The association between dietary intake and breast cancer risk in black South African women.

The SABC study.

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with
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No conflict of interest with collaboration partners or researchers involved in this study.
Background

2nd Leading cancer in black South African women

Countries with dark red colour = higher mortality rates

(Castelló et al., 2017; Guerrero et al., 2017; Labadarios et al., 2011)
Modifiable lifestyle breast cancer risk factors

30-50% preventable

- Dietary intake
- Physical activity
- Normal body weight

(WCRF, 2018; WHO, 2018; Shah et al., 2014; Vorster et al, 2011).
Changes in diet and Physical activity

• Nutrition transition = change in diet & physical activity.

2/3 women are currently overweight or obese in South Africa.

Westernized diet

Nutrition transition = change in diet & physical activity = high risk for overweight/obesity.

High breast cancer risk

Dark colours= countries with low physical activity

(South African Heart and Stroke Foundation, 2017; Miclesfield et al., 2014, WHO, 2018)
Aim

1. To investigate the association between dietary intake and breast cancer risk in a population-based case-control study of black South African women that was conducted in CHBAH (January 2014 to June 2017).

Sample size

- **Cases** (n=396)
  - Newly diagnosed prior to any treatment.

- **Controls** (n=396)
  - Healthy, non-blood relatives.
  - Matched on age and neighbourhood setting.
Data collection

• Anthropometry

• Dietary assessment

• Biological specimen collection

• Non-dietary questionnaire
  - Adult life exposures
  - Childhood exposures and circumstances

Culture specific QFFQ was used.

Food portion pictures, household utensils & food models.

Dietary intake over the past month.

12 Food groups, energy adjusted.
Results

Distribution of characteristics

**Body weight**
80% of case and control participants were either overweight or obese.

**Stage of diagnoses**
49% of cases were diagnosed in late stage breast cancer.

**Physical activity**
- Cases: 114.0 (82.8, 163.1) METS/week
- Controls: 110.02 (81.6, 149.7) METS/week

**WHO recommends** at least 600 METS/week

**High total energy** intake/day in
- case: (8 990 kJ)
- control: (9 142 kJ)

**Known BC risk factor**

**Excluded**

**Alcohol consumption**
Non-consumers = 80% in case & 70% in control participants.

**Income**
86% earned less than R3000/month.

**Menopausal status**
65% were post-menopausal.

**Poor prognosis**

**Non-consumers**
More energy dense food = 75% of TE

Westernized/ Monotonous diet

* Break down of Animal protein compilation
Association between food groups and breast cancer risk

What is the chance of developing breast cancer with consumption of foods in a certain food group?

12 Food groups

Separated by median energy (kJ) intake

Highest intake VS Lowest intake

Conditional logistic regression

Odds ratio and 95% confidence intervals

Breast cancer risk

Possible confounders adjusted for: waist circumference, physical activity, level of education, income/month, use of hormonal birth control, age at first pregnancy and ethnicity.
Association between food groups and breast cancer risk

Red meat
Chicken
Fish, eggs
Processed meat

Animal protein consumption

Inverse association

OR 95% CI = 0.5 (0.28, 0.99)

The risk of developing breast cancer with animal protein consumption = Lower

* Post-menopausal women
Association between food groups and breast cancer risk

Various fresh fruits

Fresh fruit consumption

Inverse association

Breast cancer risk

The risk of developing breast cancer with fresh fruit consumption

= Lower

* Pre-menopausal women

OR 95% CI = 0.4 (0.21, 0.97)
Association between food groups and breast cancer risk

Savoury food consumption

- Soup powders, sauces and potato chips.

Positive association

The risk of developing breast cancer with consumption of savoury food = Higher

OR 95%CI = 2.1 (1.15, 3.80)

* Post-menopausal women
**Discussion**

**Animal Protein**
- **CUP report**
  - Limited evidence for increased/decreased risk.
- **Our results**
  - Unexpected protective association.
  - Red meat = Mostly organ meat.
  - Low cost, high quality protein.
  - Nutrient rich
  - Low energy

86% earned less than R3000/month.

**Fresh fruit**
- **CUP report**
  - Limited evidence for decreased risk.
- **Our results**
  - ± 1 ½ fruit servings/day = inverse association.
  - Low energy
  - Antioxidants and phytochemicals.

**Savoury foods**
- **CUP report**
  - No conclusion.
- **Our results**
  - Positive association.
  - High salt content.
  - Highly processed.
  - Nutrient poor
  - Energy dense

(WCRF & AICR, 2017)
Conclusion

• Less energy dense, nutrient rich foods (fruit/organ meat) may be associated with a lower breast cancer risk in this sample.

• Highly processed, energy dense foods such as savoury food may increase breast cancer risk in this sample.

• Worrisome overweight and obese rates co-exist with low physical activity.

• Poverty influences food choices and may contribute to low dietary diversity/monotonous diet.
Recommendations

• Establish and create awareness of a “lowest cost” prevention diet with emphasize on inclusion of Zero rated Vat foods, organ meat (90g/day) and fruit (400g/day).

• Investigation of the relation between micro-nutrients and breast cancer risk.

• Create awareness of the National strategy on prevention and control of obesity in South Africa.
Collaboration partners

Researchers involved in this study:

- Christine Taljaard-Krugell
- Cristian Ricci
- Hester Vorster
- Sabina Rinaldi
- Herbert Cubasch
- Ria Loubscher
- Maureen Joffe
- Tertia van Zyl
- Shane A. Norris
- Isabelle Romieu

- Participants of the SABC study
- Directors of the CHBAH breast unit
- Fieldworkers: Phindile Mathe, Yvonne Chaka, Victor Shandukani, Siphelele Sibiya, and Maria Sihlo
- Project coordinators from IARC: Tracy Lignini and Robyn Smith
Treatment without prevention is simply unsustainable.

Bill Gates

Thank you!