

Weight Changes in Hormonal Contraceptive Users at Rosmiati Independent Practice in Palopo City

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ABSTRACT

Background: Hormonal contraception refers to contraceptive methods that aim to prevent pregnancy using agents possessing estrogen and progesterone. This study aimed to determine the effect of hormonal contraceptive use on changes in body weight among acceptors at Praktik Mandiri Bidan Rosmiati, Palopo City. **Methods:** This was an analytical observational study using a retrospective cohort approach. The total population of injectable contraceptive users was 445. A purposive sampling technique was employed, with a case-to-control ratio 1:1, resulting in 208 cases and 208 controls. The study was conducted at Praktik Mandiri Bidan Rosmiati, Palopo City, in 2024. **Results:** Based on age distribution, among the 208 case participants, 189 (90.9%) were under 35, while in the control group, 169 (81.3%) were under 35. Regarding the duration of use, 145 participants (69.7%) in the case group and 155 participants (74.5%) in the control group had used hormonal contraception for more than two years. Statistical analysis using odds ratio showed that both age and duration of use significantly influenced body weight changes among hormonal contraceptive acceptors at the study site. **Conclusion:** The majority of hormonal contraceptive acceptors experienced changes in body weight following long-term use. Age and duration of contraceptive use were significant factors, with those under the age of 35 having a higher risk of experiencing weight changes compared to older users.

Keywords: Acceptors, Hormonal Contraception, Body Weight

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1. INTRODUCTION

Hormonal contraception is one of the most widely used methods for preventing pregnancy (1). This method includes pills, injections, and implants, all designed to release synthetic hormones that inhibit ovulation or alter the uterine lining, thereby reducing the likelihood of fertilization (2). Hormonal contraceptives contain estrogen and/or progestin to alter fertility and offer a high level of efficacy in preventing pregnancy, ranging from 76% to 99.95% during the first year of regular use (3).

The mechanism of action of hormonal contraceptives involves regulating endogenous hormone levels, which may indirectly affect metabolism and appetite (4). By introducing synthetic hormones, these contraceptives can disrupt the body's natural hormonal balance, potentially leading to shifts in metabolic processes and appetite regulation. Although this hormonal modulation is essential for preventing pregnancy, it may also trigger various side effects due to the interconnectedness of the body's hormonal systems (5).

Changes in body weight are among the most generally reported side effects among individuals using hormonal contraceptives. Many users attribute weight changes to the initiation or modification of their contraceptive regimen (6). While some individuals experience weight gain, others report weight loss or fluctuations, reflecting the diverse responses to hormonal changes (7).

Selecting the appropriate contraceptive method can significantly minimize the risk of weight change. Different formulations and dosages of hormonal contraceptives may affect metabolism and appetite (8). Consulting with healthcare providers to discuss risk factors and individual preferences can help identify suitable options aligned with personal health goals and reduce potential adverse effects (9).

In Indonesia, the number of couples of reproductive age reached 39.6 million in 2021. Based on age groups, 17.29% were aged 45–49 years, 19.42% were 40–44 years, 20.71% were 35–39 years, 18.55% were 30–34 years, 15.63% were 25–29 years, 7.53% were 20–24 years, and 0.86% were 15–19 years (10).

According to the 2021 data from Indonesia's National Population and Family Planning Board (BKKBN), there were 28,217 active contraceptive users, including IUD acceptors (247), Female Sterilization (MOW) acceptors (208), Male Sterilization (MOP) acceptors (40), condom users (133), implant users (5,419), injectable contraceptive users (19,362), oral contraceptive users (2,777), and Lactational Amenorrhea Method (LAM) users (31). Injectable contraception was the most commonly chosen method, primarily due to its convenience and low risk of user error (11).

Data from the South Sulawesi Provincial Health Office in 2020 reported 1,123,156 active family planning participants, with the following method distribution: condoms (2.33%), injections (53.47%), pills (25.16%), IUDs (4.58%), male sterilization (0.17%), female sterilization (1.87%), and implants (12.42%). Injectable contraception was the most widely used method among users (12).

Hormonal contraception has been extensively studied, with numerous investigations focusing on its various effects, including body weight changes. While some studies have addressed the broader impact of hormonal contraception on overall health, others have specifically explored its relationship with weight gain. These studies vary in methodology and population, contributing to a complex and sometimes contradictory understanding of the issue (13)(14).

This study offers an integrative approach by examining body weight change as a side effect and a biological response influenced by a combination of hormonal, metabolic, and dietary behavior factors. Moreover, it seeks to relate specific types of hormonal contraceptives to user-reported weight changes in Indonesia—a subject that remains under-researched using localized population data.

Addressing weight change among hormonal contraceptive users remains an ongoing challenge. Although numerous studies have been conducted on hormonal contraception, the identical mechanisms underlying weight changes and the factors predicting individual responses are not yet fully understood. Further research is needed to define these complexities and to develop strategies to mitigate unwanted weight changes among hormonal contraceptive users.

2. METHOD

This study operated a quantitative approach with a case-control study design to examine the effect of hormonal contraception on body weight changes. The data were obtained from secondary records at Praktik Mandiri Bidan Rosmiati (TPM), Palopo City. The variables measured included age, initial and final body weight, and duration of hormonal contraceptive use. Age was categorized as <35 years and >35 years. Body weight was classified as normal or abnormal based on the body mass index (BMI) standard. Duration of contraceptive use was categorized as <2 years and >2 years. Data were analyzed using the Odds Ratio (OR) test to determine the risk of body weight changes based on age and duration of contraceptive use. This study received ethical approval from the relevant institutional ethics committee. The researchers ensured the confidentiality of data and respondent identities and guaranteed that participation was voluntary and based on informed consent.

1) Participants and Study Design

This study used an analytical observational design with a case-control approach and a retrospective cohort method to assess the impact of hormonal contraception on body weight changes (15)(16). The population consisted of all hormonal contraceptive acceptors registered at Rosmiati Midwifery Practice in Palopo City, totaling 445 individuals. The sample included hormonal contraceptive users who used injectable contraception as the case group and those using oral pills as the control group, selected from Pontap Community Health Center (PKM), Palopo City. The total sample consisted of 208 cases and 208 controls, resulting in 416 participants. Inclusion criteria were hormonal contraceptive acceptors recorded in the family planning service data at BPM Rosmiati, willingness to participate in the study, and inscribing an informed consent form. Exclusion criteria included users of combined contraceptive methods (hormonal and non-hormonal), individuals with a history of metabolic or hormonal disorders, and those who were pregnant or breastfeeding during data collection.

2) Measurements and Procedure

Data collection was carried out by reviewing clients' health records, focusing on demographic data, the type of hormonal contraceptive used, initial and final body weight, age, and duration of contraceptive use. The data were classified into two groups: the case group (acceptors who experienced body weight changes) and the control group (acceptors who did not experience body weight changes). The data collection involved identifying subjects who met the inclusion criteria, retrieving medical record data, classifying samples into case and control groups, and recording data in a frequency distribution table. Data validity was ensured using information recorded directly by healthcare professionals at the service facility. The collected data were then analyzed using the Odds Ratio test to determine the risk magnitude of body weight change based on the variables studied. All procedures were conducted with caution and adherence to ethical research principles.

3) Statistical Analysis and Ethical Clearance

Collected data were analyzed using descriptive and inferential statistical approaches. The Odds Ratio (OR) test was applied with a 95% confidence interval (CI) to examine the association between independent variables and body weight change. Data processing was systematically and objectively based on secondary data obtained from medical records at TPM Rosmiati, Palopo City. All analyses were conducted using appropriate statistical software to ensure the accuracy of the results. Ethical clearance for this study was obtained from the relevant institutional review board before data collection. The researchers ensured that all data used in the study remained confidential and were solely for academic purposes. Although subject participation was indirect due to the use of secondary data, ethical principles—such as confidentiality and data protection—were strictly observed.

3. RESULT AND DISCUSSIONS

Results

Respondent Characteristics

1) Sample Distribution Based on Age of Acceptors

Tabel 1. Sample Distribution Based on Age of Acceptors at Praktik Mandiri Bidan Rosmiati, Palopo City

Age of Acceptors	Hormonal Contraceptive Users			
	Case		Control	
	f	%	f	%
> 35 years	19	9,1	39	18,8
< 35 years	189	90,9	169	81,2
Total	208	100	208	100

Source: Secondary Data

Table 1 shows that among 208 participants in the case group, 189 were under 35 years old, while in the control group, 169 participants were under 35 years old.

2) Sample Distribution Based on Initial Body Weight

Tabel 2. Sample Distribution Based on Initial Body Weight at Praktik Mandiri Bidan Rosmiati, Palopo City

Initial Body Weight	Hormonal Contraceptive Users			
	Case		Control	
	f	%	f	%
Normal	166	79,8	166	79,8
Abnormal	42	20,2	42	20,2
Total	208	100	208	100

Source: Secondary Data

As shown in Table 2, both the case and control groups had 166 participants (79.8%) with normal body weight and 42 participants (20.2%) with abnormal body weight.

3) Sample Distribution Based on Final Body Weight

Tabel 3. Sample Distribution Based on Final Body Weight at Praktik Mandiri Bidan Rosmiati, Palopo City

Final Body Weight	Hormonal Contraceptive			
	Case		Control	
	f	%	f	%
Normal	138	66,3	139	66,8
Abnormal	70	33,7	69	33,4
Total	208	100	208	100

Source: Secondary Data

Table 3 indicates that 138 participants (66.3%) in the case group and 139 participants (66.8%) in the control group had normal final body weight.

4) Sample Distribution Based on Duration of Use

Tabel 4. Sample Distribution Based on Duration of Use at Praktik Mandiri Bidan Rosmiati, Palopo City

Duration of Use	Hormonal Contraceptive			
	Case		Case	
	f	%	f	%
> 2 Tahun	145	69,7	155	74,5
< 2 Tahun	63	30,3	53	25,5
Total	208	100	208	100

Source: Secondary Data

As shown in Table 4, 145 participants (69.7%) in the case group and 155 participants (74.5%) in the control group had used hormonal contraception for more than 2 years.

5) Analysis of the Investigated Variables

1. Age

Tabel 5 Distribution of Weight Change Among Hormonal Contraceptive Acceptors Based on Age at Praktik Mandiri Bidan Rosmiati, Palopo City

Age (Years)	Hormonal Contraceptive Users				Total		Statistic Test	
	Case		Control		f	%	O	95% CI
	f	%	f	%				
> 35	1 9	9,1	3 9	18, 8	5 8	13, 9	0,4 16	0,242- 0,783
< 35	1 89	90, 9	1 69	81, 2	3 58	86, 1		
Total	2 08	10 0	2 08	10 0	4 16	10 0		

Source: Secondary Data

The Odds Ratio (OR) for age was 0.416, indicating that hormonal contraceptive users under 35 years of age had a 0.416 times greater likelihood of experiencing weight changes compared to those over 35. Since the 95% confidence interval (0.242–0.783) does not include the value 1, the result is statistically significant, and the alternative hypothesis is accepted, suggesting that age is a contributing factor to weight changes among hormonal contraceptive users.

2. Duration of Use

Tabel 6. Distribution of Weight Change Among Hormonal Contraceptive Acceptors Based on Duration of Use at Praktik Mandiri Bidan Rosmiati, Palopo City

Age (Years)	Hormonal Contraceptive Users				Age (Years)		Hormonal Contraceptive Users	
	Case		Kontrol		Case		OR	95% CI
	f	%	f	%	f	%		
> 2 years	1 45	69 ,7	1 55	7 4,5	3 00	7 2,1	0,91 0	0,558-1,487
< 2 years	6 3	30 ,3	5 3	2 5,5	1 16	2 7,9		
Total	2 08	10 0	2 08	1 00	4 16	1 00		

Source: Secondary Data

The OR for duration of use was 0.910, indicating that the odds of experiencing weight change for users with >2 years of contraceptive use were 0.910 times higher than those with <2 years of use. However, because the 95% CI (0.558–1.487) includes the value 1, the odds ratio is not statistically significant, and the result suggests no meaningful association between duration of use and weight change among hormonal contraceptive users.

Discussion

1) Age of Acceptors

The results of this study indicate that the majority of respondents in both the case and control groups were under 35 years of age—90.9% in the case group and 81.2% in the control group. Statistical analysis exhibited an Odds Ratio (OR) of 0.416 with a 95% Confidence Interval (CI) of 0.242–0.783, indicating statistical significance. It implies that hormonal contraceptive users under the age of 35 are 0.416 times more likely to experience transformations in body weight compared to those over 35 years of age.

This finding is consistent with physiological theories stating that younger reproductive-age women have higher metabolic activity and more prominent hormonal fluctuations, making them more responsive to synthetic estrogen effects from hormonal contraceptives (17). Estrogen and progesterone contained in hormonal contraceptives can influence appetite regulation and fluid retention, which tend to have more pronounced effects in younger women (18)(19).

This result aligns with previous studies showing that younger women are more susceptible to weight changes due to hormonal contraceptive use compared to older women. Other studies have found that younger age groups are more sensitive to hormonal fluctuations, including those induced by contraceptives (20).

Many women using oral contraceptives have been found to gain between 5–10 kg or more (21). On the other hand, injectable contraceptive users often experience more moderate weight gain, typically ranging from

less than 1 kg to 5 kg during the first year. Unsurprisingly, some weight gain may also be due to natural aging (22).

2) Duration of Use

The study found that 69.7% of respondents in the case group and 74.5% in the control group had used hormonal contraception for more than two years. The obtained OR was 0.910 with a 95% CI of 0.558–1.487, indicating no statistically significant association between the duration of hormonal contraceptive use and changes in body weight.

This finding contrasts with existing theory, which suggests that the longer hormonal contraceptives are used, the greater the cumulative hormonal effect on body weight (23). Synthetic hormones, particularly progesterone, increase appetite and alter fat metabolism over time (24). Therefore, long-term use should contribute to weight gain.

However, this result is supported by previous studies showing that the most significant weight changes occur during the early stages of hormonal contraceptive use rather than after long-term use. Supporting findings from Rahmadani (2025) indicate that once the body adapts to hormonal contraceptives, their effect on body weight becomes negligible despite continued use. Additionally, confounding factors such as diet, physical activity, and underlying health conditions—uncontrolled in this study—may have influenced the absence of a statistically significant relationship between duration of use and weight change (25)(26).

In terms of strengths, this study addresses a common side effect of hormonal contraceptive use, which is a key concern for many women, thus providing valuable insights for midwifery practice and family planning programs. However, limitations include the lack of control over confounding variables such as dietary habits, physical activity, baseline nutritional status, and history of metabolic disorders, all of which may affect body weight. It could result in potential bias or underestimation/overestimation of the impact of hormonal contraception. Future studies may benefit from using matching techniques or multivariate logistic regression analysis to improve the accuracy of causal inference.

4. CONCLUSION

This study confirms that the use of hormonal contraceptives, particularly injections and pills, is associated with shifts in body weight among acceptors. The analysis uncovered that most hormonal contraceptive users experienced weight changes after long-term use. Age and duration of use influenced body weight changes, with users under 35 at greater risk of encountering weight fluctuations than those over 35. Although contraceptive use for more than two years also contributed to weight changes, its impact was not as significant as that of age.

Hormonal contraceptive users are advised to attend regular consultations with healthcare providers to monitor side effects, including weight changes, and to consider the most appropriate contraceptive method. Users are also encouraged to maintain a healthy diet and engage in regular physical activity to manage body weight and reduce the risk of adverse effects associated with hormonal contraception. Further research with larger populations is needed to understand the mechanisms of contraceptive-related weight changes better and to identify practical approaches to mitigate these side effects.

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