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# THE RELATIONSHIP BETWEEN USING THE 3-MONTH INJECTABLE CONTRACEPTIVE AND WEIGHT CHANGES IN CONTRACEPTIVE USERS: A LITERATURE REVIEW

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***ABSTRACT***

*This review aimed to examine weight changes among women receiving three-month contraceptive injections and explore factors underlying variations in individual responses. Relevant publications from 2021 to 2026 were retrieved through Google Scholar, PubMed, and ScienceDirect. Study selection followed the PRISMA framework, while methodological quality was assessed using Joanna Briggs Institute (JBI) tools. Of the 1,683 initially identified records, ten studies met the eligibility criteria. Nine studies identified a statistically significant relationship between DMPA use and weight gain, whereas one reported no significant relationship. Hormonal influences on appetite regulation, energy metabolism, and fat accumulation were identified as possible contributing mechanisms. Weight gain represents a potential consequence of DMPA use, although individual physiological characteristics, nutritional habits, and energy expenditure may influence weight responses. Individualized counseling and routine weight monitoring are therefore recommended to support appropriate contraceptive decisions.*

***Keywords:*** *Injectable contraception, DMPA, weight gain, contraceptive users, literature review.*

## INTRODUCTION

In 2026, Indonesia's population is estimated at 287 million, with an annual increase of 0.76%, placing the country behind only India, China, and the United States in terms of population size (Worldometer, 2026). Managing demographic expansion is essential because uncontrolled population growth may create difficulties across socioeconomic and environmental sectors (Kailashpati & Wangmo, 2023). The Indonesian government addresses this issue through the Family Planning (KB) programme, which serves as an instrument for regulating population growth.

Family planning enables reproductive-age couples to determine how many children they wish to have and when subsequent births should occur (Aldino, 2023). Access to reproductive healthcare, adequate information, and available contraceptive options supports the achievement of these objectives. Appropriate reproductive planning is expected to help couples establish their desired family size while allowing sufficient intervals between pregnancies (Emin et al., 2026). Within this framework, contraception represents a practical means of managing pregnancy in accordance with family planning goals.

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Contraceptive methods work by preventing fertilisation so that the egg and sperm do not unite. Forms of contraception vary, including vasectomy, tubal ligation, implants, intrauterine devices (IUDs), the pill, condoms, and injectable contraception (Prasida, 2023). According to the 2017 Indonesia Demographic and Health Survey (SDKI), out of a total of 22,682,255 contraceptive users nationwide, injectable contraception accounted for the highest prevalence rate at 55.38 per cent, covering 12,562,106 users (Sartika et al., 2021). The high uptake of injectable contraception is partly due to its practicality, the fact that it does not require daily adherence like the pill, and that it does not interfere with a couple's sexual activity (Antari et al., 2024).

Among the various options, the three-month progestin-only injectable contraceptive is one of the primary choices due to its optimal long-term efficacy, as it is highly effective and provides protection against pregnancy over a relatively long period. This method also does not contain oestrogen, making it a suitable alternative for women with certain medical conditions who are at risk of cardiovascular disorders or blood clotting (Saidah, 2026). Furthermore, the three-month injectable contraceptive does not suppress lactation, does not affect sexual relations, and can be used by women aged over 35 right up to the onset of perimenopause. Although it has various advantages, its use may still cause a number of side effects, such as changes in menstrual patterns, menstrual irregularities, psychological vulnerability to depression, leukorrhoea, acne vulgaris, vomiting, alopecia, changes in libido, and weight fluctuations, which are the most frequently reported clinical manifestations (Zubaidah, 2021).

The pathogenesis of weight changes in women using the three-month injectable contraceptive is thought to be closely linked to the body's physiological mechanisms in response to exposure to exogenous progesterone. This hormone can influence the mechanisms regulating appetite, energy balance and the body's energy storage processes (Subiyatin et al., 2024). A surge in calorie intake that is not offset by increased energy expenditure through physical activity will trigger fat accumulation, leading to weight gain. This risk is thought to be greater among users of the three-month injectable contraceptive because its progesterone content is approximately six times higher than that of the monthly injectable contraceptive, which may affect the regulation of appetite, metabolism and energy storage (Widyaningtyas & Keswara, 2026).

Previous studies have explored the relationship between the 3-month injectable contraceptive and weight gain; however, most existing literature is relatively outdated and fails to reflect research findings from recent years (Arista et al., 2021; Pangestu et al., 2023). This study offers novelty by updating the current literature regarding the association between 3-month contraceptives and weight changes among family planning acceptors. This review aims to provide a comprehensive overview of previous studies to explain the varying findings concerning body weight changes associated with the three-month injectable contraceptive.

## RESEARCH METHOD

A literature search was conducted on Google Scholar, PubMed and ScienceDirect in September 2026. To ensure it can be repeated, the search strategy used the appropriate Boolean operators combining the following keywords: ("contraceptive users" OR "contraceptive acceptors") AND ("weight gain" OR "weight increase") AND "3-month contraception". The stages from article identification to selection were carried out in a structured manner based on the PRISMA framework to ensure that the literature search process was conducted systematically.

Eligibility was restricted to original quantitative studies employing observational designs, published in either English or Indonesian between 2021 and 2026. Each publication was required to contain essential research components, including an abstract, background, methodology, findings, and discussion. Study selection centred on contraceptive users and examined whether receiving contraceptive injections at three-month intervals was related to variations in body weight. Records that failed to satisfy the predefined requirements for the study population, investigated variables, measured outcomes, or search parameters were removed from consideration. Before extracting relevant data, the methodological rigour of each eligible study was assessed through the Joanna Briggs Institute (JBI) critical appraisal instruments to establish methodological validity and reduce potential bias. Figure 1 illustrates the successive stages of literature screening and selection.

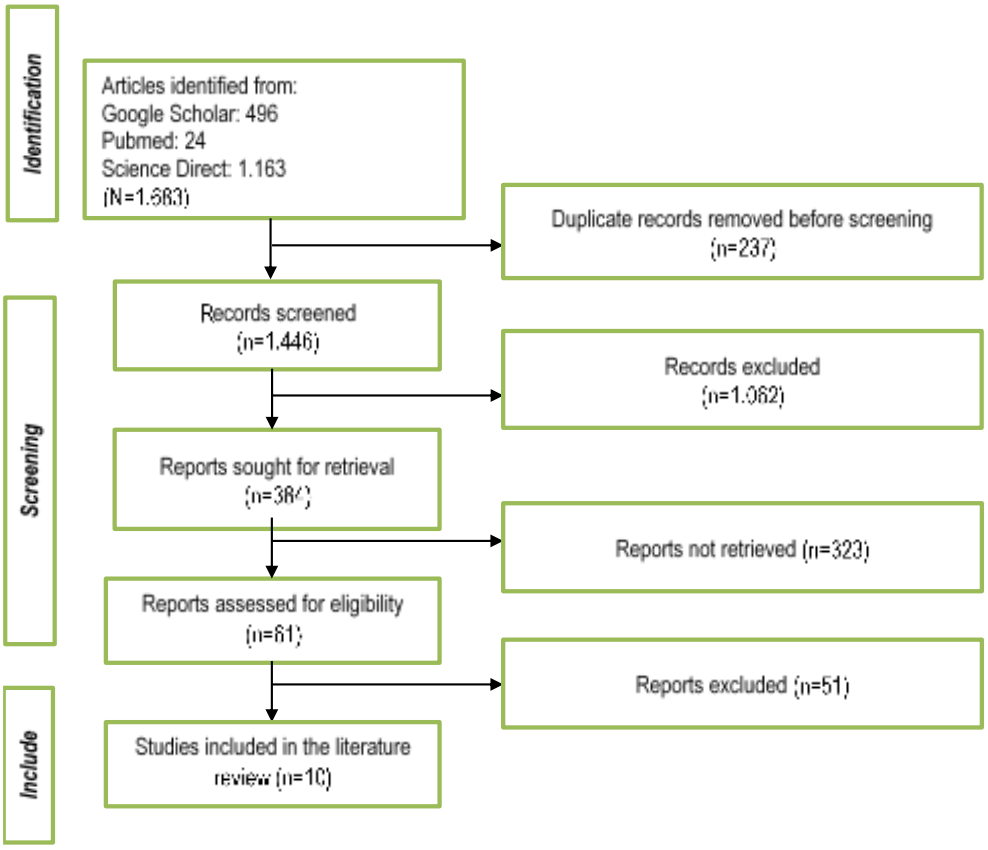


Figure 1. PRISMA Flow Diagram of the Study Selection

## RESULTS AND DISCUSSION

An initial database search of Google Scholar (n = 496), PubMed (n = 24), and ScienceDirect (n = 1,163) retrieved a combined total of 1,683 records. After removing 237 duplicate records before screening, 1,446 records were screened. Of these, 1,062 records were excluded for not meeting the inclusion criteria, leaving 384 reports sought for retrieval. However, 323 reports could not be retrieved, resulting in 61 reports assessed for eligibility. Following a detailed eligibility assessment, 51 reports were further excluded, yielding a final total of 10 studies included in the literature review. The characteristics and findings of the ten included studies are summarized in Table 1.

Table 1. Article Data Mapping Results

| Researcher and Year of Publication | Study Design | Population and Sample | Results |
|---|---|---|---|
| (Wahyuni et al., 2022) | *Cross setional* | 30 respondents selected using purposive sampling | Among contraceptive users, weight gain was associated with the use of contraceptive injections administered every three months ($p = 0.000 < 0.05$). |
| (Zubaidah, 2021) | *Cross sectional* | 69 participants using accidental sampling | Weight gain among female injectable contraceptive users was significantly associated with how long they had used the three-month method ($p = 0.000$; $\alpha = 0.05$) |
| (Mutika et al., 2021) | *Cross sectional* | 104 respondents | Bivariate testing yielded a p-value of 0.000, indicating an association between weight gain and the use of three-month contraceptive injections ($\alpha < 0.05$). |
| (Mkes, 2021) | *Cross sectional* | 45 respondents using purposive sampling | Among family planning acceptors, weight gain was significantly associated with the use of progestin-based contraceptive injections given at three-month intervals ($p = 0.013$; $\alpha = 0.05$). |
| (Pramono et al., 2025) | *Cross sectional* | 150 respondents selected using purposive sampling | An increase in body weight among contraceptive recipients was significantly associated with the use of injectable DMPA ($p = 0.000 < 0.05$). |
| (Aprilia & Dharmayanti, 2025) | *Cross sectional* | 20 participants | The length of time spent using contraceptive injections given every three months was significantly associated with weight gain ($p = 0.02 < 0.05$). |
| (Citra & Handayani, 2025) | *Cross sectional* | 100 participants selected by accidental sampling | With a p-value of 0.002 ($p < 0.05$), the analysis indicated a significant association between weight gain and the use of quarterly contraceptive injections. |

| | | | |
|---|---|---|---|
| (Sodikoh & Sutarno, 2024) | *Cross sectional* | 41 samples using total sampling | Weight gain and the use of contraceptive injections at three-month intervals were significantly associated, as indicated by a p-value of 0.01 ($p < 0.05$). |
| (Soekesi et al., 2025) | *Cross sectional* | 45 respondents using simple random sampling | Spearman's rho testing yielded a p-value of 0.000, below the specified threshold of 0.005. Accordingly, the null hypothesis was rejected, indicating an association between the duration of three-month injectable contraceptive use and weight gain among users. |
| (Husnah, 2024) | *Cross sectional* | 90 respondents using total sampling | Among family planning acceptors, no statistically significant association was identified between weight gain and the use of contraceptive injections administered every three months ($p = 0.126$). |

The synthesis results show that out of 10 articles analyzed, 9 of the 10 articles stated that there is a link between using the 3-month injectable contraceptive and weight changes in contraceptive users. This is consistent with the research by Wahyuni et al. (2022), Sodikoh & Sutarno (2024), and Citra & Handayani (2025) which consistently demonstrated that this injectable method leads to an increase in body mass. The three-month contraceptive injection itself is a hormonal product based on Depo-Medroxyprogesterone Acetate (DMPA) at a dose of 150 mg, administered via intramuscular injection every 12 weeks. In addition to its high efficacy and practicality, this method is widely chosen because it does not require daily adherence and is relatively affordable. Long-term use results in the body being repeatedly exposed to the progestin hormone, which may lead to physiological changes affecting body weight in some users.

Weight gain in DMPA users is thought to be linked to changes in energy metabolism and fat storage within the body (Aprilia & Dharmayanti, 2025). Zubaidah (2021) have shown that exposure to progestin hormones can influence carbohydrate and energy metabolism, making it easier for excess energy to be stored as adipose tissue. Hormonal changes can also affect body fat distribution, as well as the processes of fat synthesis and utilisation. Under certain conditions, these changes lead to a gradual accumulation of fat, which is subsequently reflected as weight gain (Pramono et al., 2025). Mutika et al. (2021) also explained that the progesterone content in the three-month contraceptive injection makes it easier for carbohydrates and sugars to be converted into fat, which then accumulates under the skin whilst also reducing physical activity, ultimately leading to weight gain

In addition to metabolic changes, an increase in appetite is also thought to be one of the mechanisms at play. Zubaidah (2021) and Aprilia and Dharmayanti (2025) explain that the use of DMPA can increase appetite in some users. This leads to greater frequency and volume of food intake, which, if not balanced by energy expenditure through exercise, will accelerate fat accumulation. Soekesi et al. (2025) also explained that the

long-term accumulation of the hormone progesterone triggers androgenic effects which activate the hypothalamus to increase appetite, whilst simultaneously converting the intake of carbohydrates and sugar into triacylglycerols, which can only be broken down through intense physical activity.

Mkes (2021) add that among users after three months, individual weight fluctuations are not uniform. In addition to a possible increase in fat mass, changes in body weight may also be influenced by changes in body fluid levels. Among some users, weight gain during the first year has been reported to range from less than 1 kg to around 5 kg, although this response is not uniform. Differences in response may be influenced by individual characteristics, duration of contraceptive use, dietary patterns, physical activity, and the metabolic status of each user. This is interpreted as a potential significant side effect of DMPA use, but it does not always occur to the same extent in all users.

Although the majority of the literature confirms a strong link between the three-month injectable contraceptive and weight gain, contrasting results were found by Husnah (2024) who did not find any statistical significance between the two. This discrepancy in results may indicate that the response to hormonal contraception is individual. Not all users gain weight, as other factors like age, psychology, genetics, medication use and ethnicity also influence overall weight balance. In addition, eating habits, metabolic rate, physical activity, and social environment are factors that can be modified to affect weight. Consequently, the use of the three-month injectable contraceptive may be one factor associated with weight changes, but its effect must be considered alongside other factors that determine weight balance in each individual user.

By consolidating evidence from ten publications issued between 2021 and 2026, this review extends previous knowledge through an examination of similarities and discrepancies in recent empirical findings. A statistically significant link between DMPA administration and increased body weight was documented in the majority of the included studies, notably those by Citra and Handayani (2025) and Sodikoh and Sutarno (2024). However, Husnah (2024) obtained a different statistical outcome, with no significant relationship detected. Integrating these divergent observations allows for a more comprehensive interpretation of the evidence without assuming uniform outcomes across populations. Consequently, individual characteristics and other possible determinants of body weight warrant consideration when evaluating weight responses to DMPA.

Within primary healthcare services, these observations provide relevant considerations for contraceptive management and counseling. The length of DMPA exposure has been identified as a factor associated with increased body weight (Aprilia & Dharmayanti, 2025; Soekesi et al., 2025). Midwives and other healthcare professionals may use this information to tailor counseling to each woman's circumstances, including her history of contraceptive use and the possibility of weight fluctuations. Attention may also be directed towards individual characteristics and adjustable lifestyle behaviours, particularly food consumption and physical activity. Periodic assessment of body weight as part of scheduled consultations may assist women in recognising changes and making informed choices regarding contraception.

## CONCLUSION

Evidence from nine of the ten selected studies identifies weight gain as a potential concern for women receiving DMPA injections, although the remaining study found no statistically significant relationship. Variations in weight response may reflect differences in the duration of contraceptive use, hormonal responses, energy intake and expenditure, and individual physiological characteristics. Therefore, changes in body weight should not be attributed solely to DMPA exposure. Personalized contraceptive counseling and periodic weight assessment are recommended to support informed decisions regarding continued contraceptive use.


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