

Introduction and Background

Among the mental health population of the United States, overall preventative health services, such as cancer screening rates, are remarkably low.^{2,10} Women with depressive or anxiety disorders are more likely to have cancer, significant psychosocial stress, poor health status, and a comorbid medical problem.^{1,3,5} Women with severe mental illness have rates of breast cancer screening that fall below the national average.^{4,10} They are also less likely to be screened for breast and cervical cancer, putting them at greater risk for developing the disease.^{6,7,10} In addition, veterans with a mental health diagnosis are less likely to be screened for colorectal cancer (CRC).^{2,9} Within the Black and White homeless population, depression is also negatively associated with CRC screening.⁹ Furthermore, people with schizophrenia who develop cancer are three times more likely to die than those in the general population with cancer. Unfortunately, there is a significant 30% higher mortality rate due to cancer in psychiatric patients.⁸

These higher mortality rates and decreased cancer screening rates could possibly be connected to the lower uptake of nationally offered screening tests by people with mental illness.¹⁰ Unfortunately, not enough is known about the institutional and societal factors that play a role in cancer screenings. Due to the higher cancer mortality rate, there is a need to address the specific health barriers that the mental health population endure in order to change the inequity of cancer preventative services provided in the U.S.



Cancer Risk Factors from American Association for Cancer Research Progress Report 2014. Mental health may contribute to the unknown of cancer risk factors, represented by a question mark. More research should be conducted in order to investigate a possible link between mental health diagnoses and cancer incidence.

Inquiry Question

The project will establish any significant differences in cancer screening rates between the general population and the mental health population of Southeastern Pennsylvania. The project's aims will be to analyze and compare the differences in cancer screenings (based on the type of cancer) among those currently diagnosed or treated with a mental disorder and the general population.

In Southeastern PA, is there a significant difference in cancer screening rates between the general population and those with a mental health condition (i.e., depression, anxiety, schizophrenia)?

Methods

Analysis was conducted using the Community Health Data Base (CHDB) 2014-2015, which derives its annual data from the Public Health Management Corporation's Southeastern PA Household Health survey. It is the largest and most comprehensive survey of the region's health, consisting of over 10,000 households within Bucks, Chester, Montgomery, Delaware, and Philadelphia counties. The survey is conducted through telephone interviews with people 18 years and older. From the 2014-2015 CHDB, 16% of the population was diagnosed with a mental health condition and 60% of this group was receiving treatment for a mental health condition. The project used cancer screening variables to determine any differences between the general population and the mental health population (16%). Cancer screening variables used were the time since the individual's last Pap smear, mammogram, and sigmoidoscopy/colonoscopy. The times were altered based on a confluence of established cancer screening guidelines from the American Cancer Society and USPSTF.

Breast (women, age 50-74):

Mammogram within 2 years: Followed guidelines

Mammogram in over two year: Not followed guidelines

Cervical Cancer (women, age 21-65):

Pap smear within 3-5 years: Followed guidelines

Pap smear not within 5 years: Not followed guidelines

Colorectal Cancer/CRC:

Sigmoidoscopy/colonoscopy within 5-10 years: Followed guidelines

Sigmoidoscopy/colonoscopy past 10 years: Not followed guidelines

Differing guidelines for individuals with higher risk factors was not factored within this study

Associations within the dataset were determined via the Chi-Square Test of Independence comparing a diagnosis of mental health with the four cancer screening variables listed above.

Results

Through analysis of the population counts from those with or without a mental health diagnosis who adhered to CRC, breast, and cervical cancer screening guidelines, the p-values and Pearson Chi-square statistics were obtained.

For breast cancer, the p-value was greater than our chosen significance level ($\alpha = 0.05$). Therefore, we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association between a mental health diagnosis and breast cancer screening ($\chi^2(2) > 1.60, p = 0.20$).

For CRC, the p-value was greater than our chosen significance level ($\alpha = 0.05$). Therefore, we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association between a mental health diagnosis and CRC screening ($\chi^2(2) > 1.57, p = 0.21$).

For cervical cancer, the p-value was greater than our chosen significance level ($\alpha = 0.05$). Therefore, we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association between a mental health diagnosis and cervical cancer screening ($\chi^2(2) > 1.48, p = 0.22$).

Results (cont.)

Adherence to Breast Cancer Screening

	Entire Population	
	Mental Health Diagnosis: Yes	Mental Health Diagnosis: No
Adherent to Breast Ca Screening: Yes	685	3229
Adherent to Breast Ca Screening: No	215	908

p-value = 0.20, Chi-Square Value = 1.6

Adherence to CRC Screening

	Entire Population	
	Mental Health Diagnosis: Yes	Mental Health Diagnosis: No
Adherent to CRC Screening: Yes	623	3533
Adherent to CRC Screening: No	233	1466

p-value = 0.21, Chi-Square Value = 1.57

Adherence to Cervical Cancer Screening

	Entire Population	
	Mental Health Diagnosis: Yes	Mental Health Diagnosis: No
Adherent to Cervical Ca Screening: Yes	983	4169
Adherent to Cervical Ca Screening: No	153	729

p-value = 0.22, Chi-Square Value = 1.48

Conclusions and Next Steps

Within the data from the CHDB, no significant statistical differences were established between the general population and mental health population's cancer screening rates in Southeastern PA. This project's scope may have been limited by the use of landlines to communicate with survey participants (does not include the homeless population), language barriers, and lack of a more current survey. When an updated CHDB is released, this project's findings can be used as guidance for future analysis. Variations within the mental health community and cancer screening rates should also be investigated since they may show statistical significance. From the literature, however, it is evident that there are health inequities that the mental health community must endure, so hopefully this project helps direct the next steps that preventative healthcare should take for those suffering from mental illness.

Acknowledgements

- Dr. Amy Leader - Division of Population Science, Department of Medical Oncology at Thomas Jefferson University
- American Cancer Society/ USPSTF CRC, Breast, Cervical Cancer Screening Guidelines
- Dr. James Plumb

References

1. Ackerman, M. G., Shapiro, P. A., Coe, A., Trivedi, M. S., & Crew, K. D. (2017). The impact of mental illness on uptake of genetic counseling for hereditary breast cancer and ovarian cancer.... *Breast Journal*, 23(5), 519-524.
2. Barley, E. (2016). Interventions to encourage cancer screening uptake in severe mental illness. Retrieved March 5, 2018, from www.cohcrane.org
3. Clifton, A. (2016). Influences on uptake of cancer screening in mental health service users: A qualitative study. *BMC Health Services Research*, 16(1).
4. De Oliveira, G. (2017). Social Determinants of Depression Among Hispanic Women. *Journal of the American Psychiatric Nurses Association*, 23(1), 28-36.
5. Ell, K. (2002). Integrating mental health screening and abnormal cancer screening follow-up: An intervention to reach low-income women. *Community Mental Health Journal*, 38(4), 311-325.
6. Hwang, A. R., & Mangurian, C. (2017). Improving breast cancer screening and care for women with severe mental illness. *Journal of Clinical Oncology*, 35(36), 3996-3998.
7. James, M. (2017). Rates of cervical cancer screening among women with severe mental illness in the public health system. *Psychiatric Services*, 68(8), 839-842.
8. Kisely, S., Crowe, E., & Lawrence, D. (2013). Cancer-related mortality in people with mental illness. *JAMA Psychiatry*, 70(2), 209-217.
9. Rogers, C. R. (2017). Colorectal cancer screening Uptake's association with psychosocial and sociodemographic factors among homeless blacks and whites. *Health Education and Behavior*, 44(6), 928-936.
10. Thomas, M. (2018). Mammography among women with severe mental illness. *Psychiatric Services*, 69(1), 48-54.