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Original Research Article

Prevalence of Hormonal Contraceptive Use and Its Association with Breast Cancer Risk

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Abstract: ***Background*:** Hormonal contraceptives (HCs) play a crucial role in reproductive health, offering effective birth control and managing gynecological conditions. However, their association with breast cancer risk remains a significant concern. Epidemiological studies highlight a small but notable increase in breast cancer risk, particularly among current or recent HC users. This study investigates the prevalence of HC use and its correlation with breast cancer risk among women attending Dhaka Medical College Hospital. ***Objectives:*** To assess the prevalence of hormonal contraceptive use and its association with breast cancer risk in the study population. ***Method and Materials:*** This cross-sectional study was conducted at the Department of Biochemistry, Dhaka Medical College, Dhaka from July 22 to June 23, involving 32 participants. Data were collected through structured interviews and medical record reviews. Demographics, contraceptive history, and breast cancer risk factors were analyzed using SPSS version 25.0. Chi-square tests assessed statistical significance ($p < 0.05$). Ethical approval was obtained, and participant confidentiality was maintained in compliance with the Declaration of Helsinki. ***Result:*** The study population had a mean age of 47 years (SD: 5.2), with 56.25% (n=18) aged ≤50 years and 43.75% (n=14) aged >50 years. Of the total, 18.75% (n=6) of participants aged ≤50 years and 12.5% (n=4) of those aged >50 years were diagnosed with breast cancer. Among the diagnosed cases, 37.50% were estrogen receptor (ER) positive, 28.13% were progesterone receptor (PR) positive, and 21.88% were HER2 positive. Additionally, 31.3% of participants had early menarche, which was the most prevalent risk factor observed in the study. ***Conclusion:*** Hormonal contraceptive use impacts breast cancer risk, influenced by factors like age, family history, receptor status, and lifestyle.

Keywords: Hormonal contraceptives, Breast cancer risk, Oral contraceptives, Estrogen receptor (ER), Early menarche.

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Introduction

Hormonal contraceptives (HCs) have revolutionized reproductive health by providing effective means of birth control and addressing various gynecological issues. However, their association with breast cancer risk has been a topic of extensive research and debate.[1] The use of

hormonal contraceptives, particularly progestogen-only pills, is associated with a modest increase in breast cancer risk, as reported by several epidemiological studies.[2, 3] Current data suggest that this increased risk is primarily observed among recent or current users and diminishes over time following cessation.[4, 5] A large-scale prospective cohort study conducted in Denmark revealed that contemporary hormonal contraceptives, including oral combined and progestogen-only pills, injectables, implants, and intrauterine devices, increased breast cancer risk by 20–30%.[6] Similarly, a meta-analysis comprising over 50 epidemiological studies highlighted a significant, albeit small, risk of breast cancer among hormonal contraceptive users.[7] Notably, the absolute risk remains low, with an estimated additional 1–2 breast cancer cases per 10,000 women per year of hormonal contraceptive use.[8]

While the risks are evident, hormonal contraceptives offer several benefits, including reduced risks of ovarian, endometrial, and colorectal cancers, as demonstrated in long-term studies.[9, 10] These protective effects often outweigh the associated risks for many women, particularly those with low baseline risks of breast cancer.[11] In addition, hormonal contraceptives are vital in managing polycystic ovary syndrome, endometriosis, and heavy menstrual bleeding.[12] Despite the small but significant association between HCs and breast cancer, research indicates that the type, duration, and dosage of contraceptives play crucial roles in determining individual risk levels.[13, 14] Furthermore, genetic predisposition, lifestyle factors, and hormonal profiles must be considered when evaluating the overall risk.[15] To determine the prevalence of hormonal contraceptive use and evaluate its association with breast cancer risk among the study population.

Method and Materials

Study Design

This cross-sectional study was conducted in the Department of Biochemistry, Dhaka Medical College. The study population consisted of 32 participants, and the study period extended from July 22 to June 23. The study aimed to evaluate the prevalence of hormonal contraceptive use and its association with breast cancer risk.

Data Collection Procedure

Data were collected through structured interviews and review of medical records. A pre-designed questionnaire was used to record demographic information, contraceptive usage history, family history of breast cancer, and clinical symptoms. Physical examination findings and laboratory reports were also documented for participants diagnosed with breast cancer. All data were verified and cross-checked to ensure accuracy.

Inclusion Criteria

Women aged 18–60 years using hormonal contraceptives.
Participants with a history of contraceptive use for at least 6 months.
Participants willing to provide informed consent.

Exclusion Criteria

Women with a previous diagnosis of breast cancer prior to contraceptive use.
Participants with incomplete medical records or missing data.
Women using non-hormonal contraceptive methods.

Statistical Analysis

All collected data were entered and analyzed using SPSS software version 25.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic and clinical characteristics. Chi-square tests were performed to assess associations between hormonal contraceptive use and breast cancer risk, with a p-value <0.05 considered statistically significant.

Ethical Consideration

Ethical approval was obtained from the Ethics Review Committee of Dhaka Medical College. Informed consent was secured from all participants before data collection. Confidentiality and anonymity were strictly maintained throughout the study, ensuring compliance with the principles of the Declaration of Helsinki.

Result

Table 1: Age Distribution of the Study Population (n=32)

Age Group	Frequency (n)	Percentage (%)
≤50 years	18	56.25
>50 years	14	43.75
Mean ± SD	47 ± 5.2	

Table 1 reveals the age distribution of the study population. A majority of the participants (56.25%, n=18) were aged ≤50 years, while the remaining 43.75% (n=14) were >50 years. The mean age was 47 years with a standard deviation of 5.2 years.

Table 2: Occupational Status of the Study Population (n=32)

Occupation	Frequency (n)	Percentage (%)
Homemaker	20	62.5
Service Holder	6	18.75
Others	6	18.75

Table 2 illustrates the occupational status of the participants. Most were homemakers (62.5%, n=20), while 18.75% (n=6) were service holders, and another 18.75% (n=6) were engaged in other occupations.

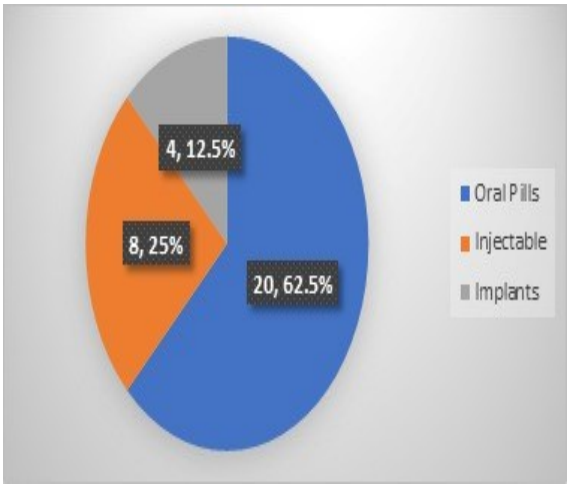

Figure 1: Type of Hormonal Contraceptive Used

Figure 1 shows the most commonly used type of hormonal contraceptive was oral pills, accounting for 62.5% (n=20) of the population. Injectables were used by 25% (n=8), while the remaining 12.5% (n=4) used implants.

Table 3: Duration of Contraceptive Use (n=32)

Duration (Years)	Frequency (n)	Percentage (%)
≤5	12	37.5
6–10	10	31.25
>10	10	31.25

Table 3 describe the participants were grouped based on the duration of contraceptive use. Those who used contraceptives for ≤5 years comprised 37.5% (n=12). A similar proportion used them for 6–10 years (31.25%, n=10) and >10 years (31.25%, n=10).

Table 4: Family History of Breast Cancer (n=32)

Family History	Frequency (n)	Percentage (%)
Positive	8	25.0
Negative	24	75.0

Table 4 describe among the participants, 25% (n=8) had a positive family history of breast cancer, while the majority, 75% (n=24), had no such family history. This highlights the role of genetic predisposition in a subset of the population.

Table 5: Breast Cancer Diagnosis by Age Group (n=32)

Age Group	Diagnosed (n)	Percentage (%)	Not Diagnosed (n)	Percentage (%)
≤50 years	6	18.75	12	37.5
>50 years	4	12.5	10	31.25

Table 5 presents the breast cancer diagnosis by age group among 32 participants. Of the total, 18.75% (n=6) of participants aged ≤50 years were diagnosed with breast cancer, while 12.5% (n=4) of those aged >50 years received a diagnosis. Additionally, 37.5% (n=12) of participants aged ≤50 years and 31.25% (n=10) of participants aged >50 years were not diagnosed, indicating variability in diagnosis across age groups.

Table 6: Clinical Symptoms Noted (n=32)

Symptom	Frequency (n)	Percentage (%)
Breast Lump	15	46.9
Pain	10	31.3
Nipple Discharge	7	21.8

Table 6 shows the most commonly reported clinical symptom was breast lump, observed in 46.9% (n=15) of participants. Pain was experienced by 31.3% (n=10), while nipple discharge was reported by 21.8% (n=7). These findings suggest a significant prevalence of classic breast cancer symptoms in the population.

Table 7: Hormonal Receptor Status among Diagnosed Cases (n=32)

Receptor Status	Frequency (n)	Percentage (%)
ER Positive	12	37.50
PR Positive	9	28.13
HER2 Positive	7	21.88
Triple Negative	4	12.50

Table 7 summarizes receptor status distribution in the studied population. ER-positive was most common (12, 37.50%), followed by PR-positive (9, 28.13%) and HER2-positive (7, 21.88%). Triple-negative cases were least frequent (4, 12.50%), indicating a predominance of ER-positive status.

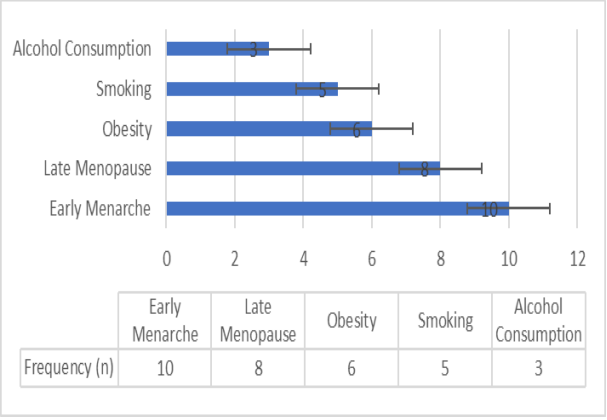

Figure 2: Risk Factors Analysis

Figure 2 shows the analysis of risk factors showed that early menarche was the most prevalent, affecting (31.3%, n=10) of participants. Late menopause was noted in (25%, n=8), while lifestyle factors like obesity (18.8%, n=6), smoking (15.6%, n=5), and alcohol consumption (9.3%, n=3) also contributed to breast cancer risk in this study.

Discussion

This study explored the age distribution, contraceptive use patterns, family history, and clinical and receptor profiles of breast cancer in women using hormonal contraceptives. Among the participants, the majority were aged ≤50 years (56.25%), with a mean age of 47 years, indicating a relatively young cohort. This finding aligns with studies suggesting that hormonal contraceptive use is prevalent among younger women due to its dual role in contraception and menstrual regulation.[16] Regarding hormonal contraceptive types, oral pills were the most commonly used (62.5%), followed by injectables (25%) and implants (12.5%). Similar findings were reported in a large-scale study conducted in Denmark, which highlighted oral contraceptives as the preferred choice due to ease of use and availability.[17]

The study also revealed that 25% of participants had a positive family history of breast cancer. This finding corroborates evidence that genetic predisposition, including family history, significantly elevates breast cancer risk in women using hormonal contraceptives.[18] A meta-analysis suggested that individuals with a family history of breast cancer had a higher likelihood of developing the disease, emphasizing the importance of genetic factors.[19] Among breast cancer cases in this study, estrogen receptor (ER)-positive cases were predominant (37.50%), while 12.5% were triple-negative. This receptor profile is consistent with findings in other populations, where ER-positive breast cancer is the most frequent subtype, particularly among contraceptive users.[20] Research highlights the hormone-driven nature of ER-positive cancers, further implicating hormonal contraceptives as a potential contributing factor.[21] The clinical presentation revealed breast lump as the most common symptom (46.9%), followed by pain (31.3%) and nipple discharge (21.8%). These results are similar to a study conducted in India, where breast lump was the primary complaint in 70% of breast cancer patients.[22] The prevalence of these symptoms underscores the need for early

detection and awareness programs.[23] Analysis of risk factors showed that early menarche (31.3%) and late menopause (25%) were predominant among participants. These findings align with previous studies identifying prolonged estrogen exposure due to early menarche and late menopause as significant breast cancer risk factors.[24] Lifestyle factors, including obesity (18.8%), smoking (15.6%), and alcohol consumption (9.3%), further contributed to risk, as established in global research linking these factors to breast cancer pathogenesis.[25]

Conclusion

This study highlights the prevalence of hormonal contraceptive use and its association with breast cancer risk. The findings emphasize the significant role of hormonal contraceptives, particularly oral pills, in influencing breast cancer susceptibility, especially in younger women. Additionally, factors such as family history, receptor status, and lifestyle-related risks underline the multifaceted nature of breast cancer etiology. These insights underscore the need for targeted awareness programs, early detection strategies, and personalized risk assessments for women using hormonal contraceptives. This study has several limitations that should be acknowledged. The small sample size (n=32) limits the generalizability of the findings to broader populations. The cross-sectional design restricts the ability to establish causal relationships between hormonal contraceptive use and breast cancer risk.

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