Arthritis and Functional Impairment Compound Nutritional Risk in Older Adults: Findings from the Canadian Longitudinal Study on Aging

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BACKGROUND & OBJECTIVES

Background: Evidence suggests that people with arthritis are vulnerable to nutritional problems. Nutritional risk (NR) screening detects risk factors associated with poor nutritional status. The role of functional impairment in this vulnerable group is understudied.

- Previous research has linked physical disability to NR in older adults.
- The absence of referents without arthritis in previous studies limited the interpretation of results for those with arthritis but no functional impairment.

Objectives: To investigate the association between arthritis and nutritional risk and to determine whether functional impairment modifies this association.

METHODS

Study Population: Respondents from the Canadian Longitudinal Study on Aging (CLSA):

- Nationally representative samples of 45-85 years-old community-dwelling Canadians adults.
- Both the Comprehensive (in-person) and Tracking (phone interview) cohorts were included (n=41,153)

Measures (self-reported):

- **Physician-diagnosed arthritis** (osteoarthritis, rheumatoid arthritis, other)
- **Nutritional Risk**, *abbreviated Seniors in the Community: Risk Evaluating for Eating and Nutrition II (SCREEN II-AB)*;
  - 8-items; range: 0-48
  - Includes recent weight changes, meal skipping, appetite, swallowing, vegetable and fruit consumption, fluid intake, the social context of mealtime, and the frequency of cooking meals at home
- **Functional Impairment**, *Older American Resources and Services scale (OARS)*;
  - 14-items; range: 0-14
  - Includes 7 activities of daily living (eating, dressing, bathing, etc.) and 7 instrumental activities of daily living (shopping, managing medication, etc.)
- **Covariates:**
  - **Demographics**: *Age, sex, personal and household income, education, number of people in the household*
  - **Measures of health:** *Weight-status (based on body mass index [BMI]), general health, mental health*

Statistical Analysis:

- **Multiple linear regression** modeled nutritional risk scores (continuous)
- **Multiple logistic regression** modeled the likelihood of having a high nutritional risk status *(score <38)*
- Analyses were conducted using SAS 9.4 and incorporated the complex sampling design and survey weights.
- Regression models controlled for the covariates listed above.

RESULTS

Descriptive statistics

	Arthritis (n=14,468)	No arthritis (n=26,685)
Male, %*	41.6	53.7
Age in years, M (SD)*	62.4 (0.09)	57.8 (0.06)
Income, %*		
<20K/year	4.9	3.0
20K-50K/year	24.3	16.8
50K-100K/year	37.3	34.4
100K+/year	33.6	45.8
Highest education, %*		
Less than secondary	5.2	3.6
Secondary	20.0	17.0
Trade school	34.7	32.7
University or higher	40.1	46.6
Num. of people living in the household, M (SD)*	2.6 (0.01)	2.3 (0.01)
Weight status, %*		
Underweight	0.6	0.7
Normal-weight or overweight	65.1	75.3
Obese	34.3	23.9
Nutritional Risk score*	38.5 (0.06)	39.6 (0.04)
High nutritional risk, % *	37.9	31.2
Any meal preparation impairment, %*	0.7	0.3
Any functional impairment, %*	13.1	4.8

***All descriptive statistics were significantly different between people with and without arthritis at p<0.0001

Multiple linear regression model: nutritional risk score

	B (SE)		
		Stratified by functional impairment	
	Full sample (n= 41,153)	No Impairment (n=37,554)	Impairment (n=3,599)
Arthritis vs no arthritis	-0.36 (0.07)**	-0.30 (0.07)**	-0.91 (0.26)*

* = p<0.05 ** = p<0.0001
Analyses adjusted for all covariates described

Multiple logistic regression model: high nutritional risk

	OR (95%CI)		
		Stratified by functional impairment	
	Full sample (n= 41,153)	No Impairment (n=37,554)	Impairment (n=3,599)
Arthritis vs no arthritis	1.12 (1.06-1.17)**	1.10 (1.04-1.16)*	1.31 (1.12-1.54)*

* = p<0.05 ** = p<0.0001
Analyses adjusted for all covariates described

- Arthritis was associated with *poorer SCREEN II-AB scores* and an *increased likelihood of high nutritional risk*.

- People with arthritis both with and without functional impairment had *poorer SCREEN II-AB scores* and *were more likely to be at high nutritional risk.*

CONCLUSION & DISCUSSION

- Respondents with arthritis were more likely to have lower SCREEN II-AB scores and consequently, to be at high nutritional risk:
  - This association persisted regardless of functional impairment;
  - However, functional impairment exacerbated the association between arthritis and nutritional risk.

- This is the first study to study the association between nutritional risk and arthritis.

- These findings highlight the need for further research on these relationships to inform interventions and improve clinical practices

ACKNOWLEDGEMENTS

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