MICHIGAN BRFSS SURVEILLANCE BRIEF

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Breast and Ovarian Cancer Family History and Genetic Counseling

Harmful mutations in the Breast Cancer, or BRCA1 and BRCA2 genes, substantially increase the risk of developing hereditary breast and ovarian cancers (HBOC) over the course of a lifetime. Additionally, a BRCA1 or BRCA2 mutation, the most common causes of HBOC, increases the risk for pancreatic and prostate cancers. Among women younger than 45, breast cancer incidence is higher among Black women than white women.[1] A strong history of breast and/or ovarian cancer in families means a person will be more likely to have HBOC. It is important to collect family health history to determine if your risk of breast and/or ovarian cancer is higher than the general public.

Background

HBOC causes approximately 7,500 breast cancer and 2,000 ovarian cancer cases per year in the United States.[1] The National Comprehensive Cancer Network (NCCN) recommends that women with a strong family history of breast and ovarian cancer should pursue genetic counseling and testing, especially with cases of cancer diagnosed under the age of 50.[2] This surveillance brief compared the prevalence of family history and cancer genetic counseling for breast and ovarian cancer among Michigan female respondents and their biological relatives between 2015 and 2018.

Methods

Questions related to breast and ovarian cancer personal and family history and genetic counseling were included within the 2015 and 2018 Michigan Behavioral Risk Factor Survey. These data were used to analyze the prevalence of breast and ovarian cancer personal and family history among adult women in Michigan and assess the utilization of breast and ovarian cancer genetic counseling among these women. Personal history of breast and ovarian cancer was established by asking whether the female respondent had ever been diagnosed with breast or ovarian cancer. The breast and ovarian cancer family history questions asked about diagnoses of breast and ovarian cancer among their biological relatives; an additional question determined the number of family members that were diagnosed with breast cancer at or before 50 years of age. These questions were then used to determine women at risk of breast and ovarian cancer based on selected criteria from the 2005 United States Preventive Services Task Force (USPSTF) Guidelines and the 2014 National Comprehensive Cancer Network (NCCN) Guidelines. Furthermore, genetic counseling was defined as the process of communication between a specially trained health professional and someone concerned about the risk of disease in his or her family.

What is the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)?

The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The MiBRFSS follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various health behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and disability. Landline and cell phone interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a raking weighting factor is used to adjust for the distribution of the Michigan adult population based on eight demographic variables. All analyses are performed using SAS-callable SUDAAN® to account for the complex sampling design.

Results

The prevalence of breast and ovarian cancer family history among female respondents was consistent between 2015 and 2018 (Table 1). In 2018, 13.9% of adult women met USPSTF family history guidelines for further HBOC genetic assessment and possible genetic testing, which did not differ significantly from 2015 at 13.6% (Table 1). In 2018, the prevalence of adult women's relatives diagnosed with breast cancer, breast cancer diagnosed at or before age 50, or ovarian cancer was 35.7%, 51.8%, and 13.4%, respectively. About 11.7% of adult women had significant family history of breast or ovarian cancer.

Table 1. Prevalence of Breast & Ovarian Cancer Family History Among Female Respondents, BRFSS 2015 & 2018

	2015			2018		
	Frequency	Percent	95% CI	Frequency	Percent	95% CI
Relatives diagnosed with breast cancer One or more	1,350,073	39.5	36.3-42.9	1,264,060	35.7	32.8-38.7
Relatives diagnosed with young breast cancer One or more	617,443	48.9	43.3-54.5	617,880	51.8	46.6-57.0
Relatives diagnosed with ovarian cancer One or more	466,237	13.6	11.5-16.1	469,996	13.4	11.3-15.7
Significant family history Yes	466,237	11.7	9.9-13.9	469,996	11.7	9.9-13.8
Met USPSTF Guidelines* Yes	542,143	13.6	11.7-15.8	558,081	13.9	11.9-16.1

CI = confidence interval.

* Adult females meeting one of the following USPSTF 2005 criteria:

a) ⩾ 2 first degree relatives with breast cancer, one of whom was diagnosed at less than 50 years of age.

b) ⩾ 3 first- or second-degree relatives diagnosed with breast cancer at any age.

c) ⩾ 2 first- or second-degree relatives diagnosed with ovarian cancer at any age.

d) ⩾ 1 first- or second-degree relative diagnosed with breast cancer at any age and ⩾1 first- or second-degree relative diagnosed with ovarian cancer at any age.

Among those with a family history of breast cancer diagnosed at or before age 50, 23.1% reported that at least one family member had accessed genetic counseling services. This prevalence was 31.7% in 2015, which was not significantly different from the prevalence in 2018. There was also a non-significant decrease (33.5% vs. 27.1%) in the proportion of adult women who reported at least one family member who received HBOC genetic counseling among those with a family history of ovarian cancer between 2015 and 2018 (Table 2).

Table 2. Prevalence of Genetic Counseling for Breast and Ovarian Cancer among Family Members of Female Respondents, BRFSS 2015 & 2018

	2015			2018		
	Frequency	Percent	95% CI	Frequency	Percent	95% CI
Breast cancer ≤ Age 50 One or more relatives	199,847	31.7	24.7-39.6	136,717	23.1	17.4-30.1
Ovarian cancer One or more relative	149,285	33.5	25.3-42.9	124,184	27.1	19.8-35.9

CI = confidence interval.

In 2018, those aged 65+, and those who identified as black, non-Hispanic and those with household income between $20,000 and $34,999 were more likely to have had themselves or a family member receive cancer genetic counseling for breast and/or ovarian cancer, but those differences were not significant. About 37.9% and 25.5% of women who met USPSTF guidelines reported having HBOC genetic counseling in 2015 and 2018, respectively (Table 3).

Table 3. Prevalence of Genetic Counseling for Breast and Ovarian Cancer among Female Respondents, BRFSS 2015 & 2018

	2015			2018		
	Frequency	Percent	95% CI	Frequency	Percent	95% CI
Total	474,082	13.8	11.7-16.3	364,083	10.3	8.6-12.3
Race/Ethnicity						
White, non-Hispanic	399,260	14.6	12.1-17.3	289,274	10.3	8.5-12.5
Black, non-Hispanic	48,756	11.5	7.3-17.7	51,477	11.3	6.4-19.4
Other, non-Hispanic	-	-	-	-	-	-
Age						
18-44	201,111	14.3	10.6-19.2	139,169	9.6	6.8-13.5
45-64	155,012	12.7	9.8-16.3	131,067	10.6	8.0-13.9
65+	117,959	14.8	11.6-18.7	93,846	10.9	8.1-14.4
Household Income						
<$20,000	74,985	13.4	9.2-19.2	62,393	13.3	8.1-21.2
$20,000-$34,999	60,991	11.9	7.9-17.5	84,939	14.0	9.7-19.9
$35,000-$49,999	49,419	12.4	7.2-20.3	26,864	7.0	3.9-12.3
$50,000-$74,999	74,711	16.8	11.0-24.9	45,577	9.4	6.0-14.3
$75,000+	101,064	12.2	8.5-17.4	97,759	10.6	7.4-15.1
Insurance						
Yes	449,556	13.9	11.8-16.4	343,200	10.2	8.5-12.3
No	-	-	-	-	-	-
Met USPSTF Guidelines						
Yes	197,656	37.9	30.1-46.3	136,815	25.5	19.3-32.9
No	276.425	9.5	7.7-11.8	227,268	7.6	6.0-9.5

CI = confidence interval.

Discussion

Although about 14% of adult women met national guidelines for further risk assessment based on their family history of breast and/or ovarian cancer in 2018, only 10% of these individuals actually had genetic counseling. Furthermore, among those with a family history of breast cancer diagnosed at or before age 50 and those with a family history of ovarian cancer, 23.1% and 27.1%, respectively, reported that at least one family member had accessed genetic counseling services in 2018. It suggests that the majority of these high-risk family members are also not receiving HBOC genetic counseling. Genetic counseling with a board-certified and/or eligible genetics provider, followed by genetic testing as appropriate, are the recommended first steps for anyone with a personal history or strong family history of these cancers. Early identification of LS can help reduce the impact of cancer and save the lives of family members who may also be at risk.

References

1. Breast Cancer Prevention Partners [BCPP] (2021). African American Women and Breast Cancer. Retrieved September 2021 from: https://www.bcpp.org/resource/african-american-women-and-breast-cancer/

2. National Comprehensive Cancer Network (NCCN) Guidelines for Detection, Prevention, & Risk Reduction (2021). Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic. September 2021 from: https://www.nccn.org/guidelines/guidelines-detail?category=2&id=1436.

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