

## Mortality attributable to poor dietary patterns in Canada: Evidence from the nationally-representative nutrition survey linked with health administrative data

Jessri, M<sup>1,2</sup>, Hennessy, D<sup>3</sup>, Sanmartin, C<sup>3</sup>, Eddeen, AB<sup>4</sup>, and Manuel, D<sup>5,4,7,8</sup>

<sup>1</sup>Clinical Epidemiology Program, Ottawa Hospital Research Institute (OHRI)

<sup>2</sup>Faculty of Medicine, University of Ottawa

<sup>3</sup>Statistics Canada

<sup>4</sup>Institute for Clinical Evaluative Sciences

<sup>5</sup>Ottawa Hospital Research Institute, Clinical Epidemiology Program

<sup>6</sup>Institute for Clinical Evaluative Science, UOttawa

<sup>7</sup>Bruyère Research Institute

<sup>8</sup>University of Ottawa, School of Epidemiology and Public Health

### Introduction

Dietary pattern modeling and linkage with health outcomes is essential for development of evidence-based dietary guidelines to support reduction of chronic diseases. National nutrition surveys are not routinely linked with health administrative databases, resulting in a lack of evidence on the health impact of unhealthy diets at the population level.

### Objectives and Approach

This study is the first to use a nationally-representative nutrition survey (i.e., Canadian Community Health Survey-Nutrition-2004) linked with health administrative databases to examine the association of 5 key dietary quality indices with mortality risk. In total, 16,212 adults  $\geq 20$  years were followed for an average of 7.3 years. Two 24-hour dietary recalls were used to estimate the usual dietary intakes using the National Cancer Institute's method. Weighted regression calibration was performed to obtain a true parameter relating diet (continuous) to mortality. Population Attributable Fractions were calculated to estimate the burden of all-cause mortality attributable to poor dietary patterns in Canada.

### Results

The 5 dietary quality indices examined were Dietary Approaches to Stop Hypertension (DASH); Dietary Guidelines for Americans Adherence Index 2015 (DGAI); Healthy Eating Index-2010 (HEI); Alternative HEI-2010 (AHEI); and Mediterranean Style Dietary Pattern Score (MSDPS). Having a better diet quality (90<sup>th</sup> vs. 10<sup>th</sup> percentile of index score) was associated with a significant 31-51% reduction in all-cause mortality hazard ratio among adults 45 to 80 years and 10-35% reduction in

those  $\geq 20$  years (in order of significance: DASH, DGAI, HEI, AHEI and MSDPS). Survival benefit was incrementally greater for higher diet quality scores; however, even the 90<sup>th</sup> percentile scores (Reference) were notably lower than the recommended levels (45.99% of recommended score). On average, 26.42% of all mortality in Canada was attributable to poor dietary patterns (range: 19.01% for MSDPS to 31.39% for DGAI).

### Conclusion/Implications

The diet-attributable burden of mortality was higher than those reported for other behavioural risks (e.g., smoking). This research informs future formulation of nutrition interventions and policies with a focus on dietary patterns. This project demonstrates the importance of leveraging linked data and analytical capacity to inform future evidence-based nutrition policies.

