

Factors Associated with Food Safety Behaviors in Cancer Patients Seeking Treatment

Paden H¹, Hatsu I¹, Kane K¹, Lustberg M², Grenade C², Bhatt³, Diaz Pardo A³, Beery A³, Ilic S¹

¹Department of Human Sciences, Human Nutrition, Ohio State University, Columbus, OH

²Dept of Internal Medicine, College of Medicine,, Ohio State University, Columbus, OH

³Dept of Radiation Oncology, College of Medicine, Ohio State University, Columbus, OH

INTRODUCTION

Each year, an estimated 48 million Americans suffer from foodborne disease. Of those, approximately 128,000 are hospitalized and 3,000 die from their infection¹. For any person diagnosed with cancer and receiving treatment, the risk of contracting a foodborne disease increases significantly from that of the general, healthy public¹ due to the compromised immune system of the cancer patient. When patients receive any form of cancer treatment (e.g. chemotherapy, radiation therapy, surgery, etc.), their immune system becomes depressed because of the mechanisms of that treatment². Radiation therapy and chemotherapy target and destroy rapidly dividing cells, which does successfully target cancer cells, but also destroys cells vital to the immune system, such as red blood cells, neutrophils, and lymphocytes³. As of 2020, the annual estimate for new cancer diagnoses is 1,806,590 cases, with approximately 606,590 resulting deaths⁴. Recent estimates indicate that the state of Ohio has the sixth highest number of cancer cases, following only California, Florida, New York, Texas, and Pennsylvania⁵. Because cancer rates remain high, it is vital that cancer treatment facilities offer materials that may improve patient outcomes to treatment.

MATERIALS & METHODS

- Cross sectional study
 - IRB Protocol Number: 2016C0013
- Hospitals (n=3)
 - James Cancer Center
 - Stefanie Spielman Comprehensive Breast Center
 - OSU James Care East
 - n=288
- Questionnaire: 173 items
 - Demographics (n=24)
 - Disease Characteristics (n=4)
 - Medication/Treatment (n=22)
 - Food Security (n=10)
 - Quality of Life (n=23)
 - Risk Perception (n=33)
 - Food Preferences (n=13)
 - Food Safety Knowledge (n=45)
 - Food Acquisition Practices (n=23)
 - Food Frequency Questionnaire
- Data analyzed using SPSS

AIMS

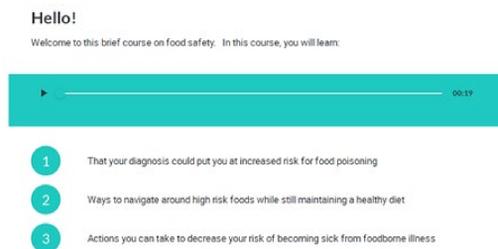
- 1) Determine food safety knowledge, food preferences, risky food acquisition practices, and risk perception among cancer patients.
- 2) Identify factors that are associated with increased food safety risk.
- 3) Translate food safety findings into education materials, targeting cancer patients seeking treatment and, specifically, the food insecure cancer population.

RESULTS

- 66.9% female
- 77.6% over the age of 50
- 87.1% non-Hispanic white
- 60.8% married
- 28.1% had less than a high school degree
- 38.6% breast cancer
- 15.8% prostate cancer
- 11.4% colorectal cancer
- 83.3% received chemotherapy
- 46.4% received radiation
- 32.4% had surgery
- 80.9% food secure
- 9.4% marginally food secure
- 9.7% low or very low food security
- 70.2% thought that contamination by foodborne pathogens is a serious problem
- 49.4% were aware that they were at increased risk
- Most thought that they knew how to keep food safe
 - When eating out 83.7%
 - When cooking at home 91.3%
- 47.0% interest in using a meat thermometer
- Rare thermometer use when:
 - Monitoring refrigerator temperature (32.9%)
 - Determining if chicken is fully cooked (34.3%)
 - Reheating leftovers (14.5%)
- 95.1% washed their hands before preparing food
- 90.2% washed raw vegetables

| Food safety topic | Items (n) | Average (%) | SD (%) |
|---|-----------|-------------|--------|
| General Food Safety | 11 | 70.74 | 15.53 |
| Cross-Contamination (Separation) | 8 | 83.03 | 15.62 |
| Food Preparation | 8 | 73.70 | 20.43 |
| Food Storage (Chill) | 8 | 69.53 | 17.47 |
| Clean Up (Cleaning/Hygiene) | 10 | 77.64 | 17.88 |
| Overall Food Safety Knowledge | 45 | 74.77 | 12.24 |

Screenshot of future intervention



- Food safety knowledge associated with:
 - Enrollment in a federal food assistance program (P<0.001)
 - Enrollment in a private food assistance program (P<0.001)
 - Smoking frequency (P<0.05)
 - Food insecurity (P<0.001)
- 97.9% of patients reported consuming at least one high-risk food
- 84.9% cooked with other people
- 46.3% removed spoiled parts from fruits/vegetables
- Rare food acquisition practices
 - Seeking out (2.1%) and eating (1.2%) roadkill
 - Purchasing (10.2%) and eating (21.5%) expired food
 - Removing slime from lunch meat (13.1%)
 - Removing mold from cheese (36.2%)
 - Removing Insects (15.6%) and mold (10.6%) from grains
 - Eating non-food items (5.7%)
 - Eating pet food (1.1%)
- High risk food acquisition practices associated with:
 - Enrollment in a federal food assistance program (P<0.001)
 - Age (P<0.05)
 - Income (P<0.05)
 - Food insecurity (P<0.05)

CONCLUSIONS

- While aware of a majority of food safety risks, cancer patients were least aware that they belong to a high-risk group
- Most cancer patients eat high risk foods
- Food insecurity affects a number of food safety behaviors
- Many patients believe they know how to keep food safe, but mediocre food safety scores indicate otherwise
- High risk food acquisition practices identified included removing spoiled parts, consuming discarded foods, and eating roadkill
- Future directions:
 - Assess efficacy of education intervention for improving patient self-efficacy
 - Assess retention of information over time

Self-reported patient food safety behaviors, attitudes, and risk perceptions

