MSI Journal of Multidisciplinary Research (MSIJMR)

Mood-Related Side Effects of Hormonal Birth Control in College Women: A Cross-Sectional Study

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The LSU Ogden Honors College Honors Thesis Scholarship Fund supported this work.

Received: 10-November-2025
Accepted: 01-December-2025
Published: 04-December-2025

This article is published in the **MSI Journal of Multidisciplinary Research (MSIJMR) ISSN 3049-0669 (Online)**

The journal is managed and published by MSI Publishers.

Volume: 2, Issue: 12 (December-2025)

ABSTRACT: Objective: Hormonal birth control (HBC) is widely used among college-aged women for pregnancy prevention and menstrual regulation, yet its psychological side effects remain underexplored. This study investigates the incidence and impact of HBC-related side effects, particularly mood changes, among female students at Louisiana State University.

Methods: A cross-sectional web-based survey was administered to a convenience sample of 446 female students aged 18 and older. Participants completed validated scales measuring perceived stress, everyday college experiences, and affective lability.

Results: The study found that mood changes, such as anxiety, sadness, and irritability, were the most reported side effects among both current and former HBC users. Weight gain and menstrual irregularities also ranked highly. Notably, participants with diagnosed mental health disorders reported significantly more adverse effects, including depression, decreased libido, and headaches. Qualitative responses

highlighted emotional instability and dissatisfaction with provider communication as the main reasons for discontinuing use.

Conclusions: These findings highlight the importance of better education and counseling about HBC's psychological effects. Healthcare providers should actively discuss potential mood-related side effects and suggest alternative dosing options to reduce distress. Since mental health diagnoses are common among college students, personalized contraceptive counseling is crucial. This study adds to a growing body of evidence supporting more comprehensive reproductive health care and informed choices for young women.

Keywords: *hormonal birth control; college students; mental health; mood disorders.*

Introduction

The term "birth control" was coined by Margaret Sanger in the 1914 Women's Rebel newspaper. At that time, it continued to symbolize women's autonomy and transformed the gender and class structure by empowering the poor and women. Although the term "birth control" was linked to a specific radical movement then, it is now widely accepted as a term for reproductive management. Experiments conducted by Ludwig Haberlandt in 1921 found that high levels of the hormone progesterone could be used to stop ovulation and serve as an effective form of birth control for women (Gordon, 2007; Wong, 2022).

In the early 21st century, the topic of contraception sparked intense debate in the political arena. The Obama administration's "contraception mandate" became a key part of the Affordable Care Act, signed into law in 2012 to provide comprehensive healthcare access for all U.S. citizens. The "contraception mandate" regarded birth control as an essential, preventive healthcare measure, similar to routine check-ups or mammograms (Wilson, 2016). More recently, almost all women have used some form of contraceptive method in their lifetime to prevent pregnancy, regulate menstruation, prevent acne, or avoid ovarian cysts. Ninety-nine percent of American women who can become pregnant have reported using some form of contraception at some point in their lives. Between 2017 and 2019, 65.3% of women in the United States aged 15-49 were using a contraceptive method (Daniels, 2014).

There are two main types of birth control methods: hormonal and non-hormonal. Although several options exist, this study will focus on hormonal contraceptive use among college-aged females. Hormonal birth control, primarily oral, comes in two forms: one with progestin (synthetic progesterone) and a combination containing progestin and synthetic estrogen (estradiol). The most common hormonal method is the birth control pill, often called "the pill," which is taken daily. Other options include the skin patch, vaginal ring, implantable devices, IUD, and injections. Despite differences in how they are used—externally or internally—they all work by altering hormonal levels in women's bodies to prevent a mature egg from being released from the ovaries. While some users find that the benefits outweigh the drawbacks, the psychological side effects of hormonal birth control are less widely discussed (Nguyen, Curtis, Tepper, Kortsmit, Brittain, Snyder, Cohen, Zapata, & Whiteman, PhD, 2024).

However, contraceptive use increased with age, from 38.7% among women aged 15-19 to 74.8% among women aged 40-49.5. The most common forms of contraceptive use were the pill (14%), IUD or implant (10.4%), female sterilization (18.1%), and male sterilization (5.6%) (Nguyen et al., 2024). Although contraceptive use is less common among younger individuals, it is widespread among college students who, generally, have left home for the first time. Between 2015 and 2017, it is estimated that 42% of never-married girls aged 15-19 have had sexual intercourse by age 19 (Martinez & Abma, 2020). Additionally, 38% of never-married boys aged 15-19 have had sexual intercourse. Of the sexually active female teens, 98% have used some form of contraceptive method. Among individuals aged 15-24, 78% of females and 89% of males who had their first sexual intercourse before age 20 used a contraceptive at that time (Martinez & Abma, 2020). In a 2023 study, 43.6% of hormonal birth control users reported experiencing mood changes while using the contraceptive. Meanwhile, 48.3% of users said they discontinued or switched methods due to adverse side effects. Among these participants, 61.2% with a history of psychiatric illness reported mood changes. Additionally, 83% stated that their healthcare provider did not mention the potential psychological effects of hormonal birth control (Martell, Marini, Kondas & Deutch, 2023). Due to the unnatural

fluctuations of hormone levels caused by hormonal birth control, it is no surprise that there are more side effects than are often advertised.

Advantages and Disadvantages of Hormonal Birth Control

In 2010, Pletzer and colleagues examined the brain scans of women using birth control and those not on it. She found that women on birth control showed growth in their prefrontal areas (behind the forehead, linked to self-control and emotional regulation) and in the hippocampus (responsible for memory integration) (Pletzer, Kronbichler, Aichhorn, Bergmann, Ladurner, & Kerschbaum, 2010). This new information raises questions about whether brain growth has positive or negative effects. Researchers at Albert Einstein College of Medicine have studied how birth control influences brain regions (Lacasse, Heller, Kheloui, Ismail, Raval, Schuh, Tronson, & Leuner, 2024). The pituitary gland is the main center for hormone receptors, especially those hormones mentioned earlier. The hypothalamus helps maintain homeostasis and balance in the body. It converts emotional signals from the brain into physical sensations. For example, it causes a rapid heartbeat when nervous and the feeling of butterflies in your stomach (Wong, 2022). Therefore, artificial hormones can interfere with regulatory systems and emotional stability.

The main benefit of hormonal birth control is preventing pregnancy. When taken correctly, it is an effective method to prevent pregnancy. Although the pill can have health side effects, it also offers benefits. For example, hormonal birth control can reduce menstrual cramps, lighten periods, and lower the risk of ectopic pregnancy (Kopp-Kallner, Linder, Cesta, Chacón, Kieler, & Graner, 2022). Specifically, for the combination pill, it can also improve acne, prevent bone loss, reduce ovarian or breast cysts, lower the risk of endometrial and ovarian cancers, decrease severe infections of the ovaries, fallopian tubes, and uterus, combat iron deficiency, and help with premenstrual syndrome (Coelingh Bennink, van Gennip, Gerrits, Egberts, Gemzell-Danielsson, & Kopp-Kallner, 2024). Additionally, hormonal birth control can help make periods more regular and predictable. However, these benefits come with potential drawbacks. Birth control can be expensive, with an IUD costing between $500 and $1300 without insurance (Attia, 2020a). Even the pill can cost up to $50 a month without insurance (Attia, 2020b). The process of visiting the doctor,

filling a prescription, and picking it up can also be a barrier for many women. Especially for the pill, it requires daily effort to take it at the same time each day. Several side effects can impact quality of life and may even cause some women to stop using it.

Six percent of users of a common IUD brand experience depressive mood. Additionally, among these IUD users, 6.8% reported acne, 8.5% experienced breast pain, 2 out of 10 women experienced amenorrhea after one year, 7.5% experienced benign ovarian cysts, and 10.5% reported vulvovaginitis (Bayer HealthCare Pharmaceuticals, Inc., 2024). While a commonly reported side effect of implantable devices is mood swings, nervousness, or depressive mood, common side effects among implant users include acne, breast pain, headaches or migraines, irregular menstrual bleeding, and weight gain (Organon, 2025). Women on the pill frequently experience breast pain, headaches or migraines, and irregular bleeding (Cunha, 2023). In a 2023 study, 43.6% of participants reported experiencing mood changes while on hormonal contraception (Ruberman, 2014).

Side Effects of Hormonal Birth Control among College Students

In college, a person is still discovering their confidence and abilities. Peer groups and friendships become more significant as individuals seek a sense of belonging. Conflicts with family and parents may arise as these individuals begin to gain the independence that comes with attending college. Additionally, changes in how one perceives their body and interests in significant others influence self-concept during this period. For some, the transition from high school to college occurs between 18 and 24. Although this transition is often viewed as a “good change,” it can still be challenging. Any change, even positive ones, can impact a person's mental health and quality of life (Zielinski, 2024).

Starting hormonal birth control has become increasingly common among women who menstruate in the 21st century. The reasons women choose to use it vary from person to person. Some may take birth control to regulate their menstrual cycle and lessen negative symptoms related to periods. Others may use it to prevent pregnancy if they are sexually active. Historically, men have been seen as rational beings, while

women are often stereotyped as emotional. The stereotype of the premenstrual woman goes further, labeling women as angry, irrational, and out of control. These cultural messages can make it difficult for women to manage mood changes while on hormonal birth control and to deal with the negative perceptions connected to the emotions they experience. In a study with participants averaging 22 years old, 33% reported feeling "crazy" because of their hormonal contraception, citing "anger" and "sadness" as their main emotions.

Psychological symptoms caused by birth control can lead to a loss of emotional regulation. Users report forgetting what "normal" feels like. In a report, a birth control user stated, "It was difficult as a young teenager to differentiate between normal mood changes and something more serious." (Wong, 2022). Data support this experience, as a 2019 study found a link between the prescription of two types of birth control progestins and depression diagnosis (Lewis et al., 2019). In another case, a college junior reported that managing side effects was challenging. She experienced a disconnect between her self-perception and her physical and emotional appearance (Alspaugh, Barroso, Reibel, & Phillips, 2020). According to a 2020 study, 56% of participants reported lower academic performance during menstruation. A total of 71.3% of participants reported having Premenstrual Syndrome (PMS). Twenty percent of participants contacted a healthcare provider about their PMS. The most common symptoms reported were abdominal bloating (85.7%), angry outbursts (72.5%), anxiety (62.9%), depression (56.2%), and social withdrawal (36.7%) (Bilir, Yıldız, Yakın, & Ata, 2020).

Unfortunately, the side effects of birth control differ for each user. Women are often advised to "wait it out" when they seek help from a doctor regarding the adverse effects they experience. Women report wanting someone to acknowledge how they feel and recognize the importance of these feelings in their daily lives (Wong, 2022). They seek more validation from their healthcare providers and an explanation of why they are experiencing specific side effects (Martell et al., 2023). Although there is still a need for better medications, change must also occur outside of drug development to improve the experience of birth control users. The full effects of hormonal birth control, whether short-term or long-term, are not fully understood by

users or healthcare professionals. This study aims to better understand the question, "Does hormonal birth control increase negative side effects for college students?" Therefore, this research has the potential to provide new information for healthcare providers to warn college students before starting hormonal birth control. If a patient chooses to continue with hormonal birth control, this information can help women manage its side effects.

Methods

Study Design and Subject Recruitment

The following study employed a cross-sectional, web-based survey of a convenience sample of female students aged 18 or older at the LSU campus. Participation was open to individuals regardless of prior experience with birth control. Exclusion criteria included males under 18 and non-LSU students. Data were collected through a Qualtrics survey accessed via a link provided by LSU. Recruitment involved posting flyers on social media and around LSU campus buildings. Additionally, a survey promotion took place in the LSU Union, where LSU female students received a chocolate treat and a flyer with a QR code to access the survey. The LSU AgCenter Institutional Research Board (IRB) approved the study, number IRBAG-24-0092.

Survey Development

The first scale in the survey is the Perceived Stress Scale, which includes 10 questions (Cohen, Kamarck, & Mermelstein, 1983). It uses a 5-point Likert scale from 0 to 4, with a total score ranging from 0 to 40. The higher the score, the greater the perceived stress. The Common Experiences scale, consisting of 22 items based on a literature review, aims to identify the most common experiences and stressors among college students. It has an 11-point scale with scores from 0 to 220. The higher the score, the more the participant experiences these everyday college stressors. The final 12-item scale is the College Stress Scale, specific to college life (Bouchrika, 2025). It ranges from 0 to 120, with higher scores indicating increased experience of these college stressors. Each survey participant answered these questions, along with demographic questions about age, race, pregnancy status, and birth control use. Participants who had never used birth control finished the survey at

that point. Those currently on or who had previously used birth control were asked additional questions.

Current users of hormonal birth control received the following questions, including when they started using it, with a range from 1985 to 2024. Participants were asked to identify which side effects they experienced based on the most common ones associated with birth control. The survey inquired about the most severe side effects and whether participants considered discontinuing the use because of them. The Affect Liability Scale long form (ALS-LF), which has 54 questions, assesses changes in affective functioning (Oliver & Simons, 2004). The Affect Liability Scale short form (ALS-SF), a shorter version, also evaluates changes in affective functioning (Contardi, Imperatori, Amati, Balsamo, & Innamorati, 2018). The survey questions for current and former birth control users were heavily influenced by these scales and customized specifically for this study's purpose. After reviewing the items, a mood scale was created from those most related to hormonal birth control side effects and mood. This scale includes 12 items, each rated on a 4-point scale, with a total score range of 0 to 36. Higher scores reflect more frequent mood-related shifts. After answering these questions, current hormonal birth control users complete the survey.

The previously mentioned hormonal birth control section skipped the questions in the earlier paragraphs and moved directly to the topics discussed here. Participants were asked when they started and stopped using hormonal birth control, with the latest possible year being 1985 and the earliest being 2024. Based on common side effects of birth control, participants indicated which side effects they experienced while using it. The survey also asked about the most severe side effects. This group was allowed to provide detailed open-ended responses explaining why they stopped using hormonal birth control.

Statistical Analyses

The required number of participants was calculated to be 378 through a power analysis based on the average number of female students at the LSU campus (GIGAcalculator, 2025). When comparing all categorical demographics with three or more categories to the perceived stress scale, personal experience scale, and college

stress scale, Analysis of Variance (ANOVA) was used, followed by Tukey post-hoc tests. A t-test was used to determine statistical significance for ethnicity, pregnancy status, and mental health diagnosis across the three scales. A Chi-Square test was used to compare the categorical variables of selected side effects and birth control status. All analyses were conducted at the $p \leq .05$ level. Qualitative data were analyzed using inductive thematic coding to identify themes explaining why former users discontinued birth control.

Results

Sample Description

The total sample of LSU female students in the sample population was N=446. The population was predominantly white (70.7%) and non-Hispanic (86.6%). The primary age range of participants was 18-19 years (55.9%). Participants were predominantly current birth control users (46.6%). All the participants (100%) had no experience with pregnancy. Over half of the sample (57%) was not diagnosed with a mental health disorder (Table 1).

Research Aim 1: Measure the incidence of the various side effects of hormonal birth control among female college students

Moving forward with the results, those who have never used birth control will not be included because all the information about birth control experiences was only gathered from those who have used or are currently using the product. For the first item related to side effects, participants were asked to select as many options from Table 2 as they had experienced. For participants in both current and former groups, all side effects were reported at least once. The most selected side effect was mood changes, such as feeling anxious, overwhelmed, angry, depressed, or sad.

Table 1. Differences in the man stress scale scores by the demographics

Demographic	N (%)	Perceived Stress Scale Mean (SD)	p-value	Negative Personal Experiences (SD)	p-value	College Stress Scale Mean (SD)	p-value
Ethnicity		n= 441	0.46	n= 359	0.62	n= 367	0.676
Hispanic	61 (13.7)	24.6 (3.1)		24.6 (3.1)		24.6 (3.1)	
Non-Hispanic	384 (86.3)	24.3 (3.3)		24.3 (3.3)		24.3 (3.3)	
Age		n= 440	0.15	n= 359	0.37	n= 367	0.598
18	117 (26.4)	23.9 (3.3)		98.3 (30.2)		60.7 (16.3)	
19	133 (30.0)	24.5 (3.2)		95.6 (35.4)		64.8 (19.6)	
20-21	136 (30.6)	24.3 (3.3)		99.8 (31.7)		64.1 (17.2)	
22+	58 (13.1)	24.4 (3.3)		92.6 (31.5)		63.1 (18.7)	
HBC status		n= 442	0.53	n= 360	0.01*	n= 368	0.236
Current	207 (46.4)	24.5 (3.4)		100.7 (32.0)		64.9 (17.9)	
Former	67 (15.0)	24.6 (3.3)		102.3 (33.2)		62.9 (18.8)	
Never	172 (38.6)	24.2 (3.2)		91.2 (32.0)		61.5 (17.4)	

Race		n= 426	0.08	n= 347	0.19	n= 354	0.603
White	305 (70.9)	24.4 (3.3)		96.9 (33.0)		62.5 (17.6)	
NH	3 (0.7)	28.0 (1.0)		139 (27.2)		75.7 (28.4)	
B/AA	97 (22.6)	24.3 (3.3)		97.8 (30.5)		64.3 (19.0)	
Asian	20 (4.7)	23.0 (2.1)		90.7 (29.3)		66.4 (9.1)	
AI/AN	5 (1.2)	25.6 (3.2)		106 (30.6)		63.2 (17.7)	
Previous Pregnancy		n= 440		n= 359		n= 367	
Yes							
No	0 (0)	0		24.4 (3.3)		0	
	444 (100.0)	97.3 (32.5)		0		63.3 (17.9)	
Mental Health Diagnosis		n= 441	0.25	n= 359	0.63	n= 368	0.372
Yes	189 (42.5)	24.8 (3.4)		105.7 (32.2)		67.3 (18.4)	
No	256 (57.5)	24.0 (3.2)		91.1 (31.2)		60.4 (17.0)	

The second side effect was similar to the first but asked participants only to choose their single most severe side effect. The top three worst side effects ranked from first to third were mood changes (anxious, overwhelmed, angry), menstrual issues, and mood changes (sad, depressed), respectively, for the current block. The previous block's worst side effect was mood changes (anxious, overwhelmed, angry) and mood changes (sad, depressed), which tied for first place, while weight gain was the second worst side effect (Table 2).

When former users were asked why they stopped using hormonal birth control, they often mentioned three main side effect categories: mood changes, weight gain, and menstrual issues. Among those who cited mood changes as their reason for discontinuing, statements included mood instability, feeling out of control of their emotions, and experiencing depression while on birth control. Of the 45 qualitative responses, 13 women identified mood changes as their primary reason for stopping birth control.

One participant stated:

"I felt as though I did not have any control over my emotions. I often felt sad, angry, upset, etc. about very mundane things that would not have normally made me upset."

Female students who stopped using birth control cited weight gain as the main reason for their decision. Among those ending birth control due to weight gain, many emphasized that the considerable weight gain made continuing the method not worth it. Out of 45 qualitative responses, 12 women identified weight gain as their primary reason for quitting birth control.

Participants were quoted:

"I still haven't lost the weight I gained from it, which has impacted my mental health."

"I gained 15 pounds over 3 months."

Table 2. Frequency of side effects among current and former HBC users

	Current n (%)	Former n (%)
Headaches/migraines	56 (27.1)	20 (29.9)
Nausea/Vomiting/Diarrhea	40 (19.3)	18 (26.9)
Weight gain	61 (29.5)	**35 (52.2)[b]**
Acne/Other skin issues	63 (30.4)	20 (29.9)
Cramps/Abdominal pain	72 (34.8)	24 (35.8)
Mood changes (anxious, overwhelmed, angry)	**129 (62.3)[a]**	**39 (58.2)[a]**
Menstrual issues	**91 (44.0)[b]**	28 (41.8)
Decreased libido	53 (25.6)	19 (58.2)
Mood changes (sad, depressed)	**98 (47.3)[c]**	**39 (58.2)[a]**

Note: Bolded n (%): top three worst side effects: a: 1st worst side effect; b: 2nd worst side effect; c: 3rd worst side effect

Research Aim 2: Analysis of mental health diagnosis and its role in the side effects of birth control

Participants diagnosed with a mental health disorder accounted for nearly half of the sample. The sample was divided into groups with and without diagnosed mental health conditions, and the frequency of experienced side effects between these groups was reported. In the current users' group, those with a mental health diagnosis reported significantly higher side effects, including weight gain ($p<0.002$), decreased libido

($p<0.012$), and mood changes (such as feeling sad or depressed) ($p<0.004$). Current users also showed a significant link between mental health status and their reported worst symptoms (Table 3).

In the former users' group, participants with a diagnosed mental health disorder reported headaches and migraines ($p<0.037$), acne and other skin issues ($p<0.011$), and mood changes (such as sadness or depression) ($p<0.029$) more frequently than those without a diagnosed disorder. No significant differences were observed in the frequency of nausea/vomiting/diarrhea, cramps/abdominal pain, mood changes (like anxiety, feeling overwhelmed, anger), or menstrual issues between participants with and without a diagnosed mental health disorder (Table 4).

Table 3. Frequency of reported side effects in current HBC users among participants diagnosed and not diagnosed with a mental health disorder

	Diagnosed (n)	Not Diagnosed (n)	p-value
Headaches/migraines	30	26	0.07
Nausea/Vomiting/Diarrhea	22	18	0.09
Weight gain	37	24	0.002*
Acne/Other skin issues	32	31	0.14
Cramps/Abdominal pain	33	39	0.52
Mood changes (anxious, overwhelmed, angry)	63	66	0.08
Menstrual issues	42	49	0.42
Decreased libido	31	22	0.01*
Mood changes (sad, depressed)	54	44	0.004*

Table 4. Frequency of reported side effects in former HBC users among participants diagnosed and not diagnosed with a mental health disorder

	Diagnosed (n)	Not Diagnosed (n)	p-value
Headaches/migraines	13	7	0.03*
Nausea/Vomiting/Diarrhea	11	7	0.10
Weight gain	18	17	0.26
Acne/Other skin issues	14	6	0.01*
Cramps/Abdominal pain	11	13	0.73
Mood changes (anxious, overwhelmed, angry)	20	19	0.24
Menstrual issues	15	13	0.22
Decreased libido	10	9	0.36
Mood changes (sad, depressed)	23	16	0.02*

Discussion

Data was collected from a smaller group of females on the LSU campus, which might not fully represent the entire population. The most common side effect reported was mood changes (such as feeling anxious, overwhelmed, angry, depressed, or sad) among both current and former birth control users. The three most severe side effects reported by these users were mood changes (anxious, overwhelmed), menstrual problems, and mood changes (sad, depressed). Nearly half of the participants reported having a mental health diagnosis. Current users with a mental health disorder experienced weight gain, mood changes (sad, depressed), and decreased libido more often than those without such a diagnosis. Former users with a mental health disorder more frequently reported headaches, migraines, skin issues like acne, and mood changes (sad, depressed) compared to those without a

diagnosis. There is a significant link between having a mental health disorder and the status of birth control use.

The most commonly reported side effects in our study were mood swings, irregular bleeding, and weight gain. Among women who discontinued HBC, weight gain (34%), irregular bleeding (38.3%), and mood changes (43.6%) were the leading reasons for stopping use (Hill, 2019). Current and former birth control users most often reported mood changes in our sample. Sudden hormonal fluctuations during the menstrual cycle can trigger mood swings and irritability, especially during significant life changes or stressful periods. Synthetic hormones from birth control may worsen these symptoms. In a study on birth control discontinuation, 47% of participants Quit because of adverse effects. The primary reason was their awareness of declining emotional and mental health (Cowan, 2025). Other research indicates that women on hormonal birth control report higher levels of depressed mood, mood swings, and fatigue compared to those taking a placebo (Berg, 2015).

Although the exact cause of these mood changes is not fully understood, several theories try to explain why they happen. One theory proposes that estrogen directly interacts with the endocrine system, affecting both brain function and the reproductive system. It is believed that synthetic hormones may interfere with normal cognitive processes and lead to mood shifts (Berg, 2015). Another idea focuses on gene transcription triggered by estrogen receptors, with scientists unsure about which genes synthetic hormones activate or deactivate. Because estrogen receptors are located near brain regions that produce serotonin, it is suggested that these hormones may inhibit genes involved in serotonin production, thereby decreasing circulating serotonin levels (Hill, 2019).

The depression and anxiety experienced while using hormonal birth control should be viewed as similar. Both conditions originate from the same brain regions and signaling pathways and respond in comparable ways to treatments such as serotonin reuptake inhibitors. Therefore, it is clear why participants in this study and others report these two side effects at similar rates. In this paper's sample, nearly 50% of participants at LSU were diagnosed with a mental health disorder. A significant finding was that Danish researchers used registries to follow women aged 15 to 34 for 14 years. They discovered that women

on hormonal contraceptives were 50% more likely to be diagnosed with depression six months later. Additionally, these women were 40% more likely to be prescribed antidepressants while using hormonal contraceptives. Moreover, women on hormonal contraceptives were twice as likely to attempt suicide (Hill, 2019). This data is concerning, as birth control can worsen symptoms in those already diagnosed with a mental health disorder.

Limitations

Initially, it was not well understood how common mental health disorders were among college females. Therefore, we decided not to explore their mental health diagnoses further, unsure if it was necessary to ask the participants. Knowing participants' mental health diagnoses could have helped us identify the most common conditions and whether students were on medication for them. There is a concern that hormonal birth control might interfere with other medications, especially those used for mental health issues. No females taking the survey reported being pregnant or having been pregnant. It is possible that a previous pregnancy could significantly influence female responses to hormonal contraceptive side effects.

Future implications

Although these statistics are concerning, it is vital to make significant changes in how healthcare providers educate women about hormonal birth control. Mood-related side effects are often overlooked in discussions of HBC's effects within the scientific community. In one study, 83% of participants reported that their provider never mentioned the possibility of psychological side effects during their appointments. Doctors must inform women about the risks of mood changes. With this knowledge, women can be prepared for this possibility instead of feeling "crazy." It should be emphasized to women that there are alternative dosing options if the side effects become overwhelming, rather than feeling they must endure them.

Conclusion

The various side effects of hormonal birth control can significantly impact the quality of life for college students. Ignoring the physiological effects of hormonal contraceptives on

women's mental health promotes harmful stigma that can undermine the legitimacy of women's experiences. Society often misunderstands women, as the 'hormonal bias' assumes women are irrational or untrustworthy. Therefore, college healthcare professionals must educate women about all the side effects of birth control, both before they start and while they continue using hormonal contraceptives.

Conflict of Interest

The authors declare that they have no competing interests.

Author Contributions

C. Greig and E. McKinley conceptualized the study, generated methods, and obtained IRB approval. C. Greig recruited participants, ensured the sample size, and verified the analysis. E. McKinley completed the data review and statistical analysis. C. Greig and E. McKinley wrote significant portions of the manuscript.

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