FPIN's Clinical Inquiries

Is the Use of Hormonal Contraception Associated With Suicide and Suicide Attempts?

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Clinical Question

Is the use of hormonal contraception associated with suicide or suicide attempts?

Evidence-Based Answer

There may be an association between the use of hormonal contraception and suicide. Women using oral contraceptives had an increase in completed suicides and suicidal behaviors (i.e., suicidal thoughts and suicide attempts without success). Suicidal behavior decreased after one year of use. However, two older prospective cohort studies did not find an increased risk of suicide. Physicians should consider individual benefits and risks of hormonal contraception use in each patient and monitor closely for potential adverse mental health effects. (Strength of Recommendation: B; based on systematic reviews, meta-analyses, and cohort studies.)

Evidence Summary

A 2020 systematic review and meta-analysis of three cohort studies (N = 184,721) compared the use of oral contraception with the use of nonhormonal contraception or no contraception on the risk of suicide in women 25 to 59 years of age.[1] Users (n = 95,901) were defined as women who were currently using or had ever used oral contraceptives. Nonusers (n = 88,171) were women who had never used hormonal contraception or a diaphragm or a nonhormonal intrauterine device for at least five months without previous oral contraceptive use. The follow-up period was study-dependent and ranged from 16 to 39 years. The primary outcome was completed suicides across the entire follow-up period, including during and after the use of oral contraceptives. A significantly increased risk of completed suicide was found in women using oral contraceptives compared with nonusers (relative risk [RR] = 1.36; 95% CI, 1.06 to 1.75). Study limitations included a lack of reported comorbid conditions known to be risk factors for suicide, and patients were taking higher doses of estrogen.

A 2020 retrospective cohort study from Sweden examined the association between combined and progestin-only oral contraceptive use and suicidal behavior.[2] Women 15 to 22 years of age (n = 216,702) who had a filled prescription for oral contraceptives were compared with those who had not filled a prescription for oral contraceptives. The outcome was a first reported suicide attempt or death by suicide from enrollment in the study until the end of the follow-up period. Pregnant women; women with polycystic ovary syndrome, endometriosis, venous thromboembolism, or cancer; and women who stopped using oral contraceptives were excluded from analysis. Compared with women not using oral contraception (n = 69,507), those using combined oral contraception (n = 97,515) had a higher risk of suicidal behavior one month after starting oral contraceptives (adjusted hazard ratio [HR] = 1.56; 95% CI, 1.30 to 1.88), improving after one year of use (adjusted HR = 1.19; 95% CI, 1.01 to 1.40). Women using progestin-only oral contraceptives (n = 23,468) had an even higher risk of suicidal behavior one month after use (adjusted HR = 2.13; 95% CI, 1.64 to 2.77), which was reduced after one year of use (adjusted HR = 1.48; 95% CI, 1.17 to 1.87) compared with women not using oral contraceptives. Study limitations included use of the Swedish National Patient Register, which may not include suicide attempts that were not recorded in the medical record.

A 2018 prospective cohort study of women from Denmark assessed the risk of suicide attempts or completion in patients using hormonal contraception (i.e., combined oral,

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progestin-only, patch, and vaginal ring).[3] Women 15 years of age and those who turned 15 years of age during the study period with no previous use of hormonal contraception, psychiatric diagnoses, or antidepressant use were identified (n = 475,802) and then followed as users or never users of hormonal contraception. Follow-up was an average of 8.3 years. Hormonal contraception use (n = 2,127,374 person-years) was positively associated with a first suicide attempt (RR = 1.97; 95% CI, 1.85 to 2.10) and with suicide completion (RR = 3.08; 95% CI, 1.34 to 7.08), compared with never use (n = 1,387,917 person-years). Combined oral contraceptive use (n = 1,983,435 person-years) was associated with a higher risk of first suicide attempts compared with never use (RR = 1.91; 95% CI, 1.79 to 2.03). Progestin-only oral contraceptive use (n = 38,965 person-years) also demonstrated an increased risk of a first suicide attempt (RR = 2.29; 95% CI, 1.77 to 2.95) compared with never use.

A 2019 cross-sectional study from Korea examined the association between oral contraceptive use and suicidal behavior.[4] Women 20 years or older without a history of cancer (n = 27,067) provided information on oral contraceptive use and suicidal behavior on the Korea National Health and Nutrition Examination Survey. Oral contraceptive use was defined as ever having used oral contraceptives for more than one month. Suicidal behavior was defined as reported suicidal ideation or attempt. An increased risk of suicidal behavior was observed with oral contraceptive users (n = 4,522) compared with never users (n = 22,545; age-adjusted odds ratio [OR] = 1.23; 95% CI, 1.10 to 1.37; number needed to harm = 28). When adjusted for a diagnosis of depression in participants, there was no significant difference.

A 2013 longitudinal study in the United States investigated the association between contraception use, depressive symptoms, and suicide attempts.[5] Women 25 to 34 years of age (n = 6,654) were classified as users of effective contraception (i.e., hormonal) to least effective (i.e., spermicide, periodic abstinence, or contraceptive film) or no contraception. Primary outcomes were depressive symptoms and the number of suicide attempts in the past year. Effective contraception use (n = 2,393), compared with least effective or no contraception use (n = 1,310), resulted in significantly decreased suicide attempts over the previous year (adjusted OR = 0.38; 95% CI, 0.15 to 0.97). Study limitations included an observational design impacting confounding factors, patients' relationship status, and the type of contraception; a lack of information on specific estrogen and progestin dose formulations; and the inability to generalize to non–sexually active women.

A 1999 prospective cohort study in the United Kingdom evaluated the long-term effects of oral contraceptive use on all-cause mortality and other causes of death.[6] Participants (n = 46,000) were recruited based on whether they had ever used oral contraceptives or never used oral contraceptives and were followed for 25 years. The median age of participants at the end of the study was 49 years. The main outcome was all-cause mortality. Secondary outcomes included suicide, cancers, circulatory diseases, and digestive diseases. No significant difference in suicide risk was observed between ever users (n = 23,000) and never users (n = 23,000).

A 1994 prospective cohort study in the United States examined the risk of mortality for women who had ever used oral contraceptives compared with those who had never used oral contraceptives.[7] The participants (n = 166,755; age range = 30 to 55 years) were registered nurses who completed a questionnaire on risk factors for cancer and cardiovascular disease, including current or past use of oral contraceptives. The women were classified as ever users or never users of oral contraceptives. Follow-up data were collected for 12 years. The primary outcome was total mortality, with secondary outcomes for suicide, cardiovascular disease, cancer, and other deaths. No significant difference in suicide mortality risk was observed for ever users compared with never users (adjusted RR = 1.32; 95% CI, 0.87 to 1.98).

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References

1. Pérez-López FR, Pérez-Roncero GR, López-Baena MT, et al. Hormonal contraceptives and the risk of suicide: a systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol*. 2020;251:28-35.
2. Edwards AC, Lönn SL, Crump C, et al. Oral contraceptive use and risk of suicidal behavior among young women [published online October 21, 2020]. *Psychol Med*. Accessed September 22, 2021. https://www.cambridge.org/core/journals/psychological-medicine/article/abs/oral-contraceptive-use-and-risk-of-suicidal-behavior-among-young-women/3D482A155F8E26028DF03FAB875A9D6C
3. Skovlund CW, Mørch LS, Kessing LV, et al. Association of hormonal contraception with suicide attempts and suicides. *Am J Psychiatry*. 2018;175(4):336-342.
4. Jung SJ, Cho SMJ, Kim HC. Association of oral contraceptive use with suicidal behavior among representative Korean population: results from Korea National Health and Nutrition Examination Survey (2007-2016). *J Affect Disord*. 2019;243:8-15.
5. Keyes KM, Cheslack-Postava K, Westhoff C, et al. Association of hormonal contraceptive use with reduced levels of depressive symptoms: a national study of sexually active women in the United States. *Am J Epidemiol*. 2013;178(9):1378-1388.
6. Beral V, Hermon C, Kay C, et al. Mortality associated with oral contraceptive use: 25 year follow up of cohort of 46,000 women from Royal College of General Practitioners' oral contraception study. *BMJ*. 1999;318(7176):96-100.
7. Colditz GA. Oral contraceptive use and mortality during 12 years of follow-up: the Nurses' Health Study. *Ann Intern Med*. 1994;120(10):821-826. ■