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Household Food Expenditures & Management of Type II Diabetes

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Introduction

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645.65

•The annual cost of treating and controlling diabetes, resulting from elevated blood glucose levels, is billions of dollars in Canada.

- •A diet high in fiber and low in simple carbohydrates and fat is known to help stabilize and lower patient blood glucose levels.
- Studies have shown
- •an association between low socio-economic status and ill health in diabetic patients (Nelson et al., 2001; Bachmann et al., 2003). •food costs and physical access to healthy foods may be
- significant barriers to following dietary recommendations, in both general (Jetter et al., 2008) and diabetes-specific contexts (Horowitz *et al.*, 2004).
- •Studies do not relate management outcomes to a detailed analysis of patient household food expenditures.
- •This study investigates the role and contribution of dietary behavioral factors among diabetes patients to overall health and wellbeing.

Research Questions

- 1. Do T2D patients who adhere to their recommended diet spend more money on food than those who do not?
- 2. Is there a significant difference in HbA1c* between T2D patients whose households spend more money on healthy foods (fruits and vegetables)



*Dietary Adherence

•12 questions based on general diabetes

Dividing by highest possible score

•Higher score = greater perceived

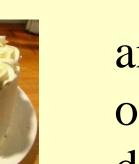
recommended diet plan.

•Answers were 0-7 scale

•Summing total

adherence

•Adherence score determined by



and those whose households spend more money on less healthy foods (snack foods, fast foods, desserts, soft drinks, frozen convenience foods)?

Methods

- •Canadian T2D patients completed a questionnaire covering sociodemographic information, diabetes treatment and perceived dietary adherence*
- A blood sample was collected from each participant.
- •A time use telephone interview was conducted to obtain information on exercise and meal preparation time.
- •All food and drink receipts were submitted by participants for four weeks to obtain data on household food purchase categories, specific food products purchased and total household food costs.
- •Correlation and multivariate regression analysis between HbA1c and different food categories were performed.

Data / Overview

Table 1. Descriptive Statistics (n=35) Variable Maximum Mean **HbA1c** (%) 7.117 Age (years) Household size 2.37 (# of people)

HbA1c is a proxy for long-term blood glucose levels

Total food expenditure

(\$CDN for 1 month)

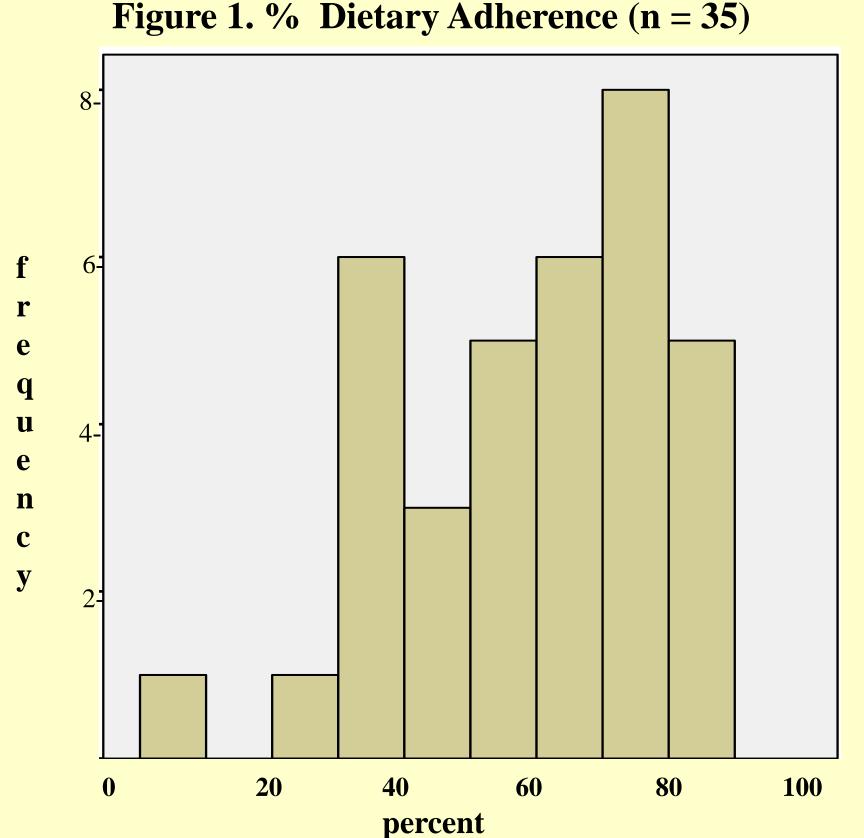
An HbA1c reading of less than 7% is generally considered healthy for diabetes patients.



Table 2. Diabetes Treatment (n=35)

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Diabetes treatment	Frequency
Diet and exercise (DE) only	3
DE + oral medications (OM)	24
DE + insulin injections (In)	6
DE + DD + In	2



Results & Discussion

Table 3. Correlations: HbA1c (n=35)

Expenditure	Correlation	Significance
Category		
Total	.120	.491
Frozen convenience	.287	.094
Desserts	263	.126
Fast food	**.541	.001
Snack foods	*.424	.011
Sweetened soft	.302	.078
drinks		
Fruits and	*375	.027
vegetables		
Dietary adherence	** 5 61	.000
Treatment	**.452	.006
Income **significant at .01 level	*031 *significant at .05 le	.860

Table 4. Correlations: Dietary Adherence (n=35)

Variable	Correlation	Significance		
Treatment	024	.889		
Income	054	.756		
Total Exp	.011	.951		
**significant at .01 level *significant at .05 level				

Table 5. Multivariate Linear Regression **Dependent Variable: HbA1c (n=35)**

Variable	Coefficient	Standard	Significance
		Error	
Intercept	**7.317	1.111	.000
Fast foods	**.011	.004	.009
Fruit/vegetable	*005	.002	.028
Time meal	.002	.004	.573
prep			
(household)			
Income	118	091	.205
Age	013	.014	.359
Treatment	*.475	.196	.022
Exignificant at .01 lev	vel002*significar	nt at 0.05 level	.360

 $R^2 = .615$ Adjusted $R^2 = .516$



Our Findings

- •HbA1c correlations:
- •Negative with fruit and vegetable expenditures and dietary adherence.
- •Positive with both snack food and fast food expenditures.
- •No correlation with total food expenditures or income.
- •Dietary adherence was not correlated with income or total food expenditures.
- •A one dollar increase in fruit and vegetable expenditure is associated with a .005% decrease in HbA1c and a one dollar increase in fast food expenditure is associated with a .011% increase in HbA1c.

Conclusions

- •A healthy diet (defined as a high adherence score and a low HbA1c score) is not associated with income or total food expenditure. Therefore, we conclude that it does not necessarily cost more to eat healthily.
- •Household food purchasing patterns are associated with differences in patient outcomes. Awareness of this relationship may help T2D patients make wise food purchase choices; thereby reducing their probability of diabetes-related complications and a rising economic burden to society.

Road Ahead

Future work will include a detailed analysis of food categories (including meat, milk and other dairy, etc.), and food-related time use (grocery shopping time, commuting, etc.) to obtain a more complete picture of the factors that help or hinder T2D patients from adhering to their recommended diet.

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