



Hormonal Birth Control Effects on the Neurological and Cardiovascular Systems



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Abstract

Objective: Analyze the effects that hormonal birth control has on the cardiovascular and neurological systems of the body

Design: Non-experimental, Comparative

Setting: Fort Hays State University Campus

Participants: Females utilizing hormonal birth control

Methods: Participants will receive a survey to identify how their emotions are affected, along with an MRI to determine structural changes. A D-dimer will be done to determine presence of a venous thrombosis event.

Results: Pending results and data collection

Introduction

In the United States it's common for women to use hormonal birth control pill as a contraceptive. Women take birth control for many reasons including severe period cramps, irregular menstrual cycles, or acne (Cooper et al., 2022). Although research has been conducted it has been found that there are various risks that come with oral contraceptive use. There is an increased risk of cardiovascular issues with hormonal birth control. There is an increased risk of arterial and venous thrombosis, ischemic and hemorrhagic stroke, and myocardial infarction (Fabunmi et al., 2023). In one of the studies, it compared the brain structure of a woman on hormonal birth control and a woman who was naturally cycling, and their brain structures were different. There is an increase in depression, suicidal tendencies and antidepressant prescriptions (Petersen et al., 2021). The focus of this study is to see the effects long term oral hormonal birth control has on the cardiovascular and neurological system.

Purpose Statement:

The purpose of this study is to compare the effects oral hormonal birth control has on the cardiovascular and neurological effects on women on oral hormonal birth control versus women not on hormonal birth control from the ages of 16-25.

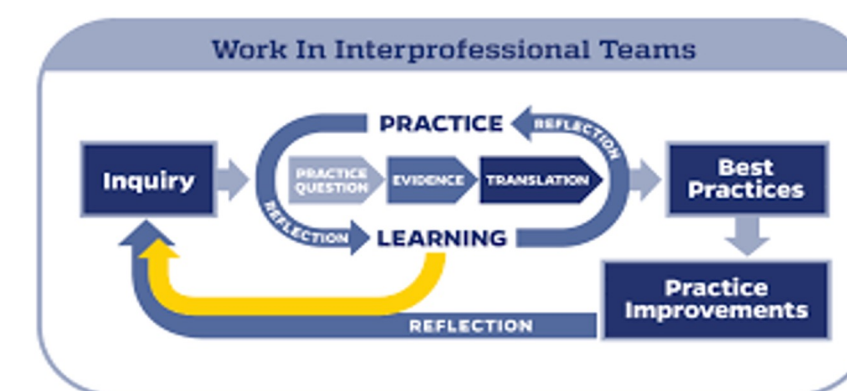
Key Terms:

Usage of oral hormonal birth control: One pill taken daily at the same time in the efforts to prevent pregnancy and minimize cycle symptoms (Cooper et al., 2022).

Cardiovascular and neurological effects: The effects due to birth control include an increased risk of venous thrombosis which are blood clots (Keenan et al., 2018). Neurological changes include structure changes such as the amygdala which alters our emotions and how we think (Brønneck et al., 2020).

Framework

The study utilizes John Hopkins Evidence-Based Practice Model for Nurses because there is a focus on implementing and inquiring best evidence to provide the best practice to improve health quality and outcomes.



<https://www.hopkinsmedicine.org/evidence-based-practice/model-tools>

Methodology

Research Design:

Non-experimental, Comparative
This study looks at the changes women have in their cardiovascular neurological systems in relation to the usage of oral birth control.

Interventions:

IV: Use or lack of usage of oral birth control

DV: The increased risk of a deep venous thrombosis and the structural changes in the brain affecting emotions

Proposed Research Question:

In women ages 16-25, how does being on oral birth control compared to women not on oral birth control affect the cardiovascular and neurological systems within a 5-year time?

Literature Sources:

A systematic study about neuroimaging shows altered results on the brain due to hormonal contraceptives (Brønneck et al., 2020). A different study focused on the cardiovascular effects due to hormonal birth control. These studies showed increased risk of venous thrombosis including vein thrombosis and pulmonary embolism (Keenan et al., 2018).

Sample:

Seeking women ages 16-25 who are using oral contraceptives on the Fort Hays State campus.

Ethical Considerations:

Expedited, seeking Fort Hays State Campus, FHSU Nursing Department, and FHSU IRB approvals.

Data Collection

N=200

n=100 young females on hormonal birth control

n=100 young females not taking hormonal birth control

Over the course of six months data will be collected from 200 women at Fort Hays State University. Data will be taken from women taking hormonal birth control and women who take no birth control. Over the course of the study women will answer a survey regarding their emotions. They will also have a magnetic resonance imaging (MRI) of their brain and a D-dimer test to look for blood clots.

Results/Findings

Projected Data Analysis Method

An independent study would be used to compare the young females who are on oral birth control versus those young females who are not taking birth control.

Literature Findings

Findings support the effects long-term use of hormonal birth control have on the neurological and cardiovascular systems. According to "The Effects of Hormonal Contraceptives on the Brain: A Systematic Review of Neuroimaging Studies", the users of hormonal birth control had a decrease in grey matter in the amygdala. This research showed that the synthetic sex hormone could have a significant neural impact. Behavioral effects due to hormonal birth control have been seen in cognitive tasks such as mental rotation and verbal expression fluency (Brønneck et al., 2020).

Another study compared the usage of birth control and risk of venous thrombosis (VT). There is data pointed towards thrombosis events related to hormonal contraceptives. The study concludes, the risk of cardiovascular issues such as VT increase three-and ninefold for those taking hormonal birth control. "It has been associated with deep vein thrombosis, pulmonary embolism and cerebral VT" (Keenan et al., 2018, p. 4). The way to diagnose a thrombotic event is by a D-dimer.



<https://www.newsweek.com/study-examines-which-birth-control-pills-are-safest-women-high-bmi-1744238>

Discussion

Implications For Nursing

If the pending result show cardiovascular and neurological effects on women ages 16-25 on oral birth control, additional teaching will be needed regarding oral hormonal birth control. By providing education women will have higher knowledge which will allow them be further prepared if choosing to take oral hormonal birth control.

Conclusion

Pending results and data collection. Studies have shown that the more education patients receive regarding the side effects of birth control such as cardiovascular and neurological issues, the more comfortable they are on starting oral birth control.

Future research should acquire data between the relationship between the effects of birth control on the female body. The study could be improved by incrementing the number of participants and looking at participants that have been on birth control within a set amount of years

References

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