceptives, both types of pills, implants, and injections, there are advantages and disadvantages. Of them, side effects were found in the field, such as the alteration of menstruation (irregular menstrual periods or not even at all). The motivation behind this research is to decide the relationship of hormonal contraceptives with menstrual changes in the Public Health Centre (Puskesmas) Kotabumi II North Lampung District, 2018. This study is a quantitative research utilizing the systematic survey strategy with the cross-sectional methodology. The population in this study is the EFA using hormonal contraception in Puskesmas Kotabumi II, as many as 2899 people, with a sample of 81 people. The sampling technique utilizes proportional random sampling. Data assortment uses interviews. Data were examined by univariate (average) and bivariate (Chi-square test). The results showed 60.49% combination hormonal contraceptives, no combinations of 39.51%, and 60.49% change menstruation and menstrual unchanged, 39.51%. There is a relationship between hormonal contraception with menstrual changes ($p = 0.007$). There is a need for increased counseling and education activities in particular on hormonal contraception so that the acceptor can knowingly choose a hormonal contraception combination, and there is a need for monitoring of side effects of hormonal contraception so that if there is a change of menstruation it can be immediately addressed.

Keywords: Contraceptives, Hormonal, Menstrual.



Introduction

Family Planning (KB) is one of the most basic and primary preventive healthcare for women to reduce morbidity when maternal mortality is so high due to pregnancy. Currently, almost 60% of couples of reproductive age around the world use contraception (Ti, Stone, Whiteman, & Curtis, 2019). Family planning has been one of the great successes in the history of the 20th century (Runnebaum, Rabe & Kiesel, 1988). It is estimated that in the world over 100 million women decide to use contraception after giving birth. The use of injectable contraceptives amounted to 47.96%, 22.81% for birth control pills, and contraception implants, 11.20%. The percentage of active participants in Indonesian family planning to couples of childbearing age in 2016 amounted to 74.8%. The province of Lampung is still below the national target of 71.9% (Kemenkes RI, 2017). Puskesmas Kotabumi II ranks third most active acceptors after Puskesmas Kalibalangan, Puskesmas Negara Ratu by the number of hormonal contraception acceptors (injecting as many as 1,310 people, birth control pills 1084, and implant as many as 495) (Dinkes Lampung Utara, 2017).

Up to now, there is no one method of contraception that is absolutely 100% ideal or perfect (Wiebe, Trouton, and Fang, 2006), Likewise, with hormonal contraception, contraception is progesterone or a combination of estrogen and progesterone. The principle works to prevent the expenditure of eggs from the ovaries and condense the cervical fluid, making it hard for the sperm to infiltrate, and the uterus lining becomes thin and unfit for growing the products of conception (Cohen & Katz, 1979). The purpose of this research note acceptor number injectable hormonal contraceptives, pills, and implants both combinations and no combinations are as well known injectable hormonal contraceptives relationship, tablet, and implants with menstrual changes (Krätschmer, 2017).

Methodology

This sort of research is a quantitative, analytical survey method with a cross-sectional methodology. The population in this study is all hormonal contraceptives, all participants in Puskesmas Kotabumi II North Lampung regency in 2018. The population in this study was 2899 acceptors. The sample size in this investigation was obtained through a calculation using the Lemeshow large formula (1997), as many as 81 people with the technique of sampling with proportional random sampling. Injectable contraceptive acceptors 37 respondents pills acceptors 30 respondents, and 14 respondents implantable contraceptive acceptors. The sample is taken in every village by the proportion of injectable contraceptives, pill, and implants. The criteria are a willing sample of respondents, childbearing age 20-49 years, and residing in Puskesmas. In this study, the data collection process is interviews and direct measurement of the respondents using research instruments. The research instrument/measurement tool is a tool used to collect data from



Biran, relating to the impact of the use of hormonal birth control pills, injections, and implants (Biran, 2012). The data collection is assisted by one enumerator to interview for data collection. The analysis used univariate and bivariate, ie. univariate analysis was utilised to describe all of the variables in the form of tables and graphs to illustrate the independent variables (hormonal contraceptives: injections, pills, and implants) and dependent (menstrual changes).

The bivariate analysis is used to analyse the samples, and the results will be generalised in the population. Analysis by variables is studied by looking at the relationship between the independent and dependent variables. Statistical analysis using the Chi-Square test, with interpretation: if the $P\text{-value} \leq \alpha (0:05)$, so H_a is received, which means there is a significant association between hormonal contraception with menstrual changes or hypothesis (H_o) rejected. If $P\text{ value} > \alpha (0:05)$, then H_a is refused, which means no significant association between hormonal contraception with menstrual changes so hypothesis (H_o) is accepted. To analyse the relationship between two variables by looking at the value of the odds ratio (OR), the value OR shows the magnitude of the relationship between two variables tested (Sugiyono, 2016).

Results and Discussion

Characteristics of Respondents

Data frequency distribution characteristics of respondents and respondents of hormonal contraceptives are shown in Table 1 and Table 2. While the frequency distribution of respondents' menstrual changes are shown in Table 3.

Bivariate Analysis

Hormonal Contraceptives

A total of 16 (69.0%) of respondents combining injectable hormonal contraceptives do not experience menstrual changes, and 4 (28.6%) of respondents using injectable contraception hormones/ no combinations did not experience menstrual changes. Statistical test results procured a value of $p = 0.037$ ($p < 0.05$), which implies that statistically, there is a significant correlation between injectable hormonal contraception and menstrual changes. The results of analysis OR value of 5.714 (95% CI: 1.326 to 24.620), which means that respondents who use injectable hormonal contraceptives/ no combinations have 5.714 times higher risk of having menstrual changes compared to respondents with combined injectable hormonal contraceptives. Data are shown in Table 4. It is in line with the research of Apte & Bhise (Apte & Bhise, 2017)

Likewise, with the contraceptive pill data obtained 17 (89.5%) of respondents taking combination hormonal contraceptive pill do not experience menstrual changes and 1 (9.1%) of respondents with

non-hormonal contraceptive pill combination did not experience menstrual changes. Statistical test results procured a value of $p = 0.000$ ($p < 0.05$), which implies that statistically, there is a significant association between hormonal contraceptive pill and menstrual changes. The results of analysis OR value of 85 (95% CI: 6.809 to 106.028), which means that respondents who use non-hormonal contraceptive pill combination have 8.5 times higher risk of having menstrual changes compared to respondents with the combined hormonal contraceptive pill. In line with the research (Landgren & Diczfalusy, 1980).

Unlike the case with the contraceptive implant, it can be seen that as many as eight (88.1%) of respondents with combination hormonal contraceptive implants do not experience menstrual changes. As many as 1 (20.0%) of respondents with non-hormonal contraceptive combinations did not experience menstrual changes. The results of statistical test procured value of $p = 0.046$ ($p < 0.05$), which means that statistically there is a significant association between hormonal contraceptive implant and menstrual changes. The results of analysis OR value of 4.514 (95% CI: 1.580 to 12.894), which means that respondents who use combination hormonal contraceptive non-implant have 4.514 times higher risk of having menstrual changes compared to respondents with a combination hormonal contraceptive implant.

Univariate Analysis

1. Type of Contraception

Based on the results of research in Puskesmas Kotabumi II, respondents use combined contraceptives 60.49%, and no combinations 30.51%. The dominant hormonal contraceptive injections used is three months (non-combination) and not the one-month injections (non-combination). 3-months of injections is very useful in preventing pregnancy long-term so that mothers do not need to prepare a monthly schedule for injectable contraceptives. 3-month injectable contraceptives are also helpful because it does not influence breastfeeding – more breastfeeding women use three months injectable contraception. If we connect with the age of respondents, the period that many use injectable contraceptives is three months (Sachdeva, 2005).

The 1-month injectable contraceptives (combination) is only 39.51% because although using CICs 1 month, respondents still get menstrual changes, such as having periods but only fleck, long periods > 8 days, even having periods two times in 1 month.

2. Menstruation Changes

Based on the research results, those that are experiencing menstrual changes are as much as 60.49%, while those not experiencing menstrual changes are 39.51%. It matches with research by



Sety (2014), O'Neal (2017), and Micks et al. (2017), that generally when the mother experiences menstrual changes there is also a headache that is as much as 82.4% when using hormonal contraception, especially on both injectable and pill contraception. Likewise (Wang, Shi, Cekan, Landgren, & Diczfalusy, 1982).

It is because hormonal contraceptives contain hormones that suppress the occurrence of expenditure egg (ovulation), inhibits the secretion of luteinising hormone that do not undergo hormonal acceptors fertile period even having periods (amenorrhea), different from research (Richman, 2012).

The Bivariate Analysis

1. Injectable contraceptive relationship with menstrual changes

The results of statistical test procured value of $p = 0.037$ ($p < 0.05$) that concluded that H_0 was rejected, which means there is a statistically significant correlation between injectable hormonal contraception and menstrual changes. The results of analysis OR value of 5.714 (95% CI: 1.326 to 24.620), which means that respondents who use injectable hormonal contraceptives non-combinations have 5.714 times higher risk of having menstrual changes compared to respondents with combination hormonal contraceptives.

Similarly to the research conducted by ("Combined hormonal contraception," 2011) and Sety (2014), there was no association between CICs with menstrual disorders ($p = 0.000$). This research is also in line with research regulated by Siswati (2009) with distribution results of contraceptive use among other types of injectable contraceptives 58.1%; 22.9% implants and pills, 19.0%. There is a significant correlation between the incidence of amenorrhea with hormonal contraceptives, which is shown by the statistical test Chi-Square (X) is 21.022 and obtained a p-value of 0.000 (p -value < 0.05).

Injectable contraceptive depot consists of Provera every three months, noisiest every ten weeks, and Cyclofem every one month. The research results for respondents who use the injectable contraceptive for one month only are as much as nine respondents (24%). Still, the results of statistical analysis indicated no noteworthy correlation between hormonal contraception and menstrual changes. In line with Skouby, injectable contraceptives cause thickening of cervical mucus so stopping sperm penetration power, change the endometrium so it becomes unsuitable for implantation, and reduce the function of the fallopian tubes. But the primary feature of injectable contraceptives in preventing pregnancy is suppressing ovulation (Skouby, 2010).



That is in women that can occur because the administration of injectables Cyclofem can cause bleeding (Plu-Bureau, 2019). Bleeding that cannot be regarded as menstrual blood in the real sense, i.e., going from a normal endometrium (secretory phase). Normal menstruation occurs due to decreased progesterone levels. In contrast, the use of injectables Cyclofem menstruation occurs due to reduced levels of estrogen and progesterone or synthetic hormone levels due to falling. Menstruation occurs after the use of combination hormonal contraceptives more correct to say pseudo menstruation (Bachmann and Korner, 2009).

The results are consistent with the Kaneshiro & Edelman, which concluded that the acceptor injecting much has menstrual abnormalities due to family planning progesterone syringes contain levels only. While the high amenorrhea due to the hormone progesterone to suppress endometrial LH becomes shallow and setbacks, so the gland becomes inactive (Kaneshiro & Edelman, 2011). More significant menstrual irregularity occurs in the use of contraceptives three months (Depo Medroxy Progestin Acetate / DPMA) than acceptors that use of contraception one month, even cause no menstruation at all.

Likewise, Amory and Bremner (2006) and Henry-Suchet (1997) and Hormonal Steroids in Contraception (1968), all systems contraceptive progesterone change menstrual patterns that become irregular. Similarly, the contraceptive implant, sampling effects that often occurs is a change in menstrual pattern. The 3-month contraceptive use is usually found to be menstruating and oligomenorrhea on long-term use (Landgren, Lager, and Diczfalusy, 1981). The longer the use of syringes three months, the incidence of long menstrual periods respondent be changed not at all. This means that this is a temporary menstrual disorder, and the use of CICs is more than one year usually do not menstruate.

The outcomes of this study led in accordance with Siswati (2009) with the title of acceptors hormonal relationship with the incidence of Amenorrhea in Puskesmas Bojong (Subdistrict Bojong Tegal) with results distribution of contraceptive use among other types of injectables 58.1%, 22.9% implants, pills 19.0%, and Ziemann (2014). there is a significant correlation between the incidence of amenorrhea hormonal birth control, indicated by the statistical test Chi-Square (X) is 21.022 and obtained a p-value of 0.000 (p-value <0.05).

2. Contraception Relationship Pills with Menstrual Changes

A total of 17 (89.5%) of respondents taking combination hormonal contraceptive pill do not experience menstrual changes, and 1 (9.1%) of respondents wear non-hormonal contraceptive pill combination did not experience menstrual changes. Statistical test results procured a value of $p = 0.000$ ($p < 0.05$), which implies that statistically, there is a noteworthy association between

hormonal contraceptive pill with menstrual changes. The results of analysis OR value of 85 (95% CI: 6.809 to 106.028), which means that respondents who use non-hormonal contraceptive pill combination 8.5 times higher risk of having menstrual changes compared to respondents with the combined hormonal contraceptive pill. It is shown in Table 4.

This study led in accordance with study conducted by (Sety, 2014) there is a relationship between the contraceptive pill with menstrual disorders ($p = 0.000$). This research is also led in accordance with study run by Siswati (2009) and (Lu, Rafie, Hamper, Strauss, & Kroon, 2019) with result distribution of contraceptive use among other types of injectables 58.1%, 22.9% implants, pills 19.0%. There is a significant correlation between the incidence of amenorrhea hormonal birth control, indicated by the statistical test Chi-Square (X) is 21.022 and obtained a p -value of 0.000 (p -value < 0.05).

The pill is a tablet containing estrogen and synthetic progesterone called while the combination pill containing only mini pill synthetic progesterone called progestin or pop mini-pill (progesterone only pill) (Reid, 2014). Side effects that often occur due to the use of birth control pills, among others, the occurrence of spotting (spots of blood) (Godfrey, Whiteman, & Curtis, 2013), Irregular and reduced menstrual blood. It is caused by a hormonal imbalance use low dose estrogen (30 micrograms) so that the endometrium degenerates (Bitzer, 2017).

On the results of the 30 respondents who use the contraceptive pill, 11 respondents (36.7%), using pills containing the hormone progesterone alone. From the statistical analysis, no significant correlation between hormonal contraceptive pills with menstrual changes. It is because the content of progesterone causes the difference to menstruate. Still, it is also a contraceptive pill that must be taken every day, but instead of respondents who use contraceptive pills are not all who experience menstrual changes. That is due to the use of contraceptive pill combination for several advantages periods become irregular, blood menstrual reduced to prevent anemia (Shen, Lin Jiang, Li, & Zhang, 1994). There is no menstrual pain and not impaired during sexual intercourse (Fraser, 2010), and the mechanism of action of the combination pill only affects the cervix, fallopian tube, uterus, and endometrium so that a small effect on the peristaltic vaginal secretions and does not add to production in the vagina during sexual intercourse.

3. Implantable Hormonal Contraceptives Relationship with Menstrual Changes

In view of the above table, it very well may be considered that to be numerous as eight (88.1%) of respondents wear a combination hormonal contraceptive implants do not experience menstrual changes. As many as 1 (20.1%) of respondents wear non-hormonal contraceptive implant combination did not experience having menstrual changes. Statistical test results obtained value



of $p = 0.046$ ($p < 0.05$), which means that statistically, there is a significant association between hormonal contraceptive implant with menstrual changes. The results of analysis OR value of 4.514 (95% CI: 1.580 to 12.894), which means that respondents who use combination hormonal contraceptive non-implant 4.514 times higher risk of having menstrual changes compared to respondents with a combination hormonal contraceptive implant

This study is different from the case with research conducted by Sety (2014) there is no relationship between contraceptive implants with menstrual disorders ($p = 0.581$). This research is also led in accordance with study run by Siswati (2009). result distribution of contraceptive use among other types of injectables 58.1%, 22.9% implants, pills 19.0%. There is a significant correlation between the incidence of amenorrhea hormonal birth control, indicated by the statistical test Chi-Square (X) is 21.022 and obtained a p-value of 0.000 (p -value < 0.05).

According to S (2007), each month, a normal woman would certainly bleed (30-40 cc) lasting 3-4 days. Menstruation occurs because of the secretion phase, which is preparing to receive the products of conception when fertilisation occurs. Siswosudarno (2007) said contraception implants have fewer complaints than other contraception hormonal.

Hormonal family planning acceptors with menstrual disorders such as amenorrhea is caused by hormonal birth control progesterone component pressing Luteinising Hormone (LH). Increased hormonal contraception used in the blood will inhibit LH, follicular development, and ovulation for several months. Besides, KB also affects the reduction of Hormonal Gonadotropin-Releasing Hormone (GnRH) from the hypothalamus, which causes the discharge of follicle-stimulating hormone (FSH) and luteinising hormone (LH) from the anterior pituitary is reduced. Decreased FSH inhibit follicular development so that no ovulation or fertilisation (Crosignani, Vegetti, & Bianchedi, 1997).

It is consistent with the research of Ilminingtyas, (2009) and "Hormonal contraception: practice-based case studies" (2015) that is to say there is a relationship between the use of hormonal contraceptives with change periods ($p = 0.00$). It is in line with research Febria Oktasari (2014), she found no relationship between the type of hormonal contraception to disruption of menstrual pattern ($p = 0.001$), there is a relationship type of hormonal contraceptive with long periods ($p = 0.001$), there is a relationship between hormonal contraception to the menstrual cycle ($p = 0.001$), there was no association with the occurrence of spotting hormonal contraception ($p = 0.253$).

Likewise, with spotting events, this may have been due to the small vein dilation of blood vessels in the endometrium, and the veins become brittle, causing localised bleeding.



In the non-combination hormonal contraceptive containing progestin means changing the menstrual cycle extends and retracts. In the majority of incidents of irregular users and little or bleeding outside the period, it is sometimes prolonged and sometimes oligomenorrhea or even amenorrhea.

On the results of the 14 respondents who use implants No 8 (57%) who experience menstrual changes and the effects of statistical analysis, no significant association between hormonal contraception with menstrual changes. It can occur because the implant is a contraction method that only contains progestins with long service life, low doses, reversible and often disrupt menstruation that occurs varies with each use, such as higher menstrual bleeding, such as the use of unnecessary menstruation at all. It is consistent with Bachmann and Korner's theory, which states that menorrhagia usually occurs at the beginning of contraceptive use because progesterone causes the formation of healthy endothelial cell capillaries and cells that contain enough glycoproteins so that endothelial cells are protected from damage. That will affect the mechanism of action of hormones and the normal menstrual cycle, and bleeding will be more (Bachmann and Korner, 2009).

An implant is a tool in the form of rods or capsules contraception silastik under the skin through a single incision (Pandit, Mandrupkar, and Sahu, 2014), a contraceptive implant is less desirable because it is considered more expensive than other contraceptives. Besides that, many women are still afraid to use a birth control implant because the installation has to go through a small surgery and considered dangerous (Rapkin & Sonalkar, 2011). Contraception types of progestin-only hormonal consist of mini-pills, injectables *Depo Medroxy Progeterone acetate* (DPMA), and the implant.

Conclusion

Respondents who use hormonal contraceptives combined injectable hormonal contraception 64.9% and 35.1% of injecting non-combinations, combination contraceptive pill 63.3%, and 36.7% of non-combinations and implant combinations and non-combinations 57.1% 49.9%. Respondents who use injectable hormonal contraception experienced a 45.9% change in menstrual and menstrual unchanged 54.1%, respondents who use the pill who experience menstrual changes 60% and did not experience menstrual changes, while 40% of respondents who experienced a contraceptive implant menstrual changes 64.3% and unchanged menstruation 35.7%. There is a correlation between injectable hormonal contraceptives, hormonal contraceptive pills, and hormonal contraceptive implant with menstrual changes.

Table 1. Characteristics of Respondents Frequency distribution

Category	Frequency	%
Category Age		
20-35	49	60.49
> 35	32	39.51
Category Education		
SD	9	11.11
SMP	20	24.69
High School	41	50.62
College	11	13.58
Category Jobs		
Farmer	2	2.47
Labor	6	7.41
PNS	9	11.11
Housewife	64	79.01
Category Parity		
1	24	29.54
2	21	25.84
≥ 3	46	56.62

Table 2. Distribution of Respondents frequency Hormonal Contraception

Hormonal contraceptives Type	Frequency	%
Injectable contraceptives		
Combination	2464.9	
Non combination	1335.1	
Hormonal contraceptive pills		
Combination	1963.3	
Non combination	1136.7	
Hormonal contraceptive implant		
Combination	857.1	
Non combination	649.9	

Table 3. Distribution of the frequency of menstrual changes

Menstruation changes	Contraception syringes		Contraception Pill		contraceptive Implant	
	N	%	N	%	N	%
Yes	17	45.9	12	40.0	5	35.7
No	20	54.1	18	60.0	9	64.3
Amount	37	100	30	100	14	100

Table 4. Hormonal Contraception with menstrual changes in Puskesmas Kotabumi II Lampung Utara

Variables	There menstrual changes		No changes Menstruation		OR	p-value
	n	%	n	%		
Injectable hormonal contraceptives					5.714	
Combination	7	30.4	16	69.6	(1.326 - 24.620)	to 0,037
Non combinations	10	71.4	4	28.6		
Hormonal contraceptive pill					8.5	
Combination	2	10.5	17	89.5	(6.809 - 106.028)	- 0,000
Non combination	10	90.9	1	9.1		
Hormonal contraceptive implant					32	
Combination	1	11.9	8	88.1	(1.581 - 656)	0,046
Non combination	4	80.0	1	20.0		

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