



## Effects of oral contraceptive pill on female health

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**Abstract:** Oral contraceptives, also known as birth control tablets/pills, are medicines that stop pregnancy. About 75% of married women who use contraception in the research location (Purba Medinipur district) reported they prefer the combined hormonal pill with oestrogen and progesterone. Thirty women were chosen at random to participate in the study. Of the 50% who routinely used contraceptive pills and 50% never used them or occasionally did so. Her male partner likely uses a condom when necessary. The hormone progesterone is responsible for preventing conception, whereas the oestrogen component regulates menstrual blood loss. An questionnaire survey is used in one-on-one interviews. Statistics used in the study were descriptive. To examine the data, an unpaired 't' test was employed. In order to provide effective contraception using oral contraceptives, this study investigates the adverse effects of oral contraceptive pills. It highlights the significance of better care coordination among occupational therapist. According to this study, one of the most common oral contraceptive regimens decreases women's quality of life while not affecting depressive symptoms. However, ovarian and menstrual issues and increased bone mineral density are very noticeable in women in their forties and significantly impact their behaviour. Younger women are more receptive to oral contraceptives' positive benefits on acne. It has been shown that birth control pill side effects can include complications including cystic acne, anxiety or irritability, sore breasts, weight gain, or some trouble conceiving after discontinuing the pill. The study makes predictions about the menstrual flow type, dysmenorrhea, blood pressure, waist-hip ratio, and pattern of contraceptive use. Consuming oral contraceptives is linked to some symptoms, including breast soreness, weight gain, missing periods, vaginal discharge, alterations in vision with contact lenses, and irregular or spotty bleeding.

### Introduction

A contraceptive method reduces the likelihood of becoming pregnant in sexual activity. According to estimates, 99% of women who have ever engaged in sexual activity have used at least one kind of contraception (Daniels and Mosher, 2013). There are three different kinds of oral contraceptive pills available right now: progesterone-only, continuous, and extended-use tablets. The oestrogen and progesterone-containing combination hormonal tablet is the one that is most frequently prescribed.

It works to prevent ovulation and alter uterine and fallopian tube conditions, which prevent conception (WHO, 2008; Ribeiro et al., 2018).

Pills that prevent pregnancy have been a popular way of birth control for a significant amount of time, and many women have turned to this method in the past 60 years (Smadi and Zakaryia, 2018; Teal and Edelman, 2021). The primary way that oral contraceptives work is by interfering with the roles of oestrogen and progestin during ovulation. Progestin primarily works by reducing

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the amount of Luteinizing hormone released by the pituitary glands anterior lobe. Additionally, it prevents capacitation, or the "activation of enzymes that allow the sperm to break through the ovum," by thickening the cervical mucus, which slows down the sperm's ability to travel through the ovum. Estrogen prevents ovulation by decreasing the release of LH and follicle-stimulating hormone. In order to make implantation less likely, it was suggested that oestrogen alters uterine discharge, producing edematous patches with thick cellularity. Currently, contraceptive pills are used to prevent conception, treat endometriosis, and relieve menstrual irregularities. Today, 76 million women are using the pill, making it the third most used method of birth control. Although it is very effective, some people experience issues due to its frequent use (Abd-Ali and Shaker, 2013; Al-Saffar, 2019).

The main goal is to provide accurate information on these examined groups' physical characteristics, impact, physiological changes, and nutritional status when using oral contraceptives. Better care coordination among married women in the investigated area has also been emphasized in several awareness campaigns.

## Materials and Methods

### Study Area

Bhupatinagar under Bhagwanpur-II Block is a rural area with 180.20 square kilometres and 192,162 population. Agriculture is the primary source of income for those who live in this region. People of all castes live in this neighborhood. There are several Basic schools, Jr. High, High, Higher Secondary, General College, and B. Ed. College, for proper education. Given the information above, it can be stated that although the Bhagwanpur-II Block area is situated in a rural area, the region is rapidly developing. The entire Bhagwanpur-II block area surveyed the population to determine whether or not oral contraceptives are used. 30 (thirty) different women were chosen randomly to participate in the study so that it could be conducted. Half of these women used oral contraceptives regularly, while the other half either never did or did so very occasionally. The women were interviewed, and their ages ranged from 20 to 39.

### Techniques for evaluating nutritional status

An anthropometric rod, a weight machine, and steel tape were used to measure height and weight. After that, a woman's BMI is determined. The World Health Organization's recommendations were followed for all measurements (WHO, 1995). Calculations also include the mean and standard error.

### Background information

During this survey, the respondents were asked questions regarding their age, education, religion, weight, height, socioeconomic status, fathers' and mothers' occupations, family members, members of earning members of the family, dietary habits, and physical exercise. In addition, the respondents' family members were also asked about their occupations.

### Evaluation using anthropometric data

Nutritional anthropometry is a subfield of anthropometry that examines how diet and nutrition affect a person's physical condition and gross body composition. Anthropometry is based on the concept that the physical state and gross composition of the body. An explanation of the term "nutritional anthropometry" refers to measurements of the differences in the physical dimensions and gross composition of the human body at different age levels and degrees of nutrition. It should be noted that additional factors, such as disease caused by infection or infestation, may also affect the growth and physical health of the body (Jelliffe, 1996).

We have been using a human weighing machine to determine each individual's weight (Bathroom weighing scale, Crown classic, Ramon Surgical Company, Delhi). The participants remove as much clothing as possible, stand on the machine's platform, and apply the same amount of pressure with both feet. We have determined the weight based on the scale's reading, which was accurate to within 0.5 kg.

### Height (cm)

The vertical distance between the floor and the body's vertex is when the body is stretched out straight, the feet are planted firmly together, the weight is evenly distributed over both feet, the eyes are fixed in front, and the palm of the hand is flat against the side of the thigh. It might use a scale that has been mounted on a wall or a vertical measuring rod. To be regarded exact, the height must be measured barefoot against a wall (The Hindustan Mineral Products, Mumbai). The subject must stand in front of the scale with bare feet on a flat surface while it is being measured. Her feet must align with one another, and the back of his head, heels, buttocks, and shoulders must all make contact with the upright part of the scale. The head must be supported comfortably while being held upright. The headgear must touch the top of the head and the hair, and it must be either a bar made of metal or a bar made of wood (Waterlow et al.,1990.)

### BMI (kg/m<sup>2</sup>)

A woman's body fat is correlated with their BMI using mathematics. By multiplying the values of weight in kilograms and height in metres squared, the formula weight in (kg)/height in (m<sup>2</sup>) are used to determine each person's BMI (Henry, 1990.)

My use of the two nutritional indices for assessment in the circumstances involving physical measurements, such as –

$$\text{BMI} = \text{Weight (kg)}/\text{Height (m}^2\text{)}$$

### Size of waist in centimetres (cm)

The horizontal circumference is when the trunk has the greatest lateral indentation (i.e., where the belt is worn), she is standing straight with a relaxed abdomen.

**Table 1. The World Health (1995) Organization's adult body mass index classification.**

BMI (kg /m <sup>2</sup> )	Categories of nutritional status
< 16.0	Thinness is equivalent to Grade III
16.0-16.99	Thinness is equivalent to Grade II
17.0-18.49	Thinness is equivalent to Grade I
18.5-24.99	Normal
25.0-29.99	Grade I Overweight
30.0-39.99	Grade II Overweight (Obesity grade I)
≥40.0	Grade III Overweight (Obesity grade II)

### Hip measurement (cm)

Horizontal circumference was measured with the individual standing straight and her heels closed together at the hip bone level (or the level of the Glutens).

### Waist hip ratio

The anthropometric value is derived from the ratio of waist and hip measurements.

$$\text{Waist hip ratio} = \text{Waist circumference (cm)}/\text{Hip circumference (cm)}$$

### Blood pressure and pulse rate

The anthropometric measurements were finished before taking the blood pressure readings. After the participant had been sitting in a relaxed position for 5 minutes, the participant's left arm blood pressure was measured using a Doctor aneroid Sphygmomanometer (S.S. Surgical Co., Delhi) and a Doctor DX Stethoscope (S.S. Surgical Co., Delhi). Subjects were told to lie on the bed before measurements were taken, and the left arm was then inserted within the body. The average of the previous two readings was taken for analysis. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were measured

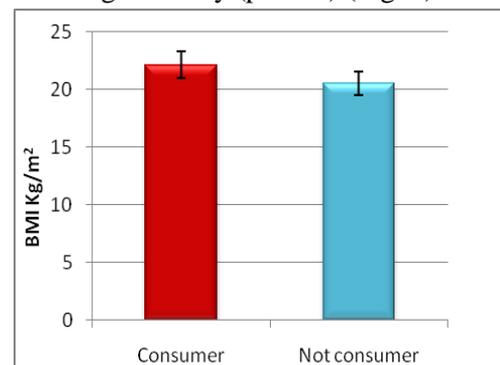
to the nearest mm of Hg when the appearance (Phase I) and disappearance (Phase II) of karat off noises, respectively, were noted, with a 5-minute relaxation period maintained between the two measures for all subjects.

### Statistical analysis of data

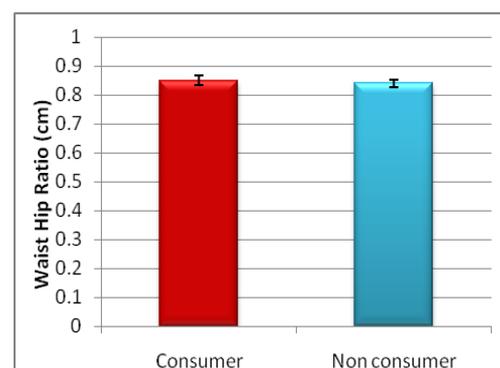
Using a SPSS software programme, the mean value examined the calculated data, standard deviation, standard error, and 't' test.

### Result and Conclusion

In the result of BMI (kg/m<sup>2</sup>), there was no discernible difference between those who used oral contraceptives and those who did not ( $p>0.05$ ) (Fig.1). But Murayama et al. (2003) discovered that using an oral contraceptive had an impact on body mass index. Users of oral contraceptives had a considerably higher BMI in that research. BMI tends to rise with the use of oestrogen and progestin-containing contraceptives. However, waist-to-hip ratio between users and non-users of oral contraceptives did not differ significantly ( $p>0.05$ ) (Fig. 2).



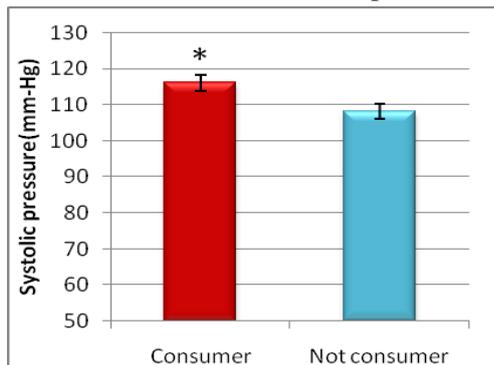
**Figure 1. The pill impacts women's body mass index (kg/m<sup>2</sup>). The vertical bars display the mean and standard error of the mean.**



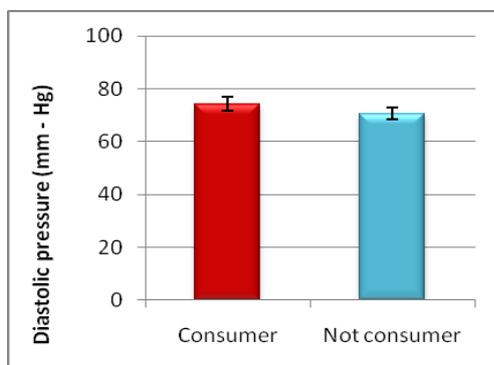
**Figure 2. Effect of taking the contraceptive pill on Waist Hip Ratio. The mean and standard error of the mean is shown by vertical bars.**

Systolic pressure (mm-Hg) between users and non-users of oral contraceptive pills differed significantly ( $p>0.05$ ) (Fig. 3). Diastolic pressure (mm-Hg) between users and non-users of oral contraceptives did not differ significantly (Fig. 4). Similarly, Shen et al. (1994) found

that although OC users' systolic blood pressure increased more than non-users', the difference was not statistically significant. However, the usage of low-estrogen OC causes a modest rise in diastolic blood pressure.

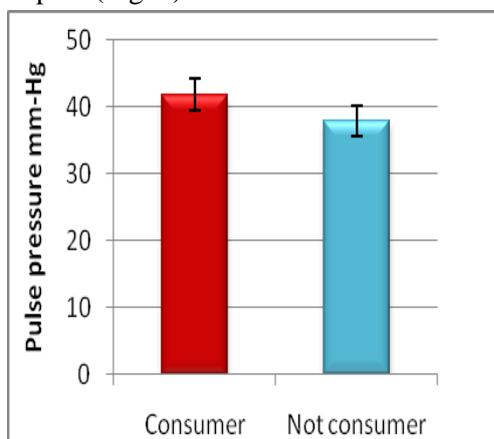


**Figure 3. Effect of using the pill as a method of birth control on systolic pressure. The mean and standard error of the mean is shown as vertical bars.**

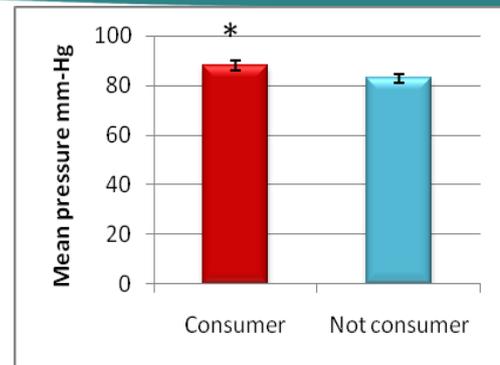


**Figure 4. Diastolic blood pressure and its relation to the use of oral contraceptives. The mean and standard error of the mean is represented by the vertical bars.**

Pulse pressure (mm-Hg) did not differ significantly ( $p>0.05$ ) between women who took oral contraceptive pills and women who did not take these pills (Fig. 5). There was a significant ( $p>0.05$ ) difference in the mean blood pressure (in millimetres of mercury) of women who took oral contraceptive pills and those who did not take these pills (Fig. 6).

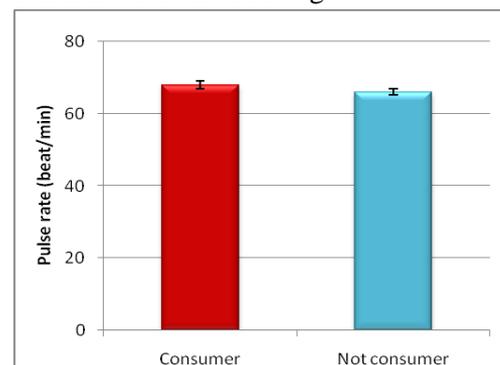


**Figure 5. The impact on one's blood pressure and heart rate of taking the birth control pill (mm-Hg). The mean and standard error of the mean is both represented by the vertical bars.**



**Figure 6. Mean blood pressure and its relation to contraceptive pill use (mm-Hg). The mean and the mean, standard error are represented by the vertical bars.**

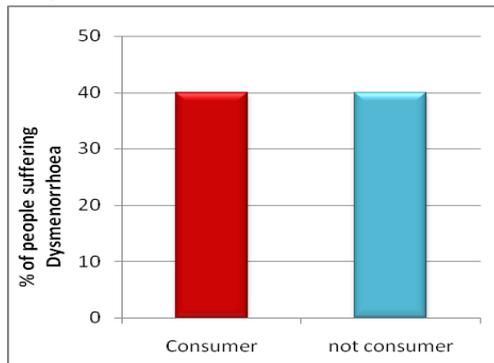
There was not a significant difference ( $p>0.05$ ) in the heart rate (beats per minute) of those who took oral contraceptive pills and those who did not take them (Fig. 7). On the other hand, Oxford Littler et al., 1974 found that consumers of the tablet group had significantly greater pulse rates. It is possible that the higher cardiac output is the result of estrogen's direct stimulant impact on the myocardium, or it may result from an increased venous return related to the increased plasma volume. Both of these possibilities are worth considering.



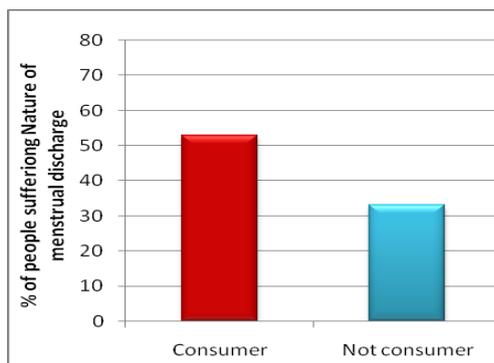
**Figure 7. The effect that taking the birth control pill has on the rate of one's pulse. The vertical bars in this graph show the mean and the standard error of the mean.**

According to the findings of the poll, 40% of women who suffer from dysmenorrhea are frequent consumers of oral contraceptive pills, while the remaining 60% are either non-consumers or only consume them sometimes (Fig. 8). However, Proctor et al. (2001) reported that dysmenorrheal responds favourably to ovulation inhibition and that the synthetic hormones in the combined oral contraceptive pill can be used to treat dysmenorrheal. These findings suggest that ovulation inhibition may be an effective treatment for dysmenorrhea. There is evidence derived from epidemiological research conducted on general populations that combined oral contraceptive tablets, sometimes known as OCPs, can be an effective treatment for dysmenorrheal.

According to the results of the poll, it was found that 53% of those who regularly took oral contraceptive pills were women, whereas 33% of those who did not take the pills or only did so infrequently suffered from the nature of menstrual discharge (Fig. 9). On the other hand, Yu, Alice, and colleagues (2014) observed that the effect of OCP use and the natural menstrual cycle on arterial stiffness and hemodynamic was similar. There is a lack of understanding regarding the effects that OCPs have on the arterial stiffness and hemodynamics. There is ongoing debate on whether or not the vascular stiffness and hemodynamics of a woman change throughout the natural menstrual cycle.



**Figure 8. The impact that taking the birth control pill has on a case of dysmenorrhea.**



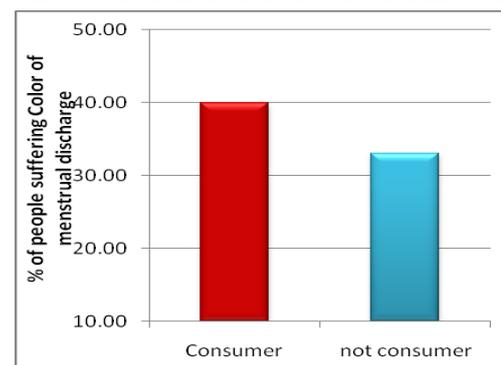
**Figure 9. The influence that taking a birth control pill has on the characteristics of menstrual discharge.**

According to the results of the poll, 40% of those who regularly took oral contraceptive pills were women, while 33% of those who did not take the pills or who did so only sometimes suffered from changes in the colour of their menstrual discharge (Fig.10). In a similar vein, Cromer et al. (1994) found that although birth control pills ensure all of the aforementioned effects, they also alter the natural hormonal balance of the menstrual cycle by lowering levels of FSH and LH.

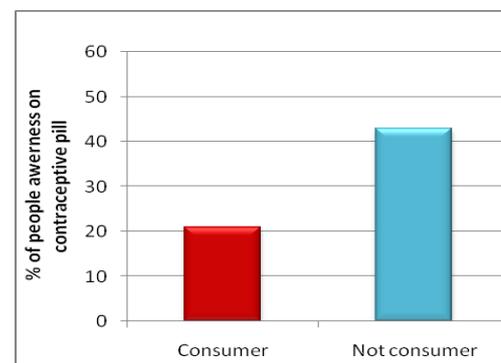
Low levels of both hormones, follicle-stimulating hormone (FSH) and luteinizing hormone (LH), are to blame for reduced quantities of estrogens and progesterone, which are both essential for healthy endometrial growth. As a consequence of this, the lining of the uterus

is growing increasingly thin, and as a consequence, it sometimes peels off in little amounts, resulting in an unpleasant and unexpected brown discharge.

According to the results of the survey, it was found that among those women who routinely took contraceptive pills, 21% were unaware of the health effect, whereas 43% of the women who were more active were also aware of the health effect the oral contraceptive pill had (Fig. 11). In a similar vein, Vanphanom et al. (2013) observed that socio-demographic factors, knowledge, and attitudes connected to ECPs, as well as sources of information regarding ECPs. Those who declared that they would not utilize ECPs did so out of worry for potential adverse effects on their health or other harmful effects.



**Figure 10. The impact that taking a birth control pill has on the colour of menstrual discharge.**

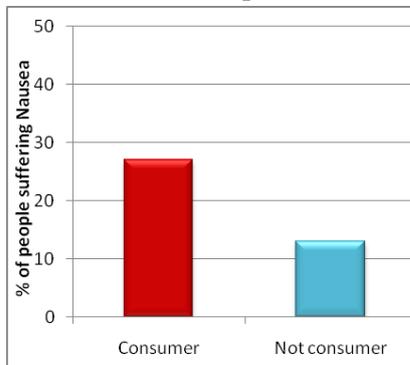


**Figure 11. The influence that taking a birth control pill has on one's awareness.**

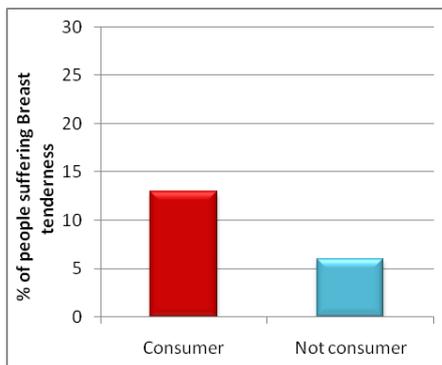
It was found that 27% of women who took oral contraceptive pills regularly experienced nausea, whereas only 13% of women who never or only occasionally took the pills did so (Fig. 12). Therefore, we can state that women who take oral contraceptive pills are more likely to suffer from the symptoms of nausea, as well as several other negative effects and disease produced in the body. According to the findings of Nicole Galan et al. (2016), nausea is one of the most common adverse effects brought on by birth control pills. When you initially begin taking the tablet, it is more likely that you will have nausea. The nausea is caused by oestrogen, making the stomach uncomfortable and irritated. Pills with a higher oestrogen

content, particularly emergency contraceptive pills, are more likely to cause stomach upset than pills with a lower oestrogen content because higher oestrogen content causes the body to produce more of this hormone. If you want to avoid feeling sick, you should not take your birth control pill on an empty stomach.

According to the research, 13% of women who regularly take contraceptive pills and 6% of those who don't or use them occasionally have breast discomfort issues (Fig 13). Therefore, we may conclude that women who use oral contraceptives are more likely to experience breast tenderness symptoms than other adverse health impacts and diseases. According to Margaret (1994), the pill is effective at preventing conception, but it takes some time for a woman's body to adjust to the altered hormone levels. Hormone effects on breast tissue are delicate, and high levels can lead to fluid retention, which in turn causes breast soreness and pain.



**Figure 12. Effect of taking the pill to prevent pregnancy on nausea.**

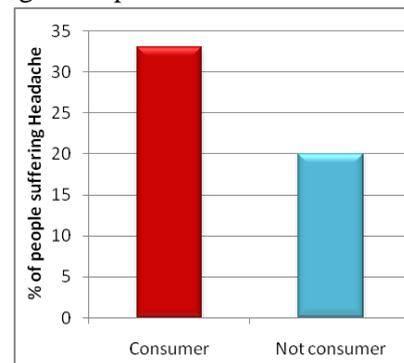


**Figure 13. Breast soreness as a result of taking the pill to prevent pregnancy.**

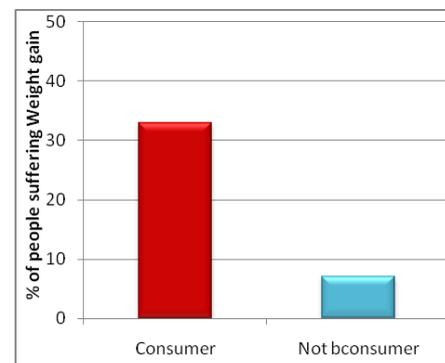
According to the study, headaches are an issue for 20% of women who do not regularly take contraception pills and 33% of women who do. We might conclude that most women who use oral contraceptives experience headache symptoms and other negative health impacts (Fig. 14). Similar to this, Elizabeth et al. (2005) found that primary headache disorders like migraine affect almost one-third of women during their reproductive years. They recommended continuing OC use in women who

experience worsening migraine and the development of aura after initiating OCs, initiating OC use in women with tension-type headache (TTH) and a family history of migraine, and using an extended duration OC regimen to reduce migraine caused by oestrogen withdrawal when decreasing OC use (OCs). Frequently, ladies with headaches may ask healthcare professionals for advice on how to use OCs. In four clinical scenarios, including starting OC usage in a woman with migraines without aura, the paper applies the most recent research, recommendations, and guidelines about headache and OC use to treatment choices.

33% of women who regularly take birth control pills and 7% of those who don't use them at all have the issue of weight gain (Fig. 15). Therefore, we can conclude that women who use oral contraceptives are more likely to have symptoms of weight increase and other negative impacts on their bodies, including sickness. Similarly, Gupta (2000) stated that certain users of the first generation of the contraceptive pill may have gained weight. This was due to early contraceptive tablets' extremely high hormone levels (oestrogen and progestogen). Weight gain can result from excess oestrogen's ability to enhance hunger and promote fluid retention.



**Figure 14. Headache impact of using the pill for birth control.**

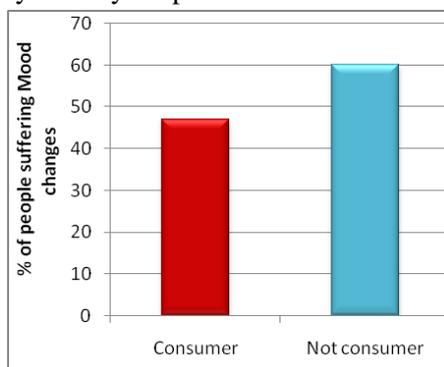


**Figure 15. Weight gain as a result of taking the pill to prevent pregnancy.**

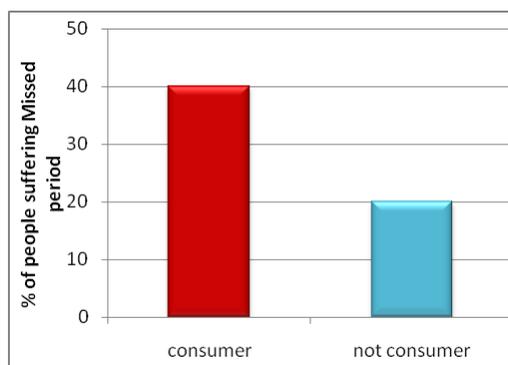
It was shown that 47% of women who consistently used oral contraceptives experienced mood disturbances, compared to 60% of non-consumers or occasional users

(Fig. 16). Therefore, it can be inferred from this poll that women should frequently take oral contraceptives. Therefore, we can conclude that women who use oral contraceptives suffer most from symptoms of mood swings, other negative side effects, and sickness that the body produces. Similarly, according to Kirsten et al. (2002), most recent scientific evidence refutes the theory that birth control causes depression. In fact, the researchers discovered that women who used hormonal contraception had lower rates of depression than those who didn't. In contrast to non-users, hormone contraceptive users actually experienced fewer depressive symptoms.

20% of women who don't regularly use birth control pills or who only do so infrequently have trouble with missed periods (Fig. 17). Therefore, we might conclude that women who use oral contraceptives are more likely to experience missed period symptoms, other negative side effects, and disease. Similar to this, Gainer and Erin (2003) reported that a month after taking emergency contraceptive tablets (commonly known as "morning after pills" or "day after pills"), they experienced a regular cycle. The length of the monthly menstrual cycle can occasionally be altered by emergency contraception, causing the next period to arrive up to a week earlier or later than usual. In addition, some women have reported that hormones in the pill can result in unanticipated bleeding, however, this is not a frequent or harmful side effect. Get a pregnancy test if your period is late.

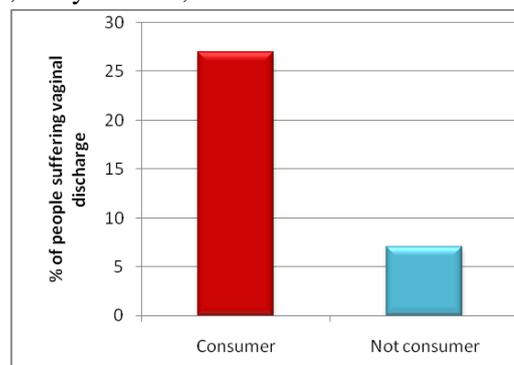


**Figure 16. Effect of using the pill to prevent pregnancy on mood changes.**



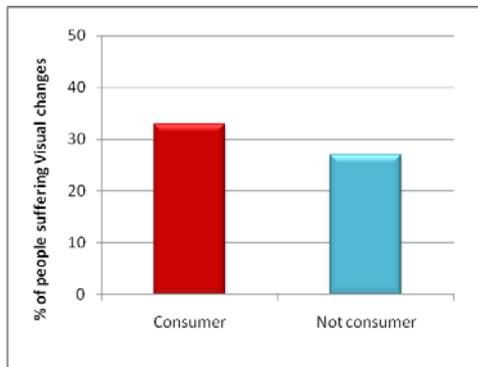
**Figure 17. The impact of taking the pill to prevent pregnancy on missed periods.**

27% of women who regularly take contraceptive pills and 7% of women who don't or only use them occasionally have vaginal discharge issues (Fig. 18). Therefore, we can conclude that women who use oral contraceptives are more likely to experience vaginal discharge symptoms than other adverse health impacts and diseases. Similarly, Thomas found in 1972 that hormone-based birth control tablets overproduce progesterone and oestrogen in the body. The uterus and cervix accumulate excess progesterone or oestrogen. Women experience a range of psychological and physiological side effects, from heavy vaginal discharge to mood swings to various sexual dysfunctions like intercourse pain or orgasm difficulty, when the liver fails to eliminate the excess hormones and to fully support the synthesis of the neurotransmitters dopamine, acetylcholine, and serotonin.



**Figure 18. The impact that taking the birth control pill has on the flow of vaginal discharge.**

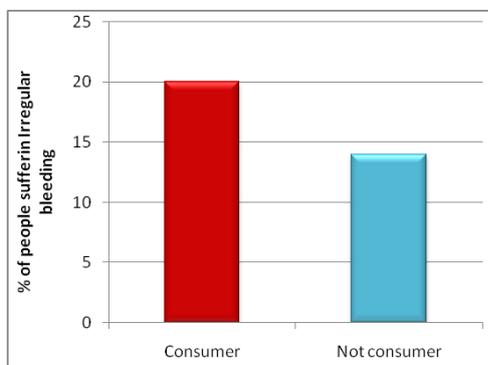
27% of women who occasionally use contraceptives and 33% of regular users had visual alterations (Fig. 18). Therefore, we can conclude that women who use oral contraceptives are more likely to experience signs of diseases and adverse consequences such as visual alterations brought on by contact lenses. Anahad (2013) also noted that women who have used oral contraceptives for a number of years or longer might want to think about getting their eyes tested more frequently as they age. According to recent studies, taking the pills could increase a person's lifelong risk of getting glaucoma, a degenerative eye disease that, if untreated, can result in blindness. The researchers issued a warning that despite the risk of glaucoma, their findings should not deter women from using oral contraceptives. It's unknown why birth control drugs might contribute to glaucoma. However, oestrogen receptors are thought to play a role in safeguarding the eyes from an age-related decrease in the optic nerve cells, and the tablets may obstruct that process by lowering oestrogen levels. So, glaucoma risk is increased among women who experience early menopause or who use estrogen-blocking treatments like those prescribed for breast cancer.



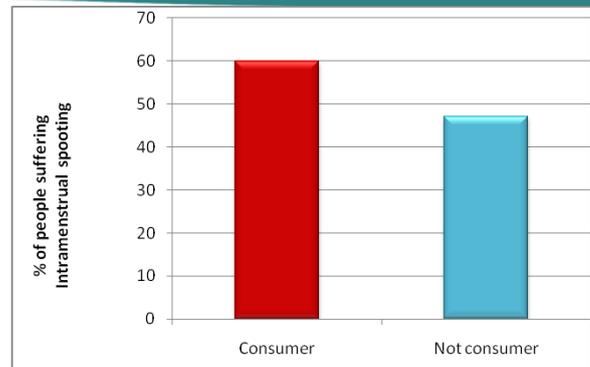
**Figure 19. Effect of using the pill as a birth control method on Visual changes.**

20% of women who regularly take birth control pills and 14% of those who only use them sometimes experience irregular bleeding (Fig. 19). Therefore, we may conclude that women who use oral contraceptives are most likely to have symptoms of irregular bleeding, other adverse effects, and sickness that the body produces. In a similar vein, Pract (2006) noted that intermenstrual bleeding was less frequent in people who had taken emergency contraception pills than in people who had not. Tips for counseling that may help lower the chance of cessation owing to monthly abnormalities in the first few months of usage are provided by the mechanisms and management of breakthrough bleeding in women taking OCs. Women should learn to manage the bleeding and continue using an effective method of contraception. Non-contraceptive advantages of OCs, such as better menstrual regularity and reduced monthly blood loss, dysmenorrhea, and risk of ovarian and endometrial cancer, are additional motivations.

According to the result, 47% of women who do not regularly take birth control pills and 60% of those who do have trouble with intermenstrual spotting (Fig. 20). Therefore, we can conclude that women who use oral contraceptives are more likely to experience intermenstrual spotting symptoms and other adverse health impacts.



**Figure 20. Effect of taking the pill to prevent pregnancy on erratic bleeding.**



**Figure 21. The effect that taking the contraceptive pill has on the occurrence of spotting between periods.**

## Conclusion

India today has a population of over one billion people, giving it a solid position among the nations with the highest density of people. Therefore, birth rates must be decreased to stabilize the population at a level compatible with the demands of the national economy. The oral contraceptive pill or oral pills is one of the many contraceptive treatments that are simple to use and significantly more successful in preventing explosive population growth. Using oral contraceptives regularly, sporadically, or never, the anthropometric assessed the nutritional health of the woman (aged 20–39). In this survey, the female growth pattern is investigated. The 't'-test estimates the surveyed woman's nutritional status based on anthropometric measurements.

Without the right information about the negative effects of respected pregnancy or high family size, the spontaneous use of these contraceptive methods is impossible. Even when women do not otherwise have economic independence, female literacy levels are a significant independent predictor of the use of contraception. Women's literacy rates in India may be the main contributors to population stabilization, however, they are only gradually rising. It is hoped that India will soon attain universal sex education, nutrition, and literacy. Pilgrims experience significant stress and discomfort due to the negative effects of taking contraceptive pills for menstruation suppression and its failures. This conventional method is advised to replace progestin-only medications, such as megestrol.

Although the use of contemporary contraceptives is still uncommon in this country despite widespread awareness of them, factors including marital status, religion, and parity play important roles in this. It is important to provide health education about the significance of modern contraceptives if one wants to increase their use among female dealers.

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