# Baby Blues: Exploring the relationship between oral contraceptive discontinuance and depression in adult American women

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## Background

- Depression is a commonly cited reason for oral contraceptive discontinuation.[1]
- Studies exploring mood change and oral contraceptive use have produced inconsistent findings.[2]
- Studies assess differences between non-users and current-users, without further dividing the non-user group into ex-users and never-users.
- This creates a potential bias, as women who have never taken birth control pills are likely fundamentally different than those who, however briefly, have.

## Objective

To avoid a bias created by the fundamental differences between ex-users and never-users, this study examined the relationship between depression and short-term versus long-term oral contraceptive use in adult American women.

## Methods

- 1,621 adult women from the 2011-2012 National Health and Nutrition Examination Survey (NHANES) were examined.
- Depression was assessed based on responses to PHQ-1 and PHQ-2 (Patient Health Questionnaire).
- Oral contraceptive use was measured on a short-term or long-term scale. Long-term was classified as a history of oral contraceptive use for a period of 12 months or more. Never-users were not included.
- STATA version 13 was used for statistical analyses, which accounted for complex survey design and weighting.
- Bivariate analysis and logistic regression were used to explore the relationship between depression and oral contraceptive use, while controlling for confounding variables.

Table 1: Description of adult females with varying lengths of time on birth control pills: NHANES 2011 – 2012

| | BC use <12 months | BC use 12+ months |
|---|---|---|
| | 80.5% (1356) | 19.4% (265) |
| | Weighted % (n) | Weighted % (n) |
| **Income** | | |
| $0 – $24,999 | 23.0% (426) | 14.0% (71) |
| $25,000 - $54,999 | 30.0% (409) | 27.0% (69) |
| $55,000+ | 46.0% (474) | 59.0% (118) |
| **Race** | | |
| Mexican American/Hispanic | 13.0% (272) | 5.8% (34) |
| Non-Hispanic White | 68.0% (527) | 82.0% (132) |
| Non-Hispanic Black | 13.0% (406) | 11.0% (88) |
| Other | 5.9% (151) | 1.4% (11) |
| **Age at first live birth*** | | |
| Never pregnant | 25.0% (208) | 23.0% (43) |
| Under 23 years old | 43.0% (506) | 33.0% (85) |
| 23 – 27 years old | 20.0% (200) | 21.0% (33) |
| Over 27 years old | 13.0% (106) | 24.0% (31) |
| **Marital status*** | | |
| Currently married | 52.0% (582) | 57.0% (128) |
| Previously married | 23.0% (357) | 25.0% (73) |
| Never married | 25.0% (368) | 18.0% (59) |
| **Insurance status** | | |
| Yes | 82.0% (1062) | 93.0% (235) |
| No | 18.0% (294) | 7.1% (30) |
| **Depression (outcome)** | | |
| No depression | 79.0% (1035) | 87.0% (217) |
| Depression | 21.0% (321) | 13.0% (48) |

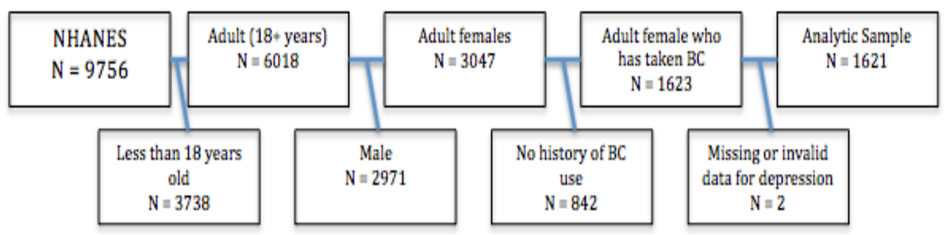
*More than 10% missing data; the large percentage of missing data is due to the fact that only females age 20+ are asked this question, and my analytic sample includes 18 & 19 year-olds

Table 2. Unadjusted and adjusted odds ratios of depression among adult women with a history of oral contraceptive use, 2011-2012 NHANES

| | Unadjusted OR<br>OR (95% CI) | Adjusted OR*<br>OR (95% CI) |
|---|---|---|
| Oral contraceptive use | | |
| Long-term use | 1.00 (ref) | 1.00 (ref) |
| Short-term use | .57 (.38 - .85) | 1.01 (.59 – 1.73) |

Note: OR = Odds Ratio & CI = Confidence Interval
*Adjusted for income, race, marital status, insurance status, and woman's age at her first live birth

Figure 1: Graphic of exclusion criteria for analytic sample




## Results

- Among adult women that have used or are using oral contraceptives, 21.0% of those who used the pills for less than one year are depressed. Among those who used birth control for one year or more, 13.0% are depressed.
- The unadjusted odds of having depression for short-term users is .57 (.38 - .85) times the odds of having depression for long-term users. The adjusted odds of having depression for short-term users is 1.01 (.59 – 1.73) times the odds of that for long-term users.

## Conclusions

- There is not a statistically significant, independent association between oral contraceptive use and depression.
- It is likely that the statistically significant, observed relationship in the unadjusted model is due to some confounding variable or demographic factor.
- The effect is not statistically significant when confounding variables are included in the model.
- Further research should continue to explore the mental health effects of oral contraceptives in long-term and short-term users. As a widespread method of birth control, it is important to assess potential health consequences thoroughly.

## Acknowledgements

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## References

1. O'Connell K et al. Oral contraceptives: side effects and depression in adolescent girls. Journal of Contraception. 2007; (75): 299 – 304.
2. Oinonen K, Mazmarian D. To what extent do oral contraceptives influence mood and affect? Journal of Affective Disorders. 2002; 70(30): 229-240.