

# Fruit and Vegetable Consumption Among Individuals Previously Diagnosed with Skin Cancer: An Assessment of the 2019 Indiana BRFSS

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## Introduction

- In 2018, 83,996 new cases of melanomas of the skin reported in the United States, resulting in an incidence rate of 22.0 per 100,000 individuals.
- Melanoma of the skin was the sixth highest type of cancer diagnosed in the United States (CDC, 2021).
- In 2018, 8,199 individuals died from skin cancer, resulting in a mortality rate of 2.1 per 100,000 (CDC, 2021).
- In Indiana in 2018, the incidence rate of skin cancer was slightly lower at 20.7 per 100,000 individuals, while the mortality rate was slightly higher, at 2.2 per 100,000 (CDC, 2021).
- Consuming fruits and vegetables rich in dietary phytochemicals has been associated with a reduced risk of cancer (Islam et al., 2020).
- The Behavioral Risk Factor Surveillance System (BRFSS) collects data from > 400,000 adults each year.
- While cause and effect cannot be determined between past diagnosis and current consumption of fruits and vegetables, the literature suggests people may make lifestyle changes after the diagnosis of colon cancer (Van Zutphen et al., 2021).
- Might this be true for individuals diagnosed with skin cancer?

## Purpose

The purpose of this secondary data analysis was to identify the relationship between having been diagnosed with skin cancer and one's self-report consumption of fruits and vegetables among respondents to the 2019 Indiana Behavioral Risk Factor Surveillance System (BRFSS), overall and by gender.



## Methods

Data from the 2019 Indiana BRFSS was analyzed using the Cross Tabulation module in the Web Enabled Analysis Tool (WEAT), as this was the last year the Fruit/Vegetable modules were included.

- The row variables selected, from the Topic: "Fruits/Vegetables," were "Consume fruit 1+ time per day (FRTL1A)" and "Consume vegetables 1 or more times per day (VEGL1A)."
- The column variable selected was from the Topic: Chronic Health Conditions, "Ever told you had skin cancer." To examine the results by gender, the Topic: "Demographic Information" was chosen, and the variable "Gender (SEX1)" was selected.

## Results

- The **fruit analysis** found that those who had skin cancer (n=771) were significantly more likely to consume fruits 1+ times per day at the time of the survey than those who had not been told they had skin cancer (p=0.0071). (Table 1).
- Females who had skin cancer (n=423) were significantly more likely to consume 1+ servings of fruit/day at the time of the survey than females who had not been told they had skin cancer (p=0.039).

- The **vegetable analysis** found that those who had skin cancer (n=756) were significantly more likely to consume vegetables 1+ times per day than those who had not been told they had skin cancer (p<0.0001).

**Table 1: Rate of Prior Skin Cancer Diagnosis by Fruit Consumption (≥ 1 serving/day vs. < 1 serving/day), Overall and by Gender: 2019 Indiana BRFSS Data (n=7,769)**

Fruit	Skin Cancer 1+ Fruit/Day	Skin Cancer <1 Fruit/Day	No Skin Cancer 1+ Fruit/Day	No Skin Cancer <1 Fruit/Day	p
Overall	6.7%	5.3%	93.3%	94.7%	0.007
Males	6.3%	5.1%	93.7%	94.9%	0.102
Females	7.0%	5.5%	93.0%	94.5%	0.039

- Males who had skin cancer (n=340) were significantly more likely to consume vegetables 1+ times per day than those who had not been told they had skin cancer (p=0.0003).
- Females who had skin cancer (n=416) were significantly more likely to consume 1+ servings of vegetables/day than females who had not been told they had skin cancer (p = 0.031).



**Table 2: Rate of Prior Skin Cancer Diagnosis by Vegetable Consumption (≥ 1 serving/day vs. < 1 serving/day), Overall and by Gender: 2019 Indiana BRFSS Data (n=7,471).**

Vegetable	Skin Cancer 1+ Veg/Day	Skin Cancer <1 Veg/Day	No Skin Cancer 1+ Veg/Day	No Skin Cancer <1 Veg/Day	p
Overall	6.8%	4.3%	93.2%	95.7%	0.0001
Males	6.6%	3.7%	93.4%	96.3%	0.0003
Females	7.0%	5.1%	93.0%	94.9%	0.0310

## Conclusion

- Intake of phytochemicals, found in plant-based foods, can be correlated to positive health outcomes, including a reduced risk of cancer.
- Although no cause and effect can be determined between past diagnosis and current consumption of fruits and vegetables, the literature suggests people may make changes to their lifestyle after the diagnosis of skin cancer.
- Further research is needed to determine if there is a difference in the specific type and amounts of vegetables and fruits consumed among those who have been diagnosed with skin cancer.

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