

Food insecurity and mortality

An epidemiological analysis linking CCHS to CVSD

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Background

Food insecurity (FI) is associated with

- Nutrient inadequacy, hypertension, inflammation, depression, type-II diabetes, poor sleep etc. (e.g. Kirkpatrick and Tarasuk, 2008)
- Mortality among HIV-affected adults in British Columbia (e.g. Anema et al. 2013)
- Mortality among working-age adults in Ontario (Gundersen et al. 2018)

Existing knowledge gaps

- Limited generalizability & Unknown death causes

Our approach

- Linking national survey CCHS to vital statistics CVSD with death causes



Methods

Data

- CCHS (Cycles 2005, 07-08, 09-10, 11)
- CVSD (Feb/2005 – Dec/2011)

Sample

- 207K working-age adults 18-64 yo
- 67K elderly 65+ yo

Measurement

- DV: One-year all-cause mortality; Four-year all-cause mortality; Ever-while-traced cause-specific mortality; Age at death for the dead-while-traced
- IV: Food insecurity (binary)
- Controls: Host (age, sex) + SES (e.g. income) + Health (e.g. smoker)



Summary statistics

- 0.24% WA adults (500) and 1.79% elderly (1200) died in a year
- 1.07% WA adt (2600) and 10.09% eld (8100) died while traced
- 70% of the deaths due to non-communicable diseases (e.g. cancer)
- 15% due to communicable diseases; 15% due to injuries and others
- Top 3 causes for WA adt: ischemic heart disease, lung cancer, and accidents
- FI most prevalent among those dead from infectious-parasitic diseases, diabetes, and respiratory diseases including influenza, pneumonia, and chronic lower respiratory diseases
- WA adt more likely to die if FI, but die at the same age whether FI or not
- Eld no more likely to die if FI, but die younger if FI
- Unadjusted Cox hazard ratio = 2.02*** for WA adt, 1.08 (ns) for eld.



FI predicts higher mortality among WA adults

<i>Adj. odds ratio of FI</i>	Working-age adults		Elderly	
	One-year mortality	Four-year	One-year	Four-year
Sex-age only	3.323***	2.438***	1.210	1.331+
+ SES	2.212**	1.614***	1.000	1.127
+ SES + Health	1.741*	1.342*	0.764	0.948



FI predicts higher mortality in:

communicable, infectious-parasitic, respiratory, diabetes, and accidents among WA adults

Cause-specific mortality	Non-communicable	Communicable	Flu/Pneumonia/Chro.Low.Resp.	Infectious-parasitic	Diabetes	Accidents	Lung cancer
Adj. Odds Ratio of FI	1.233	8.750**	5.435*	5.059***	4.494*	2.217**	1.385
Colorectal cancer	Ischaemic heart	Cerebrovascular	Chronic liver / Cirrhosis	Suicide	Breast cancer (women)	Other cancers	All other causes
0.410	1.213	1.769	1.365	0.718	0.423	1.009	1.240

Elderly

Non-communicable: 0.903

Communicable: 0.983



FI adults with non-communicable diseases die younger

Adj. OLS beta for age at death among those aged 50-80 at interview and dead from non-communicable diseases

Overall	WA adults	Elderly
-6.892***	-1.766***	-2.453***



Discussion

FI → Higher mortality among WA adt but not among elderly

- Elderly have low FI rate and die of lots of reasons.

FI → Higher premature mortality by communicable, infectious-parasitic, flu/pneumonia/chronic lower respiratory, diabetes, accidents

- Low folate/immunity, high inflammation, high stress, risky environment, poor health management

FI → Lower age at death among 50-80 yo dead from non-communicable diseases

- Adj. Odds Ratio for HH Income 100K+ (relative to 0-30K): -6.818***



Limitation and Contribution

Limitation

- Correlation, not causation
- FI binary, not categorical
- Health variables self-reported
- Jurisdictions opt out of FI survey

Contribution: First study that...

- Links FI and mortality nationwide
- Identifies specific death causes
- Includes elderly
- Associates FI to age at death for non-communicable diseases



Thanks

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