Analyzing the relationship between patient demographic and cancer-related fatigue

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Abstract

In 2023, there will be an estimated increase of 1,958,310 cancer cases and 609,820 cancer deaths within the United States [4]. Malignant neoplastic disease, a cancerous tumor that can metastasize to other tissues in the body, is treated through aggressive treatments such as chemotherapy and radiation treatment which can result in negative post-treatment symptoms such as cancer-related fatigue [1]. Although certain demographics such as age and race are more prone to cancer diagnoses, there is little research that discusses the relationship between demographics and the likelihood of having post-treatment symptoms. This quantitative study aims to determine the relationship between certain patient demographic such as age and gender with the likelihood of developing cancer-related fatigue. Data was collected through the All of Us Research Database and was analyzed utilizing descriptive statistics. Results showed that there was no specific demographic that was more or less likely to have cancer-related fatigue as each demographic had around 1% of their population diagnosed with cancer-related fatigue. Future studies could focus on analyzing other types of demographics such as socioeconomic status and race, along with further identifying other relationships between certain demographics and other post-cancer treatment symptoms.

Background

Malignant neoplastic disease is defined to be a cancerous tumor that can metastasize to other tissues within the body. With malignant neoplasms, treatments such as chemotherapy, radiation therapy, and surgery are crucial to a patient's survival following a cancer diagnosis [1]. However, with these treatments, physical and psychological symptoms such as cancer-related fatigue are possible post-treatment effects that negatively impact the livelihood of cancer survivors [2]. Certain demographics such as age, race, and ethnicity have been associated with an increased risk of cancer diagnosis due to survivors' various socioeconomic backgrounds and the existence of cancer disparities [3]. However, there is little known about the relationship between patient demographics and post-cancer treatment symptoms. Thus, this study will focus on determining if a certain demographic will affect the likelihood of a cancer patient having cancer-related fatigue post-treatment.

Materials and Methods

Materials:

- All of Us Research Hub
- Calculator

Methods:

1. All of Us Research Database
2. Access "Conditions Domain" on database
3. Use keyword "cancer"
4. Malignant neoplastic disease demographic data / Cancer-related fatigue demographic data

- Cancer-related fatigue data was collected from fatigue associated with Malignant neoplastic disease. Thus, the sample size of 254,700 participants within the "condition domain" was reduced to 50,720 participants within the "malignant neoplastic disease" domain for data analysis.
- Descriptive statistics were used when comparing the demographics of cancer-related fatigue and Malignant neoplastic disease.
- Demographic groups of ages 18-29 and over 89 were excluded from data analysis because exact value of patients within this age group were not provided within All of Us database.

References

Results

Out of 50,720 participants who were diagnosed with Malignant neoplastic disease, 660 patients experienced cancer-related fatigue.

Gender			
	Total number of patients	Number of patients with cancer-related fatigue	Percentage
F	28,060	420	1.5%
M	20,120	220	1.1%
O	1,040	< 20	1.9%
T	50,720	660	

	Total number of patients	Number of patients with cancer-related fatigue	Percentage
1	1,740	< 20	------
3	3,580	40	1.1%
4	7,520	100	1.3%
5	14,960	140	0.94%
6	21,720	200	0.92%
7	16,400	160	0.98%
8	520	< 20	------
T	50,720	660	

Conclusion

Demographics (gender and age) had no effect on the percentage of patients with cancer-related fatigue. The number of patients having cancer-related fatigue was around 1% (one percent) for each demographic. This suggests that the demographic of a cancer patient does not affect the likelihood of a patient having cancer-related fatigue post-treatment. This emphasizes that cancer-related fatigue is not associated with certain demographics and can impact any patient after cancer treatment.

Future Direction

Potential research could be directed towards analyzing other aspects of demographic information such as income level, race, and ethnicity. Future studies could also analyze other cancer-related symptoms and their rate within specific demographics.

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