# Exploring the Effects of Oral Contraceptive Pills on Neurophysiological function, Mood, and Sexuality

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## Introduction

- 100 million women worldwide use OCPs.[2]
- Little knowledge known about their behavioral and neurophysiological impact.[3]
- OCPs suppress endogenous and ovarian steroid hormones [3]
  - Prevent pregnancy,[3] dysmenorrhea, and menorrhagia[2]

## Objective

- To further understand oral contraceptive pills effects on
  - Structural brain changes
  - Mood
  - Sexuality.

## Methods

- In depth PubMed literature review
- February-March 2024

## Results

**1. Neurophysiological effects:**

- OCP use during puberty/adolescence:[3]
  - Blunted stress response
    - Risk factor for depression
  - Greater vulnerability to depression diagnosis in adulthood[3]
- Below changes in grey and white matter:[3]
  - Depressive symptoms such as altered emotion regulation and cognition

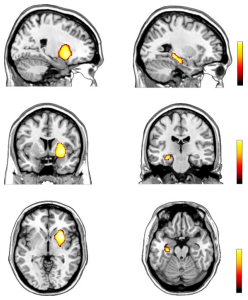

Figure 1.Grey matter (GM) volume decrease in putamen (left) and white matter (WM) volume increase in hippocampus (right)[3]

**2. Mood changes:**

- A 1974 study of 46,000 women:[1]
  - 30% increase in depressive symptoms
- A study of half a million adolescents without prior psychiatric history:[1]
  - 2X increased relative risk (RR) of suicide attempts
  - 3X increased RR of completed suicide
- Australian Longitudinal Study on Women's Health [2]
  - Higher odds of depressive symptoms in women taking OCPs for pain or other medical conditions
- A 2021-2022 study by Martell et al. surveying 188 women taking OCPs with and without prior psychiatric history

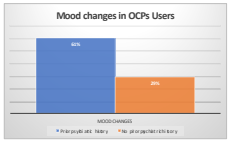


Figure 2. Mood changes in OCP use with and without prior psychiatric history

**3.Sexuality**

- A 1974 study of 46,000 women taking OCPs:[1]
  - 30% decreased libido
- A survey of 188 participants[1]
  - 97 had mood changes and/or sexual side effects
  - 16 reported loss of libido and anorgasmia

## Discussion

- OCPs can have a negative impact on structural brain function, mood, and sexuality
- Women taking OCPs for non-contraceptive uses [2]
  - Higher odds of reporting depressive symptoms when used for pain or other medical conditions
- 14-year prospective study in Denmark of 1 million women using OCPs: [2]
  - Increased risk of:
    - Subsequent treatment with antidepressants
    - Diagnosis of depression

## Conclusion

- Some negative impact of OCPs reported on neurophysiological function, mood, and sexuality
- However, OCPs not always detrimental to mental health [2]
  - Women with bipolar disorder on OCPs less severe course of illness? [2]
- More longitudinal studies needed for further understanding of OCPs impact on structural and functional brain changes
- Recommend Consultation-Liaison Psychiatrists to screen for psychiatric conditions in OCP users

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