FSRH CEU Statement: Contraception and Weight Gain
12 August 2019

Key Points

- Women of reproductive age tend to gain weight over time regardless of use of any contraceptive method. Clear explanation of this to women could help to reduce discontinuation of contraceptives due to perception of associated weight gain.
- While some users of contraception gain weight during use, there is no evidence that use of intrauterine contraception, the etonogestrel implant, the progestogen-only pill or combined hormonal contraception causes significant weight gain.
- The progestogen-only injectable depo-medroxyprogesterone acetate (DMPA) appears to be associated with some weight gain, particularly in women aged under 18 with a BMI ≥30 kg/m^2. Women who gain more than 5% of their baseline body weight in the first 6 months of use may be more likely to experience continued weight gain.

Introduction

Weight gain is a concern for many women for personal and health reasons. There is a perception that weight gain is a common side effect of contraceptive use and this is often cited as a reason why women do not initiate or do not continue contraception.[1–6] However, it must be remembered that gaining weight is developmentally normal during adolescence and many adults gain weight with increasing age regardless of use of contraception.[7–9]

This FSRH CEU statement reviews the evidence for the effect of contraceptive methods on weight; it is intended for use by contraceptive providers to support women in making contraceptive choices.

Most research that reports on weight gain and contraception is of limited quality. Very few studies are designed to measure weight change as a primary outcome and most studies are relatively small, lack important data such as lifestyle factors (e.g. diet, eating behavior, exercise) which may confound associations between contraceptive use and weight change, have high losses to follow-up and are observational without randomised comparison groups. In addition, the majority of studies researching contraception and weight have considered a population of women who are no more than 130% of ideal body weight: few women with obesity are included in these studies. The effect of contraception on weight may vary depending on a woman's weight or body mass index (BMI) at the time of contraceptive method initiation, but this has not been definitively studied.

Intrauterine contraception (IUC)

Most of the studies identified compared weight change in users of levonorgestrel-releasing intrauterine systems (LNG-IUS) with users of copper intrauterine devices (Cu-IUD). On average, users of both LNG-IUS and Cu-IUD gained weight – although weight change varied widely between individual women in all studies. There is no plausible biological mechanism for weight gain with Cu-IUD use, suggesting that any weight gain during use is likely related to other characteristics of the user such as increasing age and/or lifestyle factors rather than the contraceptive method itself. Although mean weight gain was generally greater amongst LNG-IUS users than Cu-IUD users, differences were not statistically significant. Only one study compared LNG-IUS users with non-users of contraception.

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The evidence

A 2017 prospective cohort study[10] found no statistically significant difference in body composition changes or weight changes between 85 LNG-IUS and 31 Cu-IUD users over 12 months. Mean increases in weight were 0.5 and 0.4 kg, respectively, and not statistically significant. This study used validated measures of eating behaviour and body composition and controlled for confounding. An earlier analysis of this cohort[11] evaluating weight gain over 12 months as the primary outcome found no statistically significant differences between 130 LNG-IUS and 100 Cu-IUD users: mean weight increase was 1.0 kg and 0.2 kg, respectively. A retrospective study[12] comparing weight changes in IUC users at 1 year (602 LNG-IUS; 602 Cu-IUD), 3 years (537 LNG-IUS; 576 Cu-IUD) and 10 years (68 LNG-IUS; 154 Cu-IUD) also found no statistically significant difference in weight change between groups. Mean weight gain for LNG-IUS vs. Cu-IUD use was 0.7 kg vs. 0.2 kg at 1 year, 2.4 kg vs. 1.4 kg at 3 years, and 4.0 kg vs. 4.9 kg at 10 years. Two prospective cohort studies[13,14] reported differences in body composition changes over 12 months. Body fat percentage increased slightly in LNG-IUS users but decreased slightly or did not change significantly in Cu-IUD users or users of no contraception. Differences in weight change over 12 months between users of the different methods were small and not statistically significant (although the sample sizes were small).

The GDG concludes that while users of the LNG-IUS and Cu-IUD may gain some weight during use, there is no evidence that LNG-IUS or Cu-IUD use causes significant weight gain.

Progestogen-only implants

Studies identified compared weight change in etonogestrel implant (ENG-IMP) users with Cu-IUD users; none of the studies included non-users of contraception as a comparator. Weight change varied widely between individual women in the studies, and although on average women gained weight during use of both methods, most studies reported no statistically significant difference in weight change between ENG-IMP and Cu-IUD users.

The evidence

A 2017 prospective cohort study[10] comparing 33 ENG-IMP, 85 LNG-IUS and 31 Cu-IUD users found that changes in body composition and weight did not significantly differ among those who continued their method for 12 months. Weight increases were 0.1 kg, 0.5 kg and 0.4 kg, respectively—the difference was not statistically significant (p=0.97). The study used validated measures of eating behaviour and body composition and adjusted for confounding. An earlier analysis of this cohort[11] evaluating weight gain over 12 months as the primary outcome found that ENG-IMP use (n=130) was not associated with significantly greater weight increase when compared to Cu-IUD use (n=100) (2.12 kg for ENG-IMP and 0.16 kg for Cu-IUD—the difference was not statistically significant). One study[15] of body composition changes over 12 months among 23 ENG-IMP and 25 Cu-IUD users found that ENG-IMP users compared with Cu-IUD users had statistically significant increases in body weight (+4.1 vs -0.1 kg) and fat mass (+2.4 vs 0.2 kg). This study is limited by very high losses to follow-up and no adjustment for possible confounding factors.

The GDG concludes that while users of the ENG-IMP may gain some weight during use, there is no evidence that ENG-IMP use causes significant weight gain.

Progestogen-only injectable

Studies identified generally compared weight gain with DMPA injectable use to that with use of no hormonal contraception (HC). Evidence is conflicting, but some studies suggest that use of DMPA is associated with some weight gain for some women; weight change varied widely among individual women in the studies.

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The evidence

Several prospective cohort studies and one retrospective study found no association between DMPA use and weight gain or changes in body composition. One prospective study[11] comparing 67 DMPA and 100 Cu-IUD users did not find a statistically significant difference in mean weight gain after 12 months of use after adjustment for confounders (2.2 kg for DMPA, 0.2 kg for Cu-IUD users). Two studies[16,17] comparing DMPA and Cu-IUD use over 12 months, which adjusted for possible confounders, found no significant difference between the groups with respect to changes in weight or composition. One retrospective study[18] among women aged 37-50 years found no difference in weight gain between 50 DMPA and 50 Cu-IUD users after 10 years of use.

Conversely, some cohort studies have shown a significant association between DMPA use and weight gain and/or changes in body composition when compared with non-users of HC. One retrospective study[19] of 379 DMPA and 379 Cu-IUD users matched on baseline age and BMI determined that DMPA users gained 3.17 kg more than Cu-IUD users after 3 years of use (95% CI 2.51-3.83). Per year, the mean weight gain for DMPA users was 1.76-3.9 kg, while changes within the Cu-IUD group were less than 1 kg.[19,20] Another retrospective study[12] comparing weight changes in DMPA and Cu-IUD users at 1 (675 DMPA; 602 Cu-IUD), 3 (526 DMPA; 576 Cu-IUD) and 10 years (125 DMPA; 154 Cu-IUD) also found a statistically significant difference in weight change. Mean weight gain for DMPA vs. Cu-IUD use was 1.3 kg vs. 0.2 kg at 1 year, 3.1 kg vs. 1.4 kg at 3 years, and 6.6 kg vs. 4.9 kg at 10 years. One prospective study[21] observed significantly greater weight gain over 4-5 years in 15-19 year-old new users of progestogen-only injectables when compared to users of combined oral contraception (COC) or no contraception. Those using norethisterone enanthate (n=115) or DMPA (n=115) throughout, or switching between the two, gained an average 6.2 kg compared with 2.3 kg in COC users (n=116), 2.8 kg in non-users (n=144) and 2.8 kg among all discontinued users (p=0.02). In a prospective study[22] of 8 adolescent DMPA users and 18 adolescents not using HC, DMPA users had a greater increase in percent body fat (10.3% vs -0.7%) and a greater decrease in percent lean body mass (-3.4% vs +0.6%) than those using no HC after 6 months.

There are concerns that women who are overweight (BMI 25-29.9 kg/m^2) or with obesity (BMI ≥30 kg/m^2) who initiate DMPA may be at greater risk of weight gain than women of normal weight (BMI 18.5-24.9 kg/m^2). Among adults, weight gain with DMPA use has generally not been shown to differ among women of different BMI classes.[23–25] One retrospective study[19] assessed BMI changes over 3 years in DMPA (n=379) and Cu-IUD users (n=379) matched for age and BMI and classified as normal weight, overweight or obese. It found that weight increased progressively in all groups but significantly more in normal- and overweight DMPA users compared to normal- and overweight Cu-IUD users. In women with obesity, weight increases were similar in DMPA and Cu-IUD users.

Studies focusing on adolescent DMPA users,[26–28] however, have found that those with obesity were more likely to gain a greater amount of weight than those without obesity or those of all weight categories using oral contraception (OC) or non-hormonal methods.[23] One prospective study[26] of mainly African-American adolescents reported that those with a BMI ≥30 kg/m^2 had significant weight gain at 18 months after initiating DMPA (n=115) compared with those initiating OC (n=175) or no HC (n=160). Mean weight gain was 9.4, 0.2 and 3.1 kg, respectively (p<0.001). Weight gain in adolescents with obesity using DMPA was also greater than weight gain among adolescents without obesity using DMPA, OC or no HC.[26] BMI prior to DMPA use in women aged less than 18 years may predict weight gain with DMPA use, with higher initial BMI predictive of increased weight gain. However, evidence on the relationship between initial BMI/weight, DMPA use and weight gain is insufficient to draw definitive conclusions.

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A systematic review[29] of adverse events after contraceptive initiation found that women who gained more than 5% of their baseline weight in the first 6 months of DMPA use were more likely to experience continued weight gain.[27,30,31]

Data are limited but patterns of weight gain appear to be similar with subcutaneous (SC) and intramuscular (IM) DMPA use. A randomised study[32] of 266 SC and 268 IM users found that after two years, SC and IM users had mean weight increase of 3.4 kg and 3.5 kg, respectively (4.5 vs. 5.8 kg at 3 years).

The GDG concludes that DMPA use appears to be associated with some weight gain in some women, particularly women aged under 18 with a BMI ≥30 kg/m^2. Women who gain more than 5% of their baseline weight in the first 6 months of use may be more likely to experience continued weight gain. However, data are insufficient to confirm or exclude a causative relationship between DMPA use and weight gain.

Progestogen-only pill (POP)

Evidence relating to the effect of POP use on weight is extremely limited. One prospective cohort study[14] compared body composition changes in 42 perimenopausal women using a desogestrel POP and 26 perimenopausal women not using HC. At 12 months, mean weight increase in the groups was not significantly different (+0.3 kg in POP vs -0.2 kg in controls) but POP users had a statistically significant increase in fat mass of 2.8% compared with -0.5% in controls.

The GDG concludes that while users of the POP may gain some weight during use, there is no evidence that POP use causes significant weight gain.

Combined hormonal contraception (CHC)

A 2014 Cochrane review[33] of 49 randomised controlled trials looking at weight gain with CHC use identified only 4 studies that compared CHC with placebo or with no intervention; the remainder compared different CHC formulations. These 4 studies found no statistically significant differences in weight or body composition changes over time between users and non-users of CHC. A systematic review[34] which identified data for women under 18 years of age from 9 observational studies concluded that there was no evidence of an association between CHC use and weight gain in this group of women.

The GDG concludes that the limited evidence available does not support a causal association between CHC use and weight gain and there is no consistent evidence that different CHC formulations affect weight differently.

Conclusion

On average, women of reproductive age tend to gain weight over time whether they use any contraceptive method or not. In the studies identified by this review, weight change during use of contraception varied widely among individual women. Average weight gain during use of IUC, ENG-IMP, POP or CHC was modest and not significantly different between comparison groups using hormonal contraception, non-hormonal contraception and no contraception. Very limited evidence suggests an association between DMPA use and weight gain, particularly in women under 18 years of age with a BMI ≥30 kg/m^2. However, data are insufficient to confirm or exclude a causative relationship between DMPA use and weight gain.

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These findings are in line with those of a 2016 Cochrane review[20] looking at weight gain with progestogen-only contraceptive use and a 2014 Cochrane review[33] of weight gain and CHC use, which generally found little evidence of weight gain associated with use of progestogen-only contraceptives or CHC, respectively.

Women can be reassured that the evidence indicates that it is likely that use of IUC, ENG-IMP, POP or CHC **does not cause** weight gain. DMPA appears to be associated with some weight gain, particularly in women aged under 18 with a BMI ≥30 kg/m^2. Women who gain more than 5% of their baseline body weight in the first 6 months of use may be more likely to experience continued weight gain.

Appropriate advice regarding typical patterns of weight gain amongst women of reproductive age may help allay users' concerns and reduce discontinuation of contraceptive methods.

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The Clinical Effectiveness Unit (CEU) was formed to support the Clinical Effectiveness Committee of the Faculty of Sexual and Reproductive Healthcare (FSRH), the largest UK professional membership organisation working at the heart of sexual and reproductive healthcare. The CEU promotes evidence based clinical practice and it is fully funded by the FSRH through membership fees. It is based in Edinburgh and it provides a member's enquiry service, evidence based guidance, new SRH product reviews and clinical audit/research. Find out more here.

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