

[Cancer Disparities: Likelihood of Development]

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Abstract:

Cancer can be caused by a majority of reasons such as race, gender, sexual orientation, weight, and age. A combination of these could put one at higher risk of developing cancer. The articles discussed in this paper showcase specific cancers and the risk factors that would cause someone to be at higher risk to develop these cancers.

Introduction

Cancer seems to be completely random and strike at the oddest times. Although, how random is it actually? There are many factors that change your prospects and chances of developing cancer. Some of these factors include gender, race, age, and a variety of others. Not only do these factors affect if you are more likely to contract cancer but they also can dictate what type of cancer you are more likely to receive.

Recent Progress

There have been many scientific studies that show the disparities in cancer one of these disparities includes racial/ethnic profiles. One cancer that is greatly affected by race is lung cancer which is detailed in this article by Brid M. Ryan, called “Lung cancer health disparities.” According to the article, “African Americans are disproportionately affected by lung cancer, both in terms of incidence and survival” (Ryan, 2018). In an age-based study African Americans were higher on average in comparison with European Americans. Men also were shown to develop

lung cancer more than women overall. African Americans were also diagnosed earlier than European Americans. Lung cancer overall is a leading cancer that results in over one hundred fifty thousand deaths every year. Lung cancer is so prevalent that even more women die from lung cancer instead of breast cancer. However, the prevalence of lung cancer is greatly diminished in non-smokers. There are two different types of lung cancer that are the most prevalent, these include non-small cell lung cancer and small cell carcinoma. Around 85% of lung cancer is non-small cell, a few examples of these types are large cell carcinoma, adenocarcinoma, and squamous cell carcinoma. The other 15% is made up of small cell cancer these include predominantly carcinoid tumors and bronchoalveolar carcinoma. Going along with lung cancer being affected by race, a study was done, and it was found that “African Americans had a 30% increased hazard of adenocarcinoma diagnosis, and a 70% increased hazard of squamous cell carcinoma diagnosis compared with European Americans” (Ryan, 2018). Another disparity in

lung cancer is whether one is a smoker or not. Not only is there a disparity whether one is a smoker or not but what brand of cigarettes one consumes. Interestingly though scientifically African Americans have a higher chance of developing cancer and its prevalence is higher in their community, according to the article, “both historically, and currently, African Americans have consistently consumed fewer cigarettes. For every cohort examined in the Holford Study, the mean consumption of cigarettes per day was significantly lower in African American men and women, which would seem to contradict racial differences in lung cancer rates” (Ryan, 2018). In conclusion of the study it was found that although it is expected that African Americans would have a lower chance of developing lung cancer, they actually have a higher chance. The reasons they have a higher chance of developing lung cancer is that they start smoking in their later years and when they do, they smoke fewer cigarettes per day, but have a harder time quitting.

Along with race having an effect on the likelihood of the development cancer, obesity can also have an effect on the development of cancer. According to the article by Eric C. Dietze, “Obesity and Triple-Negative Breast Cancer: Disparities, Controversies, and Biology,” women who are obese are more likely to develop triple-negative breast cancer. While the main factor discussed in the article is obesity, race also plays a factor, as in the United States “>58.6% of African American women are obese (versus 34.5% non-Hispanic European Americans),” (Dietze, 2018). With obesity becoming more prevalent in today’s society, a rise in triple-negative breast cancer has occurred. There are many reasons why obesity has increased in prevalence in the current times, among these reasons include differences in income, and the different neighborhoods. For instance, people with lower income can’t regularly afford regular groceries meaning that they have to rely on fast food and junk food to sustain themselves as it’s the cheaper, more affordable option. This is another reason that

African American women are more likely to develop triple-negative breast cancer due to obesity as “>30% of African American families with children live below the poverty line and 12% of African American families live in deep poverty (<50% of the US federal poverty threshold). In African American families, 22.5% do not have consistent access to adequate food because of lack of money or other resources...” (Dietze, 2018). Another reason that obesity has become more prevalent in African American women is due to the lack of safe neighborhoods, it was shown that “African Americans were 80% less likely to engage in physical activity than non-Hispanic European Americans” (Dietze, 2018). In conclusion of the study, while obesity in women does not necessarily determine if you will develop triple-negative breast cancer, there is a high correlation with the development of the cancer and being obese.

Discussion

While cancer can still be relatively random there are a lot of factors that can help determine if one will develop cancer. Race is a big factor is whether one will develop cancer and what type of cancer they will develop this is due to many subfactors including different genetics and different opportunities that are awarded to certain groups. Many other factors also affect the likelihood of the development of different cancers such as gender, age, weight, sexual orientation among many others. A great way to know which cancers and when you might develop would be to look at studies with people similar to you as well as family histories as genetics is probably one of the biggest factors that affect the likelihood of development of a variety of different types of cancers as well as how fast they can progress.

References

1. Dietze, E. C., Chavez, T. A., & Seewaldt, V. L. (2018). Obesity and triple-negative breast cancer: disparities, controversies, and biology. *The American journal of pathology*, 188(2), 280-290.
2. Ryan, B. M. (2018). Lung cancer health disparities. *Carcinogenesis*, 39(6), 741-751.