

Clinical Relevance of Adolescent OCP Use and Depression Risk

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Abstract

Prevalence of depression within the United States has risen significantly in recent years.¹ Depression in females has increased by 12 percent compared to 3.8 percent in males between 2009 and 2019.³ Hormonal contraceptives are widely used by women throughout the world and often started as early as menarche. Traditionally intended to prevent unwanted pregnancies, contraceptives are frequently used in the symptom management of menorrhagia and dysmenorrhea in females.² Oral contraceptive pills (OCP) are a popular choice for adolescents due to their ease of use, formulation varieties, and ability to be used long-term. Considering the widespread use, the adverse effects can have significant clinical relevance.³ OCPs have a wide variety of side effects - including mood changes; however, there is no clear consensus among researchers and clinicians on the associations between OCP use and risk of depression.² Nevertheless, mood changes are a common reason for discontinuation of OCPs. Further investigation into the possible connection between hormonal contraceptive use and depression may offer insight into the prevalence of depression in adolescent females compared to adolescent males and should be taken into consideration by clinicians. Overall, medical providers should be better equipped to address these concerns with their patients. The purpose of this study is to conduct a literature review based on global studies investigating possible correlation between the use of hormonal contraceptives in adolescent females and subsequent mood changes, such as depression.

Vulnerability to Depression Depending on OCP Use

	1st OC use in adolescence	1st OC use in adulthood	Never users of OCs
Major depressive disorder			
1-year prevalence, % (95% CI)	16.1 (12.5–19.7)	9.3 (5.5–13.1)	5.7 (2.6–8.8)
Unadjusted association, OR (95% CI)	1.00 [Reference]	0.54 (0.30–0.95)	0.31 (0.16–0.60)
PS-adjusted association not controlling for current OC use, OR (95% CI)	1.00 [Reference]	0.34 (0.17–0.69)	0.31 (0.10–0.94)
PS-adjusted association controlling for current OC use, OR (95% CI)	1.00 [Reference]	0.36 (0.18–0.75)	N/A

Figure 1. Relationship between OCP use and development of major depressive disorder after controlling for potential confounding variables using propensity score weighting⁴

Depression Risk

OCPs are not the only risk factor involved in the development of depression; rather, it is an additive effect on the risk of mood changes.

Use in Adolescence vs Adulthood (Figure 1.)

Women who began using OCPs in adolescence had a 16.1% 1-year prevalence of depression; whereas women who first used OCPs in adulthood had a 9.3% 1-year prevalence, and women who never used OCPs had a 5.7% 1-year prevalence.⁴ This indicates a long-term association between beginning hormonal contraceptives in adolescence and the development of depression in adulthood. The sensitive period of development in adolescence may be affected by hormonal contraceptive use, leading to long-term mood changes later in life.⁴⁻⁵ Data show no association between OCP use and depressive symptoms when all age groups in the data set are considered together.⁵

Statistical Significance of Age (Figure 2.)

Current literature is conflicting on the association between OCPs and depression. This could be explained by participant age, as OCPs may not impact women of different ages in the same ways. One study sought to investigate a possible association between hormonal contraceptive use and adverse psychological outcomes, as well as determine if age of the user modified results. Researchers performed age-stratified logistic regression models to measure any association between hormonal contraceptive use and psychotropic drug use. In their age stratified analysis, they found a strong association in adolescent girls. There was no association in adult women, suggesting that hormonal contraceptives have an adverse effect on the adolescent population that they do not have on the adult population.⁶

Anti-Depressant Use

Current literature points towards an overall association between the use of hormonal contraceptives and psychotropic drugs. Several studies note an increased prevalence of antidepressant prescriptions with the use of oral contraceptives.⁶⁻⁷ Other studies have found a positive correlation between hormonal contraceptive use, antidepressant prescriptions, and suicidal behavior.⁸

Psychotropic Drug Use

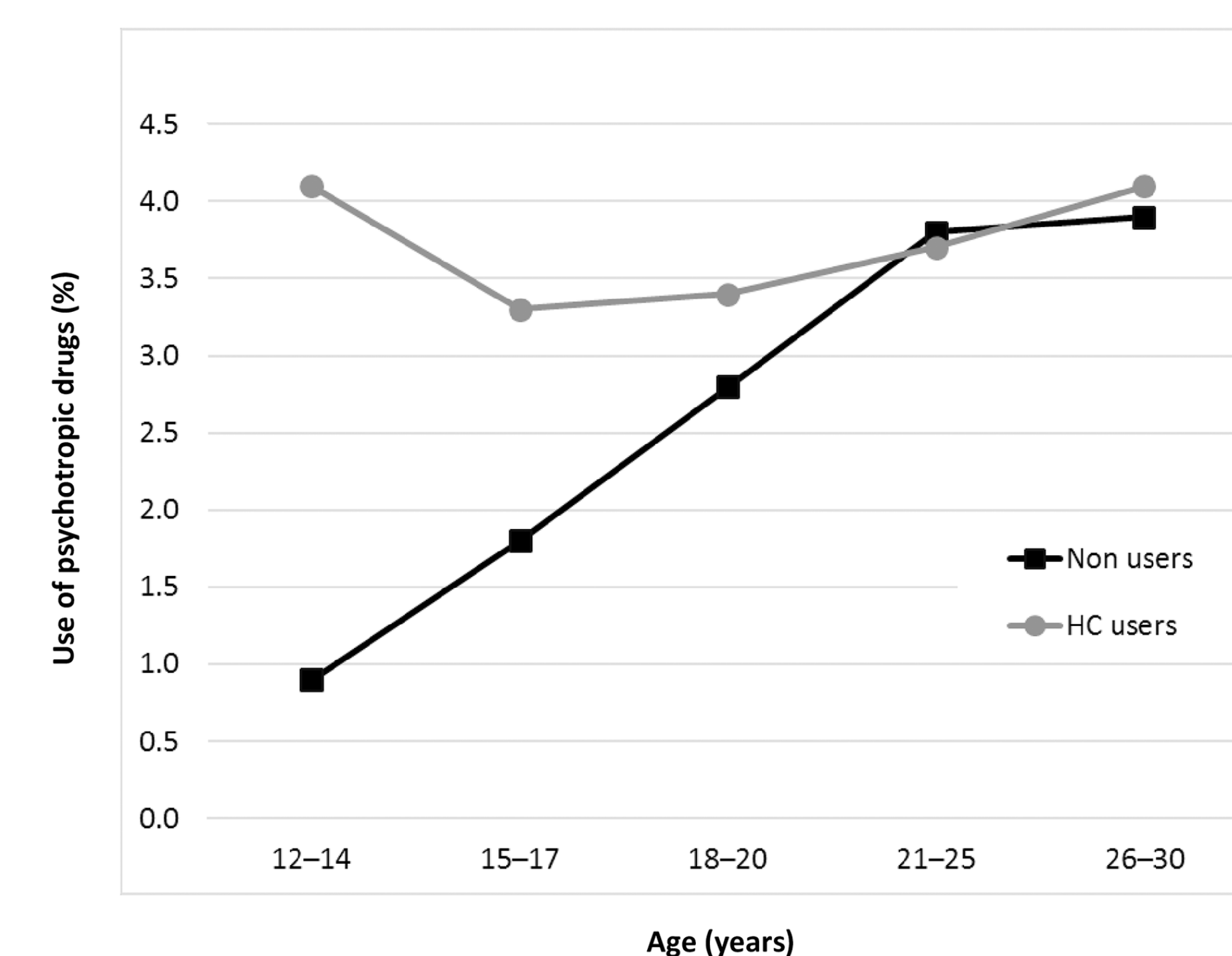


Figure 2. Percentage of participants who experienced first time use of psychotropic drugs during 1-year follow up from baseline among 815,662 Swedish women⁶

OCP users = gray circles
Non-users = black squares

Conclusion

While the evidence of a link between hormonal birth control use in adolescent females and mood changes continues to be complex and influenced by many variables, the need for adequate education on OCPs from health care providers is evident. Further, as OCPs are widely used as a first line treatment for multiple health concerns, such as dysmenorrhea and endometriosis, health care providers should feel confident to discuss possible side effects, such as mood changes, with their patients and encourage other options if needed.

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