REVIEW ARTICLE

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Gynecological and breast cancer risk factors and screenings in lesbian and bisexual women

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ABSTRACT

It is estimated that individuals with lesbian, gay, bisexual, transsexual, intersexual, and other sexual tendencies make up approximately 3-12% of the world population. The proportion of lesbian and bisexual women (LBW) varies between 1-20% of all women. Studies on the subject show that risk factors for gynecological malignancies and breast cancer are more common in lesbian and bisexual women than in heterosexual women. In LBW, it is reported that obesity or high body mass index, inactivity, smoking, alcohol and substance abuse, stress, anxiety disorders, depression, and sexually transmitted diseases are more common than in heterosexual women. In addition, sexually transmitted infections (STIs) such as genital herpes, human papilloma virus (HPV) infections, bacterial vaginosis, trichomoniasis, hepatitis A, syphilis, and HIV disease, that can be transmitted by homosexual relationships, are also common in these women. It is known that genital herpes and HPV are important risk factors especially in the development of cervical cancer. In addition, breastfeeding rates and lactation periods are known to have protective effects against gynecological malignancies and lactation periods are known to have protective effects against breast cancer. This review aims to discuss gynecological malignancy and breast cancer incidence in LBW and the risk factors for these cancers according to current literature. In this context, a total of 340 articles were accessed by entering keywords related to the subject in the PubMed database and analyzed according to their titles and abstracts, while duplicates were removed. However, reviews, qualitative studies, and summaries were not included in the study. A total of 23 research articles were examined, published between 2012-2022, whose full text can be accessed through the PubMed database, investigating gynecological cancer and breast cancer risk factors and screenings in LBW.

Keywords: Lesbians, bi-sexual women, gynecological cancers, breast cancer, screening

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INTRODUCTION

The abbreviation "LGBTI +" is used for lesbian, gay, bisexual, transsexual, intersex, and other sexual trends that reflect different dimensions of homosexuality worldwide.[1,2] While men with a sexual orientation towards their sex are defined as gay and women as lesbian, sexual tendency towards both sexes is defined as bisexual.[1,3] When the literature is examined, it will be seen that LGBTI + individuals make up approximately 3-12% of the total population.[4,5] It is estimated that the proportion of lesbian and female bisexuality in the world varies between 1-20% of all women.[2,6]

This finding clearly reveals that the problems of lesbian and bisexual women (LBW) who have to live in society invisibly, should be addressed separately. According to a study conducted in the United States (USA), almost 50% of "LGBTI +" individuals were diagnosed with cancer.[7] Studies on the subject show that smoking, alcohol use, excess weight/obesity, inactivity, stress, anxiety disorders, depression, and sexually transmitted diseases that are seen more in lesbian and bisexual women (LBW) than in heterosexual women, are considered to be risk factors for gynecological malignancies and breast cancer.[8- 10] In addition, the use of oral contraceptives is known to protect against endometrial cancer while birth and breastfeeding rates are known to protect against ovarian cancer and breast cancer, all of which are lower in this group of women than in heterosexual women.[11,-13] Also, sexually transmitted infections (STIs) such as genital herpes, human papilloma virus (HPV) infections, bacterial vaginosis, trichomoniasis, hepatitis A, syphilis, and HIV disease, which can be transmitted by homosexual relationships, are also common in these women.[9,14] It is known that genital herpes and HPV are important risk factors, especially in the development of cervical cancer.[9,14] Although they have many risk factors, it is known that LBW avoid gynecological examination and gynecological cancer screenings and receive inadequate health care services related to women's health.[11-15] Although the rates are only estimates, the increase in gynecological cancer prevalence in LBW today may be associated with the insufficiency of protective gynecological health services despite the increased cancer risk in this group of women. In this review paper, a total of 340 articles were reached by entering keywords in the PubMed database. However, reviews, qualitative studies, and summaries were not included in the study. The flow of review information is shown in Figure 1. This review aims to discuss gynecological malignancies and breast cancers in LBW according to the current literature.

A total of 23 research articles, published between 2012-2022, were examined, whose full text can be accessed through the PubMed database, and which investigated gynecological cancer and breast cancer risk factors and screenings in LBW (Table 1).

GYNECOLOGICAL AND BREAST CANCER RISK FACTORS IN LESBIAN AND BISEXUAL WOMEN

Cervical cancer

Cervical cancer is the third most common type of gynecological cancer in the world.[16,17] The prevalence of cervical cancer is estimated to be over 400,000. It is the second most common gynecological cancer type among the top 10 cancer types seen in women in the USA,[17] where the incidence of cervical cancer is 7.7/100.000, and the mortality rate is 2.3/100.000.[16] The literature on cervical cancer and screening studies in LBW seems to be quite insufficient.[9,15] In Turkey, a study on this group of women in the reproductive health and health care services has not been demonstrated outside of the limited number of studies.[6,11] According to the California Health Interview Questionnaire, lesbians (16.5%) were reported to have a higher prevalence of cervical cancer than heterosexual women (14.0%). According to the same study results, the prevalence of cervical cancer

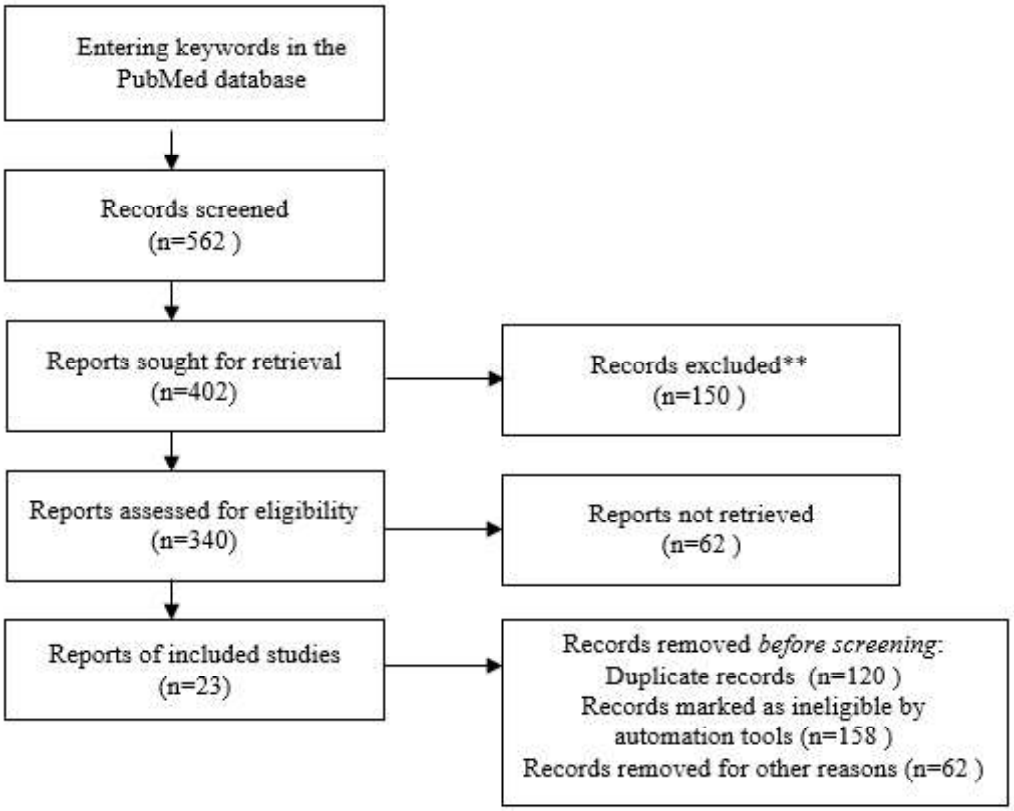

Figure 1. Flow of review information

(41.2%) was found to be higher in bisexual women compared to heterosexual and lesbians.[18] These findings require that risk factors related to cervical cancer be examined in LBW. It is known that cervical cancer risk factors such as smoking, alcohol use, substance abuse, and obesity are common in LBW. [8,19] In addition, the main risk factors for cervical cancer, namely early sexual intercourse before the age of 16, polygamous sexual life, and STIs such as HPV-16 and HPV-18, [especially HPV-11 and HPV-16], are common in LBW and are reported to increase the risk of getting caught.[1,9] It is known that HPV-16 and HPV-18 are responsible for almost 70% of all cervical cancer cases. When the literature is examined, different study results related to the subject were found. Although previous studies indicate that STIs are rare among lesbians, studies in recent years are drawing attention.[14,15] This has been linked to the fact that lesbians or their spouses have past or current heterosexual relationship histories. In addition, STIs such as HPV, genital herpes, bacterial vaginosis, trichomoniasis, hepatitis A, syphilis, and HIV disease have been reported to be transmitted through homosexual intercourse in women.[14,15] According to the literature, HPV transmission can also occur through skin contact with infected body fluids, genital mucosa, penis, scrotum, vagina, vulva, or anus. For this reason, it is known that lesbians who do not have vaginal/anal intercourse are also at risk of HPV infection and thus cervical cancer.[14,15]

Endometrial cancer

Endometrial cancer is the most common type of gynecological cancer. One in every 40 women is diagnosed with endometrial cancer in her life.[20,21] In the USA, there are an average of 54,870 new cases of uterine corpus cancer each year, and it is predicted that endometrial cancer will develop mostly among these cases.[17, 22] When the literature is examined, it is seen that, like other types of gynecological cancer, there is a limited number of studies

Table 1. Data on the studies conducted between 2000-2020 on gynecological cancer and breast cancer risk factors and screening in Lesbian and Bisexual Women

Authors	**Article title**	**Type of study**	**Sample size**	**Results**
United States Preventive Services Task Force [42]	The guide to clinical preventive services: Screening for cervical cancer. Baltimore	Descriptive	9581 women	Pap Smear screening rates in lesbian women were found to be significantly lower than in heterosexual women.
Cochran & Mays [46]	Risk of breast cancer mortality among women cohabiting with same sex partners: findings from the National Health Interview Survey	Descriptive	693 women	Lesbian women are less likely to undergo clinical breast examination (CBE) in 2 years than heterosexual women, but mammography rates do not differ. Sexual orientation has been found to be at risk of fatal breast cancer.
Gooren et al.[34]	Breast cancer development in trans-sexual subjects receiving cross-sex hormone treatment	Descriptive	15,974 people	Cross-sex hormone therapy of transgender subjects does not appear to be associated with an increased risk of developing malignant breast cancer.
Bernat et al.[40]	Characteristics associated with Initiation of the HPV vaccine among a national sample of male and female young adults	Descriptive	3,448 people	The rate of LBW (44.9%) receiving at least one dose of HPV vaccine was lower than that of heterosexual women (51.1%) in their Web-based studies involving women between the ages of 18 and 24 years. However, the relationship between sexual orientation and HPV vaccination was statistically insignificant.
Fredriksen-Goldsen[15]	HPV vaccination among lesbian and bisexual women: Findings from a national survey of young adults	Descriptive	543 people	Many LBW were not vaccinated against HPV. 45% of lesbian and bisexual women received one dose of HPV vaccine, but 70% completed all three doses of the vaccine.
Clavelle et al.[36]	Breast cancer risk in sexual minority women during routine screening at an urban LGBT health center	Descriptive	423 women	The nullipara rate and the lifetime risk of breast cancer in LBW compared with the Gail model were found to be higher than in heterosexual women
Lacombe-Duncan & Logie [48]	Correlates of clinical breast examination among lesbian, gay, bisexual, and queer women	Descriptive	22410 women	The rate of participation in the clinical breast examination of LBW in the last two years, knowledge of STDs, sexual risk practices, the last two years of Pap test, regular health check-ups and the state of health personnel's knowledge of sexual orientation were positive. The thought of stigmatization and the belief that healthcare personnel are uncomfortable with their sexual orientation were negatively correlated.

Authors	Article title	Type of study	Sample size	Results
Liu &Yeo [47]	Breast health, risk factors, and cancer screening among lesbian, bisexual, and queer/questioning women in China	Descriptive	310 women	The rates of breast self-examination and clinical breast examination of LBW were low. The study concluded that LBW are vulnerable to breast cancer.
Greene et al. [44]	Association of pregnancy history and cervical cancer screening in a community sample of sexual minority women	Descriptive	430 women	A positive correlation was found between pregnancy history and having a Pap test. In addition, disclosure of one's bisexual identity and sexual orientation to healthcare providers also positively affects the Pap test.
Milner & McNally[20]	Non adherence to breast and cervical cancer screening among sexual minority women	Descriptive	1115 women	Among women who had a general physical in the last year, concealment, stigma consciousness, rejection sensitivity, and fear of negative evaluation were all positively associated with lower rates of timely Pap tests. Among all women, these psychological variables were positively associated with never obtaining a Pap test and concealment was also negatively associated with clinical breast exam adherence.
Kim, Lee & Choi-Kwon [43]	Cervical cancer screening and human papillomavirus vaccination among Korean sexual minority women by sex of their sexual partners	Descriptive	671 women	LBW with only female partners had lower rates of Pap testing and completion of HPV vaccine than women with male and female partners.
Herriges et al. [1]	The association of sexual orientation with prostate, breast, and cervical cancer screening and diagnosis	Descriptive	Overall, 4,441 and 6,333 heterosexual men and 225 and 213 LGB men and women,	A higher proportion of heterosexual women than LBW were screened for cervical cancer with Pap smears (95.36% vs. 90.48% and 86.11%, p=<0.001).

Legend: LBW = lesbian women and bisexual women

related to endometrial cancer incidence in LBW.[18,21] In some studies, the risk of endometrial cancer in LBW has been reported to be higher than in heterosexual women,[3] while in other studies it has been reported to be lower.[1] It is known that the most important factors that increase the risk of endometrial cancer in LBW are obesity, nulliparity, medications suppressing the ovaries, and anovulation. Risk factors such as polycystic ovarian syndrome, tamoxifen use, hypertension and diabetes mellitus, and Lynch syndrome are thought to affect the prevalence at the same rate as in heterosexual women.[1,10] According to the American Cancer Society [3]

comparing gynecological cancer risk factors over 40 years of age, cancer risk factors such as nulligravida, high body mass index, and immobility in LBW were found to be higher in homosexual than in heterosexual women. Moreover, the number of pregnancies, breastfeeding, and oral contraceptive use rates are lower in LBW than in heterosexual women. In the study, it was concluded that gynecological malignancy risk factors were higher than in heterosexual women.[3] According to the Women's Health Initiative (WHI), older LBW who have never had sex with men have been reported to have a lower prevalence of endometrial cancer than heterosexual women.[1] However, the limited literature on the subject reveals the need for further study.

Ovarian cancer

Although ovarian cancer is the second most common type of gynecological cancer, it is also seen as the most common cause of death among other gynecological cancer types.[22,23] Risk factors include nulligravida, early menopause, unsatisfactory use of estrogen, breast cancer gene 1 (BRCA1) or breast cancer gene 2 (BRCA2) gene mutation, overweight, and obesity.[22,23] The factors with a protective effect are pregnancy, high parity, oral contraceptive use, lactation, and ovarian cancers. In LBW, obesity, low use of oral contraceptives, nulligravida, or decreased number and duration of pregnancy, are associated with ovarian cancer.[19,24,25] In addition, some studies on the subject reported that the health beliefs and behaviors of this group of women towards ovarian cancer genetic risk tests (BRCA1 or BRCA2) are inadequate.[13-15] In the studies of Azagba et al.[26] and Semlyen et al.[27] lesbians had a higher body mass index while in the studies of Waterman and Voss [14] and Barefoot et al.[28] the number of pregnancies, number of children, number of abortions, and use of birth control pills were higher. Also, in the study of Fallin at al.[19] smoking rates are higher in lesbians than in heterosexual women.

Breast cancer

Breast cancer is the most common type of cancer in women after skin cancer and is observed in 18% of women worldwide. While one out of every nine women gets breast cancer at some time in their lives, one out of thirty women die due to breast cancer.[17,22] The estimated incidence of breast cancer in the USA is 124.8/ 100,000 per year.[29] Breast cancer risk factors include early menarche, late menopause, pregnancies over 35, hormone replacement therapy, family history, BRCA1-2 gene mutation, alcohol use, obesity, and nulliparity.[30,31] Studies on breast cancer in LBW have shown that these women have a higher risk of breast cancer risk factors such as alcohol use, obesity, and nulliparity compared to heterosexual women. It is reported that the rate of breastfeeding, known to be protective against breast cancer, is also lower in LBW.[10] In the studies of Austin et al.[32] the incidence rate ratio of breast cancer in LBW were found to be higher than in heterosexuals. In this same study one year incidence rates per 100,000 person-years were 131.6 lesbian, 131.7 bisexual women and 122.6 heterosexual women.[32] In addition, it is known that the risk of developing breast cancer in lesbians who have not had mastectomy and who received testosterone treatment is not clear, but treatment taken does not affect estradiol levels.[31,33] According to the WHI, LBW have a higher prevalence of breast cancer compared to heterosexual women.[34,35] When the literature is examined, different study results related to the subject were found. The study of Boehmer et al.[10] reported that in the 2001, 2003, 2005, and 2007 California Health Interview Surveys, the lesbian population density was associated with higher breast cancer incidence, and the executive bisexual population density was associated with lower breast cancer incidence. Clavelle et al. [36] in their study investigating breast cancer risk factors in LBW, found that the nullipara rate and the lifetime risk of breast cancer in these women compared with the Gail model were higher than in heterosexual women.

GYNECOLOGICAL AND BREAST CANCER SCREENING IN LESBIAN AND BISEXUAL WOMEN

Gynecological cancers

The American Academy of Pediatrics (APA) recommends routine administration of 3 doses of HPV vaccine between the ages of 11-12. It has been reported that those who have not had immunity or who have not completed their doses should be vaccinated by completing their doses between the ages of 13 and 26.[37] The American Food and Drug Administration (FDA) approved two types of HPV vaccines, namely the bivalent (HPV-16, HPV-18) and quadrivalent (HPV-6, HPV-11, HPV-16, HPV-18) vaccines.[38] The American College of Obstetrics and Gynecology (ACOG) recommends performing an annual pelvic examination and Pap test for all sexually active women aged 21 and over.[39] These recommendations also include LBW. However, although limited data are available, including cervical cancer screenings and HPV vaccination for LBW, studies show that HPV vaccination and cervical screening are insufficient in this group of women.[14,29] Bernat et al.[40] reported that the rate of LBW (44.9%) receiving at least one dose of HPV vaccine was lower than heterosexual women (51.1%) in their Web-based studies involving women between the ages of 18 and 24. However, the relationship between sexual orientation and HPV vaccination was found to be statistically insignificant. In addition, in the studies of McRee et al.,[41] which included 543 LBW between the ages of 18-26, it was found that 45% of women received a dose of the HPV vaccine, but that 70% completed three doses of the vaccine. In the studies of the United States Preventive Services Task Force (USPSTF), it was found that the Papanicolaou (Pap) smear screening rates in lesbians were quite low compared to that in heterosexual women.[42] Similarly, according to the WHI, compared to heterosexual women, older LBW have been reported to be significantly less likely to undergo a Pap test at any time.[1] In the same study, after a short training session with a lesbian doctor, it was found that one in four women (58-66 years) who did not have a Pap test had a Pap test within 3 years.[1] Similarly, in the studies of Kim et al.[43] it was found that LBW with only female partners had lower rates of Pap testing and completion of HPV vaccine than women with male and female partners.

As can be seen, studies on the subject show that the health behaviors of LBW regarding gynecological examination and Pap test are not at a sufficient level.[1,14,40] On the other hand, the frequency of gynecological examination and Pap test in women with heterosexual relationships is higher than in women with only homosexual relationships. Similarly, in the study conducted by Greene et al.[44] on LBW, it was reported that previous pregnancy history positively affected the rates of having Pap tests. Another factor that positively affects the rates of LBW having Pap tests is the disclosure of sexual orientation to healthcare providers. In the studies of Milner and McNally,[20] fear of stigmatization, tendency to hide, and fear of exclusion negatively affect the Pap test in LBW. Psychological barriers and concealment of sexual identity may negatively affect compliance with gynecological screening behaviors among some sexual minority women. Strategies that facilitate positive disclosure experiences to healthcare providers and address psychological factors related to minority stress can improve compliance with gynecological cancer screening.[20,44]

Breast cancer

There are also different results in studies examining the effect of sexual orientation on awareness of breast cancer and screening. While some studies reported that LBW are less interested in breast self-examination (BSE) and mammography applications than heterosexual women,[15] sexual orientation does not affect awareness of these scans.[34,45] In the studies of Cochran and Mays,[46] it was found that lesbians had a lower probability of performing clinical breast examinations (CBE) within 2 years

compared to heterosexual women, but their mammography rates did not differ. Similarly, in the studies of Liu and Yeo,[47] LBW were reported to have low BSE and low clinical breast examination (CBE) rates. In the studies of Fredriksen-Goldsen et al.,[15] LBW mammography rates were found to be significantly lower compared to those of heterosexual women. In Lacombe-Duncan and Logie's [48] studies the rate of participation of LBWs in CBE in the last two years, knowledge of STDs, sexual risk practices, the last two years of Pap test, regular health checkups and the state of health personnel's knowledge of sexual orientation were positive. The thought of stigmatization and the belief that healthcare personnel are uncomfortable with their sexual orientation was negatively correlated. The contradictory findings may be due to the small sample sizes in the studies to represent the universe, the demographic determinants that prevent access to breast cancer screenings, homogeneous distribution in the studied groups, how sexual orientation is classified, and differences in methodologies. For this reason, it is thought that more studies are needed to generalize the results of the studies.

CONCLUSION

Although LBW carry many risk factors in terms of gynecological malignancies and breast cancer, their awareness and healthcare rates are insufficient compared to heterosexual women. While LBW should receive reproductive health and sexual health services based on their risk factors specific to their sexual orientation, the fact that this group of women tends to hide their sexual orientation makes them invisible to the health system. However, the results of this study on the subject show that LBW need to be handled specially in the provision of health services and the preparation of guidelines when developing preventive health policies for gynecological malignancies and breast cancer. When the literature is examined, it is seen that studies examining gynecological malignancies and breast cancer incidence and risk factors in LBW are insufficient. Therefore, more studies are needed to produce good and generalizable evidence. In addition, healthcare providers should question sexual orientation and evaluate LBW-specific health risk factors, not only in the provision of preventive healthcare, but also in therapeutic services. Training and counseling services to increase awareness of gynecological malignancies and breast cancer and to encourage screening in this group of women should be made widespread throughout society.

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