Zahedan J Res Med Sci. 2026 July; 28(3): e171202 https://doi.org/10.5812/zjrms-171202

Published Online: 2026 June 23 **Research Article**

Psychological Burden and Reproductive Correlates of Oral Contraceptive Pill Use Among Women in Yemen: A Cross-sectional Study

Afaf Alsharif [1, *], Doa'a Mofleh [2], Angham Alragai [2], Zuhour Sallam [2], Bara'ah Annashmi [2], Awsan Alhermiri [2], Hala Ghaiyath [2]

[1] Department of Gynaecology, Jiblah University for Medical and Health Sciences, Jiblah, Yemen
[2] Department of Obstetrics and Gynecology, College of Midwifery, Jiblah University for Medical and Health Sciences, Jiblah, Yemen

[*] ***Corresponding Author:*** Department of Gynaecology, Jiblah University for Medical and Health Sciences, Jiblah, Yemen. Email: afafmussa2018@gmail.com

Received: 4 April, 2026; **Revised:** 28 April, 2026; **Accepted:** 26 May, 2026

Abstract

Background: Oral contraceptive pills (OCPs) are widely used for family planning. However, evidence regarding their association with psychological symptoms remains inconsistent, particularly in low-resource settings.

Objectives: This study aimed to evaluate the association between OCP use and psychological symptoms, including depression, anxiety, and mood swings, and to identify associated sociodemographic and reproductive factors.

Methods: This cross-sectional study included 400 women aged 18 - 49 years who attended a tertiary hospital in Yemen. Current OCP use was defined as use within the preceding 3 months. Data were collected through structured interviews covering sociodemographic characteristics, reproductive history, and self-reported psychological symptoms. Multivariable logistic regression models were used to estimate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for depression, anxiety, and mood swings after adjustment for age, body mass index, smoking, Qat chewing, duration of OCP use, education, income, parity, and employment status.

Results: Of the 400 participants, 216 (54.0%) were OCP users. The prevalence of depression (18.1% vs. 10.3%, P = 0.039), mood swings (51.9% vs. 40.2%, P = 0.026), and premenstrual syndrome (65.7% vs. 50.0%, P = 0.002) was higher among OCP users than among non-users. In multivariable analyses, OCP use was associated with increased odds of depression (aOR = 2.11; 95% CI, 1.09 - 4.11; P = 0.027) but was not associated with anxiety or mood swings. Longer duration of OCP use was associated with anxiety and mood swings (aOR = 1.01 per month). Education was inversely associated with depression (aOR = 0.37; P = 0.009), whereas employment was positively associated with depression (aOR = 2.55; P = 0.014). Among OCP users, progestin-only formulations were associated with a higher prevalence of psychological symptoms than combined formulations.

Conclusions: Oral contraceptive pill use was associated with a higher likelihood of self-reported depression, but not with anxiety or mood swings. Hormonal formulation and duration of use, together with socioeconomic and contextual factors, may influence psychological outcomes. However, causality cannot be inferred, and prospective studies are needed to clarify these associations and to inform individualized contraceptive counseling.

Keywords: Oral Contraceptives, Female Contraceptive Agents, Depression, Anxiety, Mood Disorders, Reproductive Health

1. Background

Oral contraceptive pills (OCPs) are among the most widely used reversible contraceptive methods worldwide and are generally considered effective and well tolerated (1). However, concerns remain regarding their potential effects on psychological well-being, including depressive symptoms, anxiety, and mood changes (2, 3). Such symptoms have been reported as reasons for discontinuation among some users (4).

Evidence regarding the association between OCP use and psychological outcomes is inconsistent. Some

How to Cite: Alsharif A, Mofleh D, Alragai A, Sallam Z, Annashmi B, et al. Psychological Burden and Reproductive Correlates of Oral Contraceptive Pill Use Among Women in Yemen: A Cross-sectional Study. Zahedan J Res Med Sci. 2026;28(3):e171202. doi: https://doi.org/10.5812/zjrms-171202

studies have suggested an increased risk of mood-related symptoms (5, 6), whereas others have reported no association or even potential benefits in specific populations (7, 8). Psychological responses to OCPs may vary according to the formulation, duration of use, and individual susceptibility (9, 10). In addition, socioeconomic and contextual factors may influence both contraceptive use and symptom reporting; these factors are often underexplored, particularly in resource-limited settings (11-16).

This issue is especially relevant in Middle Eastern populations, where sociocultural norms, environmental stressors, and lifestyle factors may shape reproductive health behaviors and psychological outcomes (10, 17). In Yemen, evidence on the psychological and reproductive correlates of OCP use is scarce, despite its potential importance for clinical practice and family planning services (18, 19).

2. Objectives

This study aimed to assess the association between OCP use and psychological symptoms among women of reproductive age in Yemen. The specific objectives were to compare the prevalence of depression, anxiety, and mood swings between OCP users and non-users; identify associated sociodemographic and clinical factors; and examine the relationship between the duration of OCP use and psychological symptoms. Given the cross-sectional design, the study assessed associations rather than causal relationships.

3. Methods

3.1. Study Design and Setting

This cross-sectional study was conducted at Jiblah University Hospital, affiliated with Jiblah University for Medical and Health Sciences, Ibb Governorate, Yemen, between 1 December 2024 and 28 March 2025. The hospital is a referral center that provides outpatient gynecology and family planning services to urban and surrounding rural populations.

3.2. Participants and Sampling

Women aged 18 - 49 years who attended outpatient clinics during the study period were recruited using consecutive sampling during weekday clinic hours. Eligible participants were those able to provide informed consent and complete the interview. Women with severe cognitive impairment or conditions that limited reliable communication were excluded.

Current OCP use was defined as self-reported use within the preceding 3 months. Non-users were defined as women who had never used OCPs or who had discontinued use more than 3 months before the interview.

3.3. Sample Size

The sample size was calculated based on the detection of a mean difference of 1.5 points, with a standard deviation of 2.8, in a psychological symptom score between groups, using a two-sided alpha of 0.05 and 80% power. The minimum required sample size was 376. To account for potential missing data, 400 participants were recruited.

3.4. Data Collection

Data were collected using structured, interviewer-administered questionnaires in Arabic. The instrument was adapted from validated components and pilot-tested in 30 participants.

The questionnaire included the following domains:

1) Sociodemographic characteristics: Age, education (illiterate, primary, secondary, or higher), occupation (housewife, farmer, labourer, or other), and income (low, middle, or high).

2) Clinical and reproductive history: Parity, body mass index (BMI, kg/m^2), and self-reported chronic conditions, such as hypertension and diabetes mellitus.

3) Contraceptive history: Type of OCP, categorized as combined or progestin-only, and duration of use in months.

4) Psychological symptoms: Self-reported presence or absence of depression, anxiety, mood swings, and premenstrual syndrome.

3.5. Outcome Measures

The primary outcome was self-reported depression, assessed as a binary variable. Secondary outcomes were anxiety and mood swings, also assessed as binary variables. An exploratory composite score combining the three symptoms was evaluated but showed low internal consistency (Cronbach $\alpha = 0.585$) and was not used in subsequent analyses.

3.6. Statistical Analysis

Data were analyzed using R version 4.2 (R Foundation for Statistical Computing, Vienna, Austria). Continuous variables were summarized as mean ± standard deviation and compared using independent t tests. Categorical variables were presented as frequencies and

percentages and compared using the chi-square test or Fisher exact test, as appropriate.

Multivariable logistic regression models were constructed to estimate aORs and 95% CIs for depression, anxiety, and mood swings. Covariates were selected a priori based on clinical relevance and included OCP use, age, BMI, smoking status, Qat chewing, duration of OCP use, education (any formal schooling vs. illiterate), income (low vs. middle/high), parity, and working status (employed vs. housewife). All variables were entered simultaneously into each model.

Subgroup analyses comparing combined and progestin-only OCP users were exploratory and unadjusted. Spearman correlation was used as an exploratory measure of association between duration of OCP use and psychological symptoms.

Missing data were minimal (< 0.5% for all variables). Complete-case analysis was performed. A two-sided P value < 0.05 was considered statistically significant.

3.7. Ethical Approval

The study was approved by the Research Ethics Committee (Institutional Review Board) of Jiblah University, Faculty of Medicine and Health Sciences, Yemen (reference No. 35; approved 1 December 2024). Written informed consent was obtained from all participants before enrollment. The study was conducted in accordance with the Declaration of Helsinki.

4. Results

4.1. Participant Characteristics

A total of 400 women were included, comprising 216 OCP users and 184 non-users. Baseline characteristics are presented in Table 1. Oral contraceptive pill users had a significantly lower mean BMI than non-users (23.1 ± 3.5 vs. 24.5 ± 4.0 kg/m^2; P < 0.001) and a lower prevalence of hypertension (2.8% vs. 7.6%; P = 0.048). Other baseline characteristics were comparable between the groups (all P > 0.05).

4.2. Psychological and Reproductive Outcomes

Compared with non-users, oral contraceptive pill users had a significantly higher prevalence of depression (18.1% vs. 10.3%; P = 0.039), mood swings (51.9% vs. 40.2%; P = 0.026), and premenstrual syndrome (65.7% vs. 50.0%; P = 0.002) (Table 2). Anxiety and reduced sexual desire did not differ significantly between the groups (P = 0.225 and P = 0.948, respectively).

4.3. Independent Predictors of Psychological Outcomes

In a multivariable logistic regression analysis (Table 3), OCP use was independently associated with higher odds of depression (aOR = 2.11; 95% CI, 1.09 - 4.11; P = 0.027). Higher education was associated with lower odds of depression (aOR = 0.37; 95% CI, 0.18 - 0.78; P = 0.009), whereas working status was associated with higher odds of depression (aOR = 2.55; 95% CI, 1.21 - 5.38; P = 0.014).

Oral contraceptive pill use was not significantly associated with anxiety (aOR = 1.27; 95% CI, 0.82 - 1.96; P = 0.289). However, OCP use duration and low income were significantly associated with anxiety (aOR = 1.01 per month; 95% CI, 1.002 - 1.016; P = 0.014; and aOR = 2.09; 95% CI, 1.13 - 3.86; P = 0.018, respectively).

For mood swings, OCP use did not reach statistical significance after adjustment (aOR = 1.47; 95% CI, 0.96 - 2.27; P = 0.080), whereas duration of use remained significantly associated with mood swings (aOR = 1.01 per month; 95% CI, 1.002 - 1.016; P = 0.015).

4.4. Subgroup Analysis

Among OCP users, progestin-only formulations were associated with a higher prevalence of depression (24.6% vs. 10.3%; P = 0.015), anxiety (58.2% vs. 33.8%; P = 0.001), and mood swings (56.6% vs. 39.7%; P = 0.048) than combined formulations (Table 4). Other outcomes were comparable between the groups.

4.5. Correlation Analysis

Among OCP users, duration of use showed weak, non-significant correlations with anxiety (ρ = 0.102; P = 0.136) and mood swings (ρ = 0.104; P = 0.129).

4.6. Missing Data

Missing data were minimal (< 0.5% for all variables). Complete-case analysis was applied for all analyses.

5. Discussion

In this study of women attending a university hospital in Yemen, OCP use was associated with a higher likelihood of self-reported depression after adjustment for measured confounders. In contrast, no independent association was observed between OCP use and anxiety or mood swings in the multivariable models. These findings suggest that the relationship between hormonal contraception and psychological symptoms is selective rather than uniform and may vary by outcome, formulation, and duration of use.

Table 1. Baseline Characteristics of Study Participants by Oral Contraceptive Pill Use Status [a]

Characteristic	OCP Users (n = 216)	Non-users (n = 184)	P Value
Age, y	31.8 ± 6.9	33.0 ± 8.9	0.136
Body Mass Index, kg/m^2	23.1 ± 3.5	24.5 ± 4.0	< 0.001
Education			0.481
Illiterate	43 (19.9)	43 (23.4)	
Primary	54 (25.0)	35 (19.0)	
Secondary	65 (30.1)	57 (31.0)	
Higher	50 (23.1)	46 (25.0)	
Occupation			0.141
Housewife	177 (81.9)	138 (75.0)	
Farmer	7 (3.2)	13 (7.1)	
Laborer	6 (2.8)	3 (1.6)	
Other	26 (12.0)	30 (16.3)	
Income			0.231
Low	26 (12.0)	27 (14.7)	
Middle	150 (69.4)	112 (60.9)	
High	37 (17.1)	41 (22.3)	
Smoking	57 (26.4)	49 (26.6)	1.000 [b]
Qat chewing	118 (54.6)	110 (59.8)	0.349
Hypertension	6 (2.8)	14 (7.6)	0.048
Diabetes mellitus	8 (3.7)	11 (6.0)	0.406

[a] Values are expressed as No. (%) or mean ± SD.

[b] Fisher exact test. Other P values were calculated using the chi-square test or independent t test, as appropriate. Percentages are based on available data. Abbreviations: Qat, Catha edulis; SD, standard deviation.

Table 2. Psychological and Reproductive Outcomes by Oral Contraceptive Pill Use Status [a]

Outcomes	OCP Users (n = 216)	Non-users (n = 184)	P-Value
Depression	39 (18.1)	19 (10.3)	0.039
Anxiety	101 (46.8)	74 (40.2)	0.225
Mood swings	112 (51.9)	74 (40.2)	0.026
Premenstrual syndrome	142 (65.7)	92 (50.0)	0.002
Reduced sexual desire	66 (30.6)	55 (29.9)	0.948

[a] Values are expressed as No. (%). P values were calculated using the chi-square test.

Our results are broadly consistent with portions of the existing literature, which has produced mixed findings on the mental health effects of hormonal contraception (20). Several observational studies and meta-analyses have reported an increased risk of depressive symptoms among OCP users, particularly shortly after initiation (10, 21-23), whereas others have found little or no association after baseline differences are considered (24, 25). Notably, some evidence suggests that, in specific subgroups, particularly women with significant premenstrual symptoms, OCPs may have mood-stabilizing effects (26, 27).

Differences across studies likely reflect variation in study design, population characteristics, contraceptive formulation, duration of exposure, and measurement of psychological outcomes. In this context, our findings align more closely with reports linking OCP use to depressive symptoms, while providing less support for a consistent association with anxiety or mood instability.

The pattern observed in our sample may also reflect confounding by underlying health and socioeconomic factors. Oral contraceptive pill users had lower BMI and lower rates of hypertension, suggesting a more favorable baseline health profile than non-users. Such

Table 3. Multivariable Logistic Regression Analysis of Factors Associated with Psychological Outcomes [a]

Predictors	Depression OR	P-Value	Anxiety OR	P Value	Mood Swings OR	P Value
OCP use (yes vs. no)	2.11 (1.09 - 4.11)	0.027	1.27 (0.82 - 1.96)	0.289	1.47 (0.96 - 2.27)	0.080
Age, per year	1.06 (1.00 - 1.12)	0.065	1.03 (0.99 - 1.07)	0.171	1.02 (0.98 - 1.06)	0.419
Body mass index, per kg/m^2	0.94 (0.87 - 1.03)	0.176	1.01 (0.95 - 1.07)	0.717	0.95 (0.90 - 1.01)	0.121
Smoking (yes vs. no)	0.54 (0.26 - 1.14)	0.109	1.14 (0.69 - 1.87)	0.615	0.95 (0.58 - 1.55)	0.823
Qat chewing (yes vs. no)	1.45 (0.76 - 2.74)	0.256	0.81 (0.52 - 1.26)	0.354	0.96 (0.62 - 1.49)	0.857
Duration of OCP use (mo)	1.01 (0.996 - 1.02)	0.253	1.01 (1.002 - 1.016)	0.014	1.01 (1.002 - 1.016)	0.015
Educated (any schooling vs. illiterate)	0.37 (0.18 - 0.78)	0.009	0.77 (0.44 - 1.35)	0.359	0.69 (0.39 - 1.22)	0.202
Low income (vs. middle/high)	0.91 (0.38 - 2.18)	0.831	2.09 (1.13 - 3.86)	0.018	1.37 (0.75 - 2.51)	0.310
Parity, per child	0.93 (0.77 - 1.12)	0.418	0.95 (0.83 - 1.09)	0.497	1.03 (0.90 - 1.18)	0.690
Working (vs. housewife)	2.55 (1.21 - 5.38)	0.014	0.91 (0.53 - 1.55)	0.722	0.96 (0.56 - 1.63)	0.867

[a] Values are expressed as 95% CI. Abbreviations: OR, adjusted odds ratio; CI, confidence interval. All variables were entered simultaneously into each model. Continuous variables are expressed per unit increase. Missing data were handled using complete-case analysis.

Table 4. Psychological Outcomes by Oral Contraceptive Pill Formulation Among Users [a]

Outcomes	Combined Pill (n = 68)	Progestin-only Pill (n = 122)	P-Value
Depression	7 (10.3)	30 (24.6)	0.015
Anxiety	23 (33.8)	71 (58.2)	0.001
Mood swings	27 (39.7)	69 (56.6)	0.048
Premenstrual syndrome	52 (76.5)	73 (59.8)	0.068
Reduced sexual desire	23 (33.8)	35 (28.7)	0.782

[a] Values are expressed as No. (%). P-values were calculated using the chi-square test. Formulation data were available for 190 participants; comparisons are unadjusted.

differences may indicate selection effects or residual confounding because women who choose or are prescribed OCPs may differ in important ways from those who do not use them. Therefore, the observed association with depression may partly reflect unmeasured characteristics, including prior mental health status, health-seeking behavior, relationship context, or other social determinants of health.

Formulation type also appeared to matter. Clinical practice guidelines for general practitioners recommend combined oral contraceptives containing levonorgestrel and ethinyl estradiol as the first-line choice (28). In this study, progestin-only pill users tended to report higher rates of depression, anxiety, and mood swings than users of combined OCPs. Our findings align with previous reports by Wallis et al. and Ciarcia et al. (9, 29). Although this finding is biologically plausible, it should be interpreted cautiously because the subgroup analysis was exploratory and unadjusted. If confirmed in prospective studies, differences between formulations could reflect variation in the neuroendocrine effects of estrogen and progestin, including their influence on serotonergic and GABAergic pathways (30, 31). At present, however, these data are insufficient to support firm conclusions on comparative psychological effects by formulation.

Duration of use showed a small association with anxiety and mood-related symptoms, but the effect size was modest and its clinical significance remains uncertain. Evidence on the effect of OCP duration on psychological symptoms remains inconsistent; while some studies suggest an increased burden of symptoms over time (5, 32), others report no clear cumulative pattern (33). In our study, the observed associations could reflect biological adaptation, differential discontinuation among symptomatic users, or residual confounding rather than a direct dose-response relationship. Prospective longitudinal studies are needed to determine whether symptom patterns truly change with continued exposure or primarily reflect selective retention and reporting.

Several sociodemographic factors were also associated with psychological outcomes. Higher education was associated with lower odds of depression, whereas employment outside the home was associated with higher odds of depression. These findings are

consistent with the broader literature showing that education may support coping resources and mental health literacy (14, 34), whereas work-related strain can increase psychological distress in fragile or resource-limited settings (9, 10). More generally, socioeconomic disadvantage has been linked to poorer mental health among women of reproductive age, underscoring that contraceptive exposure should be interpreted within a wider social context rather than in isolation.

The local context is also important. The high baseline prevalence of anxiety in both users and non-users likely reflects the burden of living in a conflict-affected setting marked by economic instability, insecurity, and limited access to mental health care (10). In such environments, symptoms may be amplified by chronic stress and may also be more readily reported during clinical encounters (14, 35). Although qat chewing was not independently associated with outcomes in the adjusted models, its potential neuropsychiatric effects have been reported elsewhere and may depend on frequency, dose, and cultural context (10, 36). These factors highlight the need to interpret reproductive health and mental health associations within the broader social and environmental conditions in which women live.

5.1. Study Limitations

This study has several limitations. Its cross-sectional design precludes causal inference and does not establish temporality between OCP use and psychological symptoms. Hospital-based sampling limits generalisability to the wider population, and self-reported symptoms were not assessed using standardized diagnostic instruments. The subgroup analysis by formulation was unadjusted and should therefore be regarded as exploratory. Although missing data were minimal, complete-case analysis may still introduce bias if data were not missing completely at random. In addition, unmeasured factors such as psychiatric history, duration of prior contraceptive exposure, and detailed hormonal composition may have influenced the observed associations.

5.2. Conclusions

Overall, OCP use was associated with a higher likelihood of self-reported depression, whereas associations with anxiety and mood swings were not statistically significant after adjustment. Longer duration of use was associated with anxiety and mood-related symptoms, although the magnitude of these effects was small and their clinical relevance remains uncertain. Educational level, employment status, and broader contextual factors also appeared to influence psychological outcomes, indicating that mental health among women of reproductive age is shaped by both contraceptive exposure and the social environment. These findings do not demonstrate causality, but they support the inclusion of psychological assessment in contraceptive counseling, particularly in high-stress, resource-limited settings. Prospective longitudinal studies using validated mental health measures are needed to clarify temporal relationships and disentangle hormonal effects from socioeconomic and psychosocial vulnerability.

Footnotes

AI Use Disclosure: For the purpose of Text Editing, the Deepseek was used Moderate in the Etc section.

Authors' Contribution: Conceptualization/design and manuscript drafting: Afaf A. and Faisal A.; Data acquisition: Doa'a M., Angham A., Zuhour S., Bara'ah A., Awsan A., and Hala G.; Statistical analysis: Afaf A.; Data interpretation: Afaf A., Faisal A., Doa'a M., Angham A., Zuhour S., Bara'ah A., Awsan A., and Hala G.; Critical revision/final approval: All authors.

Conflict of Interests Statement: The authors do not declare any conflicts of interests for this study.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Funding/Support: No funding was received for this study.

Informed Consent: Written or electronic informed consent was obtained from all participants prior to their involvement. To ensure participant confidentiality, no personally identifiable information was collected, and all data were anonymized during analysis.

References

1. Barton BE, Erickson JA, Allred SI, Jeffries JM, Stephens KK, Hunter MI, et al. Reversible female contraceptives: historical, current, and future perspectives†. *Biol Reprod*. 2024;**110**(1):14-32. [PubMed ID: 37941453]. [PubMed Central ID: PMC10790348]. https://doi.org/10.1093/biolre/ioad154.
2. Liu Z, Kuai M. The global burden of depression in adolescents and young adults, 1990 - 2021: systematic analysis of the global burden of disease study. *BMC Psychiatry*. 2025;**25**(1):767. [PubMed ID: 40770320]. [PubMed Central ID: PMC12326784]. https://doi.org/10.1186/s12888-025-07201-8.
3. Hall KS, White KO, Rickert VI, Reame N, Westhoff C. Influence of depressed mood and psychological stress symptoms on perceived

oral contraceptive side effects and discontinuation in young minority women. *Contraception*. 2012;**86**(5):518-25. [PubMed ID: 22673038]. [PubMed Central ID: PMC3440521]. https://doi.org/10.1016/j.contraception.2012.04.010.

4. Novick AM, Johnson RL, Lazorwitz A, Belyavskaya A, Berkowitz L, Norton A, et al. Discontinuation of hormonal contraception due to changes in mood and decreases in sexual desire: the role of adverse childhood experiences. *Eur J Contracept Reprod Health Care*. 2022;**27**(3):212-20. [PubMed ID: 35133231]. [PubMed Central ID: PMC9133050]. https://doi.org/10.1080/13625187.2022.2030702.
5. Skovlund CW, Mørch LS, Kessing LV, Lidegaard Ø. Association of Hormonal Contraception With Depression. *JAMA Psychiatry*. 2016;**73**(11):1154-62. [PubMed ID: 27680324]. https://doi.org/10.1001/jamapsychiatry.2016.2387.
6. Johansson T, Vinther Larsen S, Bui M, Ek WE, Karlsson T, Johansson Å. Population-based cohort study of oral contraceptive use and risk of depression. *Epidemiol Psychiatr Sci*. 2023;**32**. e39. [PubMed ID: 37303201]. [PubMed Central ID: PMC10294242]. https://doi.org/10.1017/s2045796023000525.
7. Toffol E, Heikinheimo O, Koponen P, Luoto R, Partonen T. Further evidence for lack of negative associations between hormonal contraception and mental health. *Contraception*. 2012;**86**(5):470-80. [PubMed ID: 22465115]. https://doi.org/10.1016/j.contraception.2012.02.014.
8. Bosmans NHM, Zarchev M, Berges L, Kamperman AM, Poels EMP, Hoogendijk WJG, et al. Associations between oral hormonal contraceptives and internalising problems in adolescent girls. *BJPsych Open*. 2025;**11**(2). e40. [PubMed ID: 40034053]. [PubMed Central ID: PMC12001913]. https://doi.org/10.1192/bjo.2024.859.
9. Ciarcia J, Huckins LM. Oral Contraceptives and the Risk of Psychiatric Side Effects: A Review. *Complex Psychiatry*. 2024;**10**(1 - 4):36-44. [PubMed ID: 39148498]. [PubMed Central ID: PMC11324216]. https://doi.org/10.1159/000539515.
10. Alsharif A, Al-Qadasi R, Alrefaey R, Alshahary D, Al-Tahary A, Ahmed R, et al. Prevalence and Lifestyle Correlates of Premenstrual Syndrome and Its Severity Among Female University Students in Yemen: A Cross-Sectional Study of Dietary Habits and Qat Use. *Cureus*. 2026;**18**(2). e102968. [PubMed ID: 41798526]. [PubMed Central ID: PMC12965376]. https://doi.org/10.7759/cureus.102968.
11. Sharifi Z, Yousufzai S, Akbari M, Poustchi H, Gandomkar A, Malekzadeh F, et al. Oral contraceptive use and its sociocultural determinants in Iranian women: a secondary cross-sectional analysis from the PARS cohort study. *Contracept Reprod Med*. 2025;**10**(1). 54. [PubMed ID: 40898268]. [PubMed Central ID: PMC12403471]. https://doi.org/10.1186/s40834-025-00389-w.
12. Marzban A. Psychological Well-Being of Participants in Mass Gatherings: Stress, Anxiety. *Mass Gathering Medical Journal*. 2025;**2**(2).
13. Ye M, Shou M, Zhang J, Hu B, Liu C, Bi C, et al. Efficacy of cognitive therapy and behavior therapy for menopausal symptoms: a systematic review and meta-analysis. *Psychological Medicine*. 2022;**52**(3):433-45. [PubMed ID: 35199638]. https://doi.org/10.1017/S0033291721005407.
14. Luthuli MQ, Nkala-Dlamini B, Nzuza-Moroe N. Influence of mental health conditions and symptoms on contraceptive use among adolescent girls and young women: a scoping review. *Front Reprod Health*. 2025;**7**. 1620736. [PubMed ID: 40964157]. [PubMed Central ID: PMC12436440]. https://doi.org/10.3389/frph.2025.1620736.
15. Chang YC, Sayar S, Ahmadzadeh A, Ghazanfarpour M, Asgari MR, Babakhanian M. Efficacy of Psychological Interventions on Psychological and Vasomotor Symptoms in Menopausal Women with Breast Cancer: A Systematic Review and Meta-Analysis. *International Journal of Cancer Management*. 2026;**19**(1). https://doi.org/10.5812/ijcm-162733.
16. Hopkins N, Reicher S. The psychology of health and well-being in mass gatherings: A review and a research agenda. *Journal of epidemiology and global health*. 2015;**6**(2):49. [PubMed ID: 26164280]. [PubMed Central ID: PMC7320437]. https://doi.org/10.1016/j.jegh.2015.06.001.
17. Fouad RA, AlShaikh-Mubarak GA, Alruwaished FF, Alrasheed NY, Alessad RA, Alabdullah RN, et al. Prevalence and Impact of Contraceptive Misconceptions Among Married Women in Al-Ahsa, Saudi Arabia. *Healthcare (Basel)*. 2025;**13**(24):3256. [PubMed ID: 41464325]. [PubMed Central ID: PMC12732721]. https://doi.org/10.3390/healthcare13243256.
18. Boah M, Adokiya MN, Hyzam D. Prevalence and factors associated with the utilisation of modern contraceptive methods among married women of childbearing age in Yemen: a secondary analysis of national survey data. *BMJ Open*. 2023;**13**(6). e071936. [PubMed ID: 37270197]. [PubMed Central ID: PMC10254602]. https://doi.org/10.1136/bmjopen-2023-071936.
19. Amat Al-Khaleq OM, Abdullatif DA. Prevalence and Predictors of Oral Contraceptive Pills Use Among Yemeni Women in Dhamar Area. *American Journal of Health Research*. 2016;**4**(1):1-5. https://doi.org/10.11648/j.ajhr.20160401.11.
20. Martell S, Marini C, Kondas CA, Deutch AB. Psychological side effects of hormonal contraception: a disconnect between patients and providers. *Contracept Reprod Med*. 2023;**8**(1). 9. [PubMed ID: 36647102]. [PubMed Central ID: PMC9842494]. https://doi.org/10.1186/s40834-022-00204-w.
21. Shelef DQ, Raine-Bennett T, Chandra M, Adler N, Marshall CJ, Steinberg JR. The association between depression and contraceptive behaviors in a diverse sample of new prescription contraception users. *Contraception*. 2022;**105**:61-6. [PubMed ID: 34481788]. [PubMed Central ID: PMC8805450]. https://doi.org/10.1016/j.contraception.2021.08.015.
22. Maqlam T, Saeed MAA, Binbreak S, Maad AH. Utilization of Contraception Methods and Side Effects among Women Attending the Maternal and Child Healthcare Centers in Mukalla City, Hadhramout, Yemen. *Yemeni Journal for Medical Sciences*. 2025;**19**(11). https://doi.org/10.20428/yjms.v19i11.3333.
23. Edwards AC, Lönn SL, Crump C, Mościcki EK, Sundquist J, Kendler KS, et al. Oral contraceptive use and risk of suicidal behavior among young women. *Psychol Med*. 2022;**52**(9):1710-7. [PubMed ID: 33084550]. [PubMed Central ID: PMC8917871]. https://doi.org/10.1017/s0033291720003475.
24. McKetta S, Keyes KM. Oral contraceptive use and depression among adolescents. *Ann Epidemiol*. 2019;**29**:46-51. [PubMed ID: 30674431]. [PubMed Central ID: PMC6349422]. https://doi.org/10.1016/j.annepidem.2018.10.002.
25. Bengtsdotter H, Lundin C, Gemzell Danielsson K, Bixo M, Baumgart J, Marions L, et al. Ongoing or previous mental disorders predispose to adverse mood reporting during combined oral contraceptive use. *Eur J Contracept Reprod Health Care*. 2018;**23**(1):45-51. [PubMed ID: 29323577]. https://doi.org/10.1080/13625187.2017.1422239.
26. Mengelkoch S, Afshar K, Slavich G. Hormonal Contraceptive Use and Affective Disorders: An Updated Review. *Open Access J Contracept*. 2025;**16**:1-29. [PubMed ID: 39959454]. [PubMed Central ID: PMC11829607]. https://doi.org/10.2147/oajc.S431365.
27. Lewis CA, Kimmig ACS, Zsido RG, Jank A, Derntl B, Sacher J. Effects of Hormonal Contraceptives on Mood: A Focus on Emotion Recognition and Reactivity, Reward Processing, and Stress Response. *Curr Psychiatry Rep*. 2019;**21**(11). 115. [PubMed ID: 31701260]. [PubMed Central ID: PMC6838021]. https://doi.org/10.1007/s11920-019-1095-z.
28. Stewart M, Black K. Choosing a combined oral contraceptive pill. *Aust Prescr*. 2015;**38**(1):6-11. [PubMed ID: 26648603]. [PubMed Central ID: PMC4654044]. https://doi.org/10.18773/austprescr.2015.002.

29. Wallis B, Carter G, Gimbel LA, Wright E, Sanders J. Associations between self-reported mood-related symptoms and early contraceptive method discontinuation. *Am J Obstet Gynecol*. 2026. [PubMed ID: 41791561]. https://doi.org/10.1016/j.ajog.2026.02.047.
30. Liu Y, Fu X, Guan B, Cui R, Yang W. The Role and Mechanism of Estrogen in Perimenopausal Depression. *Curr Neuropharmacol*. 2026;**24**(1):36-57. [PubMed ID: 40277106]. [PubMed Central ID: PMC13054734]. https://doi.org/10.2174/011570159x371863250327073835.
31. Mu E, Kulkarni J. Hormonal contraception and mood disorders. *Aust Prescr*. 2022;**45**(3):75-9. [PubMed ID: 35755988]. [PubMed Central ID: PMC9218393]. https://doi.org/10.18773/austprescr.2022.025.
32. Lundin C, Wikman A, Lampa E, Bixo M, Gemzell-Danielsson K, Wikman P, et al. There is no association between combined oral hormonal contraceptives and depression: a Swedish register-based cohort study. *Bjog*. 2022;**129**(6):917-25. [PubMed ID: 34837324]. https://doi.org/10.1111/1471-0528.17028.
33. Kellock MD, Potts HWW, Pinho G, Chilanga F, Farič N. Association of oral contraceptives with depression symptoms, diagnosis, and treatment in healthy women: A meta-analysis. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2026;**323**. 115144. [PubMed ID: 42061049]. https://doi.org/10.1016/j.ejogrb.2026.115144.
34. Toffol E, But A, Heikinheimo O, Latvala A, Partonen T, Haukka J. Associations between hormonal contraception use, sociodemographic factors and mental health: a nationwide, register-based, matched case-control study. *BMJ Open*. 2020;**10**(10). e040072. [PubMed ID: 33060091]. [PubMed Central ID: PMC7566729]. https://doi.org/10.1136/bmjopen-2020-040072.
35. Lund C, Jordans MJD, Garman E, Araya R, Avendano M, Bauer A, et al. Strengthening self-regulation and reducing poverty to prevent adolescent depression and anxiety: Rationale, approach and methods of the ALIVE interdisciplinary research collaboration in Colombia, Nepal and South Africa. *Epidemiol Psychiatr Sci*. 2023;**32**. e69. [PubMed ID: 38088153]. [PubMed Central ID: PMC10803189]. https://doi.org/10.1017/s2045796023000811.
36. Thabet A, Alothli E, Ahmed F, Alhajeeli N. Impact of menstrual cycle phases and dysmenorrhea on academic performance and psychosocial well-being among female university students in Yemen: A cross-sectional study at Ibb University. *Qatar Journal of Public Health*. 2026;**2026**(1). https://doi.org/10.5339/qjph.2026.3.