Medical Science

pISSN 2321–7359; eISSN 2321–7367

The rife self-confessed disorders associated with hormonal contraceptives

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To Cite:
ALmughais ES, Alreshidi FF, Aboras R, Alarfaj R, Almehmadi SA, ALmohammadi M, ALSugair MM, AlOthman HO, Ali AA, Ali AA, Batran S, Ahmed HG. The rife self-confessed disorders associated with hormonal contraceptives. Medical Science 2022; 26:ms413e2488. doi: https://doi.org/10.54905/disssi/v26i128/ms413e2488

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Peer-Review History
Received: 27 September 2022
Reviewed & Revised: 29/September/2022 to 08/October/2022
Accepted: 11 October 2022
Published: 15 October 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

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ABSTRACT

Background: The side effects of hormonal contraceptives (HCs) vary greatly between women, and different HCs cause distinct side effects. This study aimed to assess the rife of self-confessed disorders associated with hormonal contraceptives. *Methodology:* The study enrolled 200 ladies of reproductive age. One hundred women were HCs users (ascertained as cases) and 100 women non-contraceptives users (ascertained as a control group). *Results:* Irregular menstrual cycles were observed in 29% of the cases and 28% of the controls. In 21% of cases, the duration of menstruation recycling was unpredictable, compared to 26% in controls. Hormonal abnormalities were more common among controls than among cases. The hormonal associated problems in controls were: OR (95%CI) = 2.5550(1.1753 to 5.5545), P-value = 0.0179. The risk of recurrent infection among control group was OR (95%CI) = 1.5952 (0.8984 to 2.8326), P = 0.1109. *Conclusion:* The current study revealed no statistically significant differences in hormonal contraceptive-related illnesses between HCs users and non-users.

Keywords: hormonal contraceptive, birth pills, women, menstrual cycle

1. INTRODUCTION

Many women devote a significant portion of their lives to preventing or planning for pregnancy, and more than 80% of women use contraception at some point in their lives.The effectiveness of contraception is determined by a combination of the pill or device's effectiveness, a person's fecundity, how often they get sexually active, and their continued use (Teal and Edelman, 2021). Meta-analyses have revealed conflicting results on the safety of hormonal contraception, but the overall quality of the evidence supporting these associations between the use of hormonal contraceptives (HCs) and negative health outcomes has not been assessed (Brabaharan et al., 2022). Synthetic ovarian hormone-containing HCs are commonly used by women of

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childbearing age; these HCs have an impact on the user's physiological state by interfering with endogenous hormone concentrations and their influences on the reproductive system (Hilz et al., 2022).

Currently, there are three different forms of oral contraceptive pills: continuous or extended use pills, progesterone-only pills, and combined estrogen-progesterone pills. The estrogen-progesterone combination tablet is the one that is most frequently prescribed. The hormone progesterone is responsible for preventing conception, whereas the estrogen component regulates menstrual blood loss (Cooper et al., 2022). Besides temporary side effects such as changes in the menstrual cycle, other adverse effects have been suggested including venous thromboembolic disease, Arterial/cardiovascular disease, Breast cancer, and cervical cancer (Kitson, 2022). However, the present study aimed to assess the rife confessed disorders associated with hormonal contraceptives.

2. MATERIALS AND METHODS

This is a case-control study that took place in Khartoum, Sudan, from March to September 15th 2022. The study included 200 women of reproductive age. One hundred women used HCs (ascertained as a case group) and 100 women did not utilize contraception (ascertained as a control group). Cases and controls were chosen at random, regardless of age, education level, or other factors. All study participants (cases and controls) were questioned using a structured questionnaire to gather information about their use of HCs.

Statistical analysis

The data were analyzed using SPSS software to yield frequencies, cross-tabulations, and statistically significant values. A Chi-square test with a 95% confidence interval was used. A statistically significant P-value of 0.05 or less was considered.

Informed Consent

Before receiving the information, participants were requested to sign a written informed consent form.

3. RESULTS

This study investigated 200 ladies, aged 18 to 40 years with a mean age of 29 years. Most participants were aged 25-29 years followed by 21-24, and 30-35 years, representing 67/200(33.5%), 42/200(21%), and 36/200(18%), respectively. Most contributors were with primary education levels followed by secondary and university, constituting 70/200(35%), 68/200(34%), and 42/200(21%), correspondingly, as indicated in Table 1, Fig 1.

As shown in Table 2, Fig 2, controls were relatively younger than the cases. The mean age for the cases was mean ± Std. Deviation = 29.06±5.922 vs. 27.47±6.836 for controls. Most cases were with secondary education levels, followed by primary and university, constituting 40%, 28%, and 27%, in this order. Most controls were with primary, secondary, and both (university & illiterate), representing 42%, 28%, and 15%, per capita.

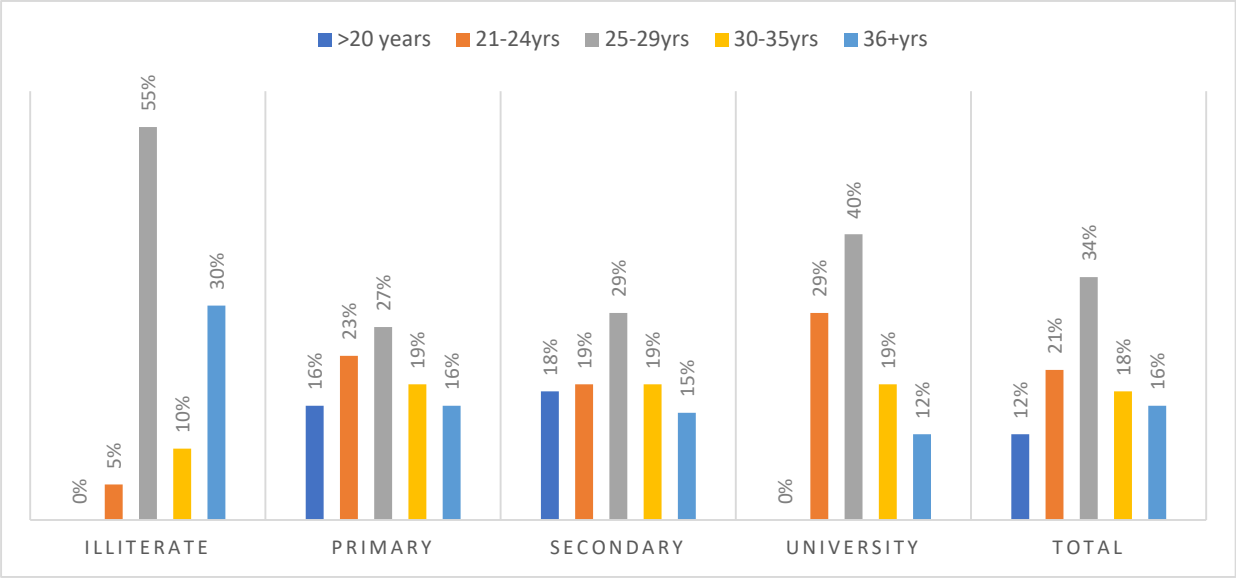

Figure 1 Description of the study subjects by age within the entire education level

Table 1 distribution of the participants' age by education level

Age	Illiterate	Primary	Secondary	University	Total
>20 years	0	11	12	0	23
21-24	1	16	13	12	42
25-29	11	19	20	17	67
30-35	2	13	13	8	36
36+	6	11	10	5	32
Total	20	70	68	42	200

Table 2 Distribution of the cases and controls by age and education level

Variable	Cases (n=100)	Controls(n=100)	Total(n=200)
Age			
>20 years	7	16	23
21-24	18	24	42
25-30	37	30	67
30-35	20	16	36
36+	18	14	32
Education level			
Illiterate	5	15	20
Primary	28	42	70
Secondary	40	28	68
University	27	15	42

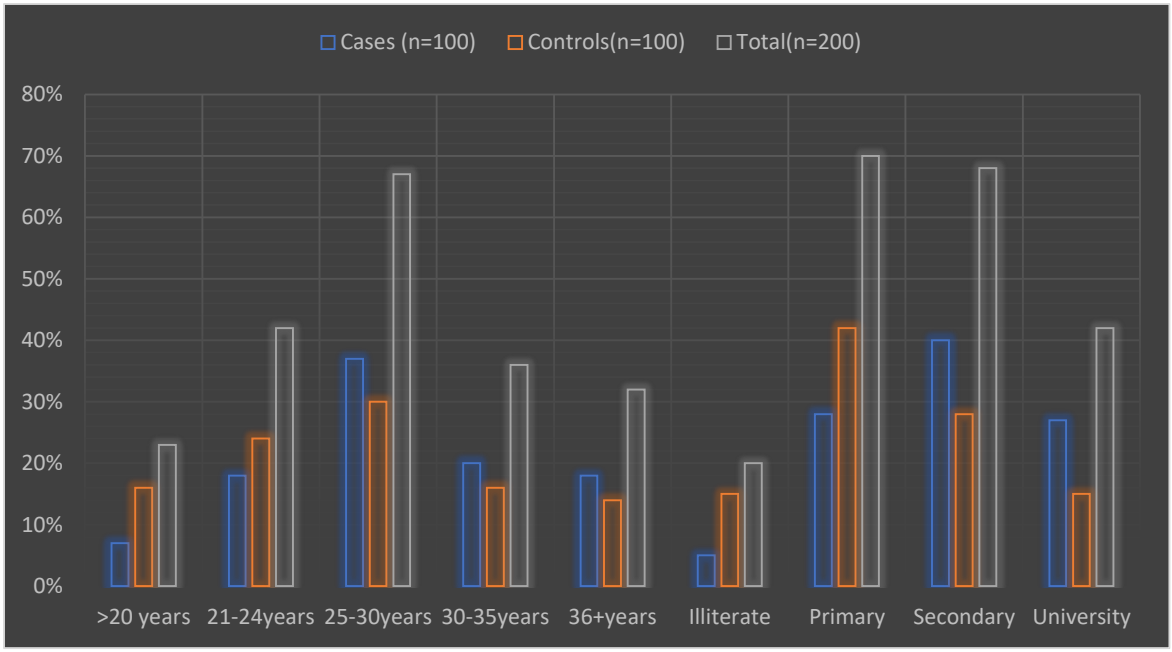

Figure 2 Cases and controls by age and education levels.

Table 3 summarized the distribution of the cases and controls by pathophysiological characteristics. Irregular mensural cycle conditions were seen in 29% of the cases and 28% of controls.The duration of menstrual recycling was unpredictable in 21% of the cases compared to 26% of controls. Hormonal-associated problems were more frequent among controls compared to cases. The Odd Ratio (OR) and 95% confidence interval (95%CI), the hormonal associated problems in controls was OR (95%CI) =2.5550(1.1753 to 5.5545), P-value = 0.0179.

Table 3 Distribution of the cases and controls by pathophysiological characteristics

Variable	Cases (n=100)	Controls(n=100)	Total (n=200)
Regularity of menstrual cycle			
regular	71	72	143
irregular	29	28	57
Period of the menstrual cycle			
1-5 days	64	68	132
6-10 days	35	32	67
11-15 days	1	0	1
Duration of menstrual recycle			
<one month	79	72	151
>one month	0	2	2
unpredictable	21	26	47
Hormonal Associated Problems			
None	89	76	165
Hyperprolactinemia	3	7	10
Polycystic ovary	2	4	6
Hyperthyroidism	0	4	4
increase in FSH	0	2	2
hyperprolactinemia+ polycystic ovary	1	3	4
Polycystic+ hormonal imbalance	0	2	2
mix (hormonal imbalance +ovarian cysts, polycystic ovary +endometrial polyp)	1	1	2
Others (hyperprolactinemia, increase fertility, ovarian cysts, hormonal imbalance, and endometrial polyp)	4	1	5

As summarized in Table 4 and Fig 3, the distribution of the cases and controls by recurrent infections indicated that 67% of the controls and 56% of the cases have reported recurrent infections. The risk of recurrent infection among control group was OR (95%CI) = 1.5952 (0.8984 to 2.8326), P = 0.1109. About 41% of the cases and 49% of the controls were on current antibiotics usage. Cases and controls were equally (12%) on medications for other diseases.

Table 4 Distribution of the cases and controls by recurrent infections and medication usage.

Variable	Cases (n=100)	Controls (n=100)	Total (n=200)
Recurrent infections			
No	44	33	77
Yes	56	67	123
On current antibiotics usage			
No	59	51	110
Yes	41	49	90
On medications for other diseases			
No	88	88	176
Yes	12	12	24

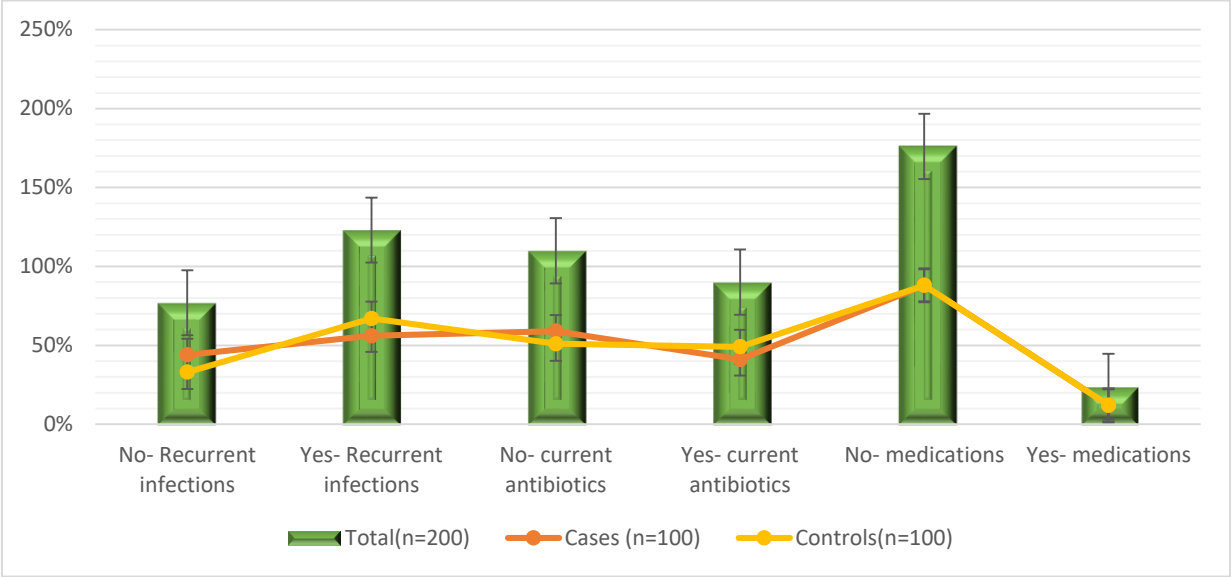

Figure 3 Description of the cases and controls proportions of infections and medications usage

4. DISCUSSION

The use of HCs can modify the same hormonal contents within the body, and some of its constituents may influence the function of some endocrine glands in the body, this study looked at some menstrual cycle-related aspects. The current investigation found no difference in menstrual cycle irregularity, period, and duration of the cycle between cases and controls. Menstrual irregularity (MI), which is a part of the Female Athlete Triad, is widespread in female athletes. A lot of athletes with the Triad start taking HCs for MI, but this makes it difficult to track menstrual cycle regularity and may hide other MI causes (Cheng et al., 2021). The menstrual cycle may be affected by HCs in one of two ways: either by continuing cyclic bleeding or by partially or completely suppressing the regular cycle. Oral contraceptives (OCs) produce an artificial cycle that suppresses the natural ovarian cycle by stopping the hormones on day 21. Progestin-only OCs, subdermal implants, injectable steroids, and levonorgestrel-releasing IUDs all partially or completely suppress the natural cycle. The OCs with the highest progestin and estrogen potency and dose has the lowest amount of bleeding days (Khafagy et al., 2021; Cooper et al., 2022).

Other endocrine Hormonal associated problems, were more frequent among controls compared to cases.Uncertainties exist on how hormonal contraceptives affect the hypothalamus and pituitary's anatomical characteristics. One earlier study linked OC usage to microstructural alterations in the hypothalamus. The hypothalamus, which is influenced by both endogenous and exogenous sex hormones, is the source of signals that control the female reproductive cycle. The hypothalamus regulates sex hormones and plays a key role in emotional expression, sexual behavior, and memory. It is also intricately connected to limbic regions (Catenaccio et al., 2016; Chen et al., 2021; Xu et al., 2022). Endocrine involvement may affect the release of additional hormones that might affect other body tissues and cause a variety of hormonal-related diseases.

The results of the current investigation demonstrated that controls experienced recurrent infections in the female genital tract (FGT) more frequently than cases. The outcomes on reproductive health and the FGT's microbiota are closely connected. There is a correlation between varied, anaerobe-dominated populations with low Lactobacillus abundance and preterm delivery, cervical dysplasia, and STIs, including HIV. A biological mediator of poor reproductive outcomes, vaginal dysbiosis is linked to localized mucosal inflammation. What specifically triggers this FGT inflammation is still a mystery. Studies on people have been difficult because of confounding factors relating to demographic, behavioral, and clinical aspects. More specifically, hormonal contraception is related to alterations in the vaginal flora and mucosal inflammation. These results highlight the importance of a systems-level, integrated approach to studying host-microbe interactions, including an appreciation of important components of the complex FGT mucosa system, such as reproductive hormones (Byrne et al., 2021). Because HCs can alter or interrupt the menstrual cycle, tissue debris and blood associated with the regular cycle may be more likely to increase the risk of opportunistic bacterial infection in non-users.

5. CONCLUSION

The current study discovered no discernible differences in the prevalence of illnesses linked to hormonal contraception between HCs users and non-users.

Acknowledgment: The authors would like to thank the participants in this study for offering the samples.

Informed consent

Written & Oral informed consent was obtained from the patient identified in this study.

Ethical Approval

The ethical committee approved the study protocol at the FMLS, University of Khartoum. Approval number: HERC 0007/CMLS.UOK/9/22.

Funding

This study has not received any external funding.

Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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