



Food insecurity and *H. pylori*-induced disease in female-led households compared to other households in Arctic Canada

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Background

Helicobacter pylori

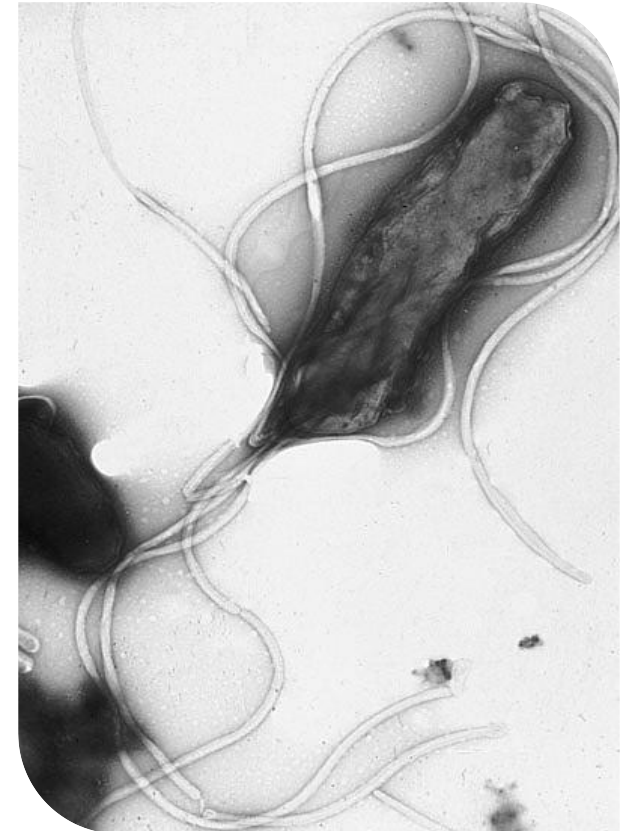
- Causes chronic stomach inflammation
- Increases risk of stomach ulcers and stomach cancer
- Disproportionately high prevalence in northern Canada

Canadian North *Helicobacter pylori* (CANHelp) Working Group

- Scientists, Northern community leaders, Health care providers
- Investigate *H. pylori* to address community concerns

H. pylori prevalence increases as socioeconomic status decreases

- How to measure socioeconomic status?
- Research participants reluctant or unable to report income



Electron Micrograph of *H. pylori*
Cr: Dr. Yutaka Tsutsumi

Canadian Deprivation Index

Developed by Doug Dover at Alberta Health
 Quantifies Deprivation without using INCOME data;
 Instead, it uses:

Education	Home Ownership	Food Security
0 – University	0 – Owner	0 – Always Secure
1 – High School	1 – Renter	1 – Sometimes Insecure
2 – < High School		2 – Always Insecure

Raw Score	CDI Score	Interpretation
0	1	Least Deprived
1	2	
2	3	
3	4	
4, 5	5	Most Deprived

Home Ownership & Education data collected by *CANHelp* Working Group, but not Food Security.

Purpose

- 1. Estimate the frequency of *H. pylori*-associated disease in:**
 - Women relative to men
 - Households led by non-partnered women relative to other households
- 2. Estimate the effect of the CDI and deprivation indicators on the frequency of *H. pylori*-associated disease in women and children.**
- 3. Assess the validity of the CDI as a deprivation indicator for Arctic communities.**

Methods

Adapted Household Food Security Module

- Appropriate for Arctic contexts
- Considers traditional foods, resources
- Low refusal rates

Piloted Spring 2017

- 4-6 Questions
- 3 Communities

Data Collection Fall 2017 – Spring 2018

- 39 Questions
- 8 Communities

EpilInfo iOS Companion

- Paperless data collection
- Built-in analyses tools
- Large, easy-to-read text

The image shows an iPad displaying the EpiInfo HFS (Household Food Security) questionnaire. The app interface includes a header with the EpiInfo logo and the title 'HFS'. The form contains the following fields and text:

- Date:** 03/15/2018
- Interviewer Name:** Taylor Cromarty
- Participant Name:** Northern Research Day
- ID Number:** 123456
- Date of Birth:** 01/01/1900
- Household ID:** 1234

Section A.

The following questions are about the food situation for your household in the past 12 months. I'm going to read you some statements that may be used to describe the food situation for a household. These questions are used by Statistics Canada and researchers over the country. Some people feel sensitive

At the bottom of the screen, there are 'Clear' and 'Submit' buttons.

Results

Pilot Data Collection

- Inuvik, Teslin, Ross River
- 292 Households, 324 persons

Data Collection Progress

- Goal of 200+ Households:



Aklavik H. pylori Project

Aklavik

27



Fort McPherson

27

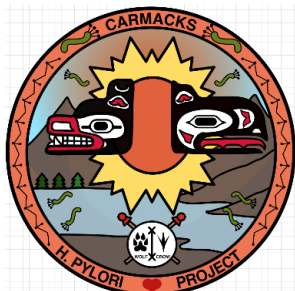


Old Crow

18

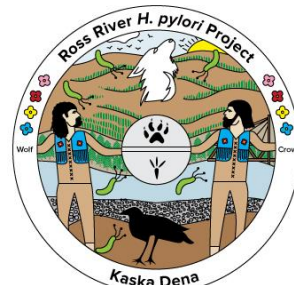


Inuvik
Ongoing



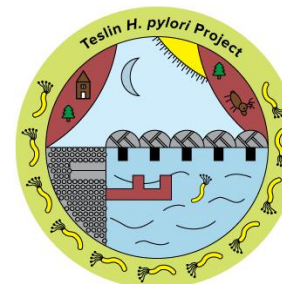
Carmacks

33



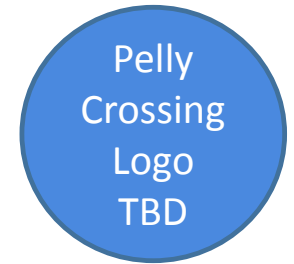
Ross River

21



Teslin

18



Pelly Crossing

42

Pilot Data Analysis

H. pylori Prevalence by Canadian Deprivation Index (CDI) Level

- 264 with complete data for CDI score

H. pylori Prevalence by Degree of Food Insecurity

- 270 with Food Security data, classified as
 - Never insecure
 - Sometimes insecure
 - Often insecure

The CDI asks:

*“You and other household members worried that food would run out before you got money to buy more. Was that **often true**, **sometimes true**, or **never true** in the past 12 months?”*

Odds Ratios and 95% Confidence Intervals for the Estimated Effects of Deprivation Index and Food Insecurity on *H. pylori* Prevalence

Pilot Data Analysis: CDI Score

➤ 1 is least deprived, 5 is most deprived

CDI Score	All Households		Households Led by Unpartnered Women	
	n	%	n	%
1	47	18%	6	9%
2	78	30%	28	40%
3	61	23%	17	24%
4	56	21%	11	16%
5	22	8%	8	12%
TOTAL	264		70	

Pilot Data Analysis: CDI Score

H. pylori prevalence is higher at higher deprivation levels

- Effect strongest in households headed by unpartnered women, though estimates are imprecise due to small numbers

CDI Score	All Households			Households Led by Unpartnered Women		
	n	<i>H. pylori</i> +	Odds Ratio [95% CI]	n	<i>H. pylori</i> +	Odds Ratio [95% CI]
1	47	32%	2.0 [0.9, 4.5]	6	33%	4.2 [0.5, 33]
2	78	19%	1.0 --	28	10%	1.0 --
3	61	46%	3.6 [1.7, 7.6]	17	65%	15 [3.2, 73]
4	56	50%	4.2 [1.9, 9.1]	11	64%	15 [2.6, 81]
5	22	45%	3.5 [1.3, 9.6]	8	50%	8.3 [1.3, 52]
TOTAL	264	36%		70		

Pilot Data Analysis: Food Security

Food Security	All Households		Households Led by Unpartnered Women	
	n	%	N	%
Never insecure	227	84%	57	81%
Sometimes insecure	32	12%	8	11%
Often insecure	11	4%	5	7%
TOTAL	270		70	

Pilot Data Analysis: Food Security

Very strong association between Severe Food Insecurity and *H. pylori* Prevalence

- Association strong in women (OR: 10, [1.2, 90])
- Also strong in households led by unpartnered women, though estimates are imprecise due to small numbers

Food Security	All Households			Households Led by Unpartnered Women		
	n	<i>H. pylori</i> +	Odds Ratio [95% CI]	n	<i>H. pylori</i> +	Odds Ratio [95% CI]
Never Insecure	227	34%	1.0 --	57	20%	1.0 --
Sometimes Insecure	32	38%	1.2 [0.5, 2.6]	8	38%	1.1 [0.2, 5]
Often Insecure	11	91%	20 [2.5, 158]	5	80%	7.4 [0.8, 71]

Future Directions

- At least 200 households to be added to dataset
- Data analysis, with adjustment for confounding
- Consult planning committees for interpretation of results
- Results dissemination



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CANHELP WORKING GROUP STAFF

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PROJECT PARTICIPANTS

Aklavik, Old Crow, Fort McPherson, Teslin, Ross
River, Inuvik, Pelly Crossing, Carmacks



Mahsi Cho

QUESTIONS?