



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Household Food Expenditures & Management of Type II Diabetes

Denise Maxwell¹ (dmaxwell@ualberta.ca)

Sven Anders¹ (sven.anders@ualberta.ca)

Sean B. Cash² (scash@wisc.edu)

¹University of Alberta ²University of Wisconsin-Madison

*Poster prepared for presentation at the Agricultural & Applied Economics Association 2010
AAEA, CAES, & WAEA Joint Annual Meeting, Denver, Colorado, July 25-27, 2010*

*Copyright 2010 by Denise Maxwell, Sven Anders and Sean B. Cash. All rights reserved. Readers
may make verbatim copies of this
document for non-commercial purposes by any means, provided that this copyright notice
appears on
all such copies.*



Household Food Expenditures & Management of Type II Diabetes



Introduction

Denise Maxwell¹ (dmaxwell@ualberta.ca) Sven Anders¹ (sven.anders@ualberta.ca) and Sean B. Cash² (scash@wisc.edu)

¹University of Alberta ² University of Wisconsin-Madison

- 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)



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

Data / Overview

Table 1. Descriptive Statistics (n=35)

Variable	Minimum	Maximum	Mean
HbA1c (%)	6.0	10.8	7.117
Age (years)	42	78	61.46
Household size (# of people)	1	5	2.37
Total food expenditure (\$CDN for 1 month)	185	1293	645.65

*HbA1c is a proxy for long-term blood glucose levels

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



Table 2. Diabetes Treatment (n=35)

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 Category	Correlation	Significance
Total	.120	.491
Frozen convenience	.287	.094
Desserts	-.263	.126
Fast food	**-.541	.001
Snack foods	*.424	.011
Sweetened soft drinks	.302	.078
Fruits and vegetables	*-.375	.027
Dietary adherence	**-.561	.000
Treatment	**-.452	.006
Income	.031	.860

**significant at .01 level *significant at .05 level

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 Error	Significance
Intercept	**7.317	1.111	.000
Fast foods	**-.011	.004	.009
Fruit/vegetable	*-.005	.002	.028
Time meal prep (household)	.002	.004	.573
Income	-.118	.091	.205
Age	-.013	.014	.359
Treatment	*.475	.196	.022
Exercise	.002	.002	.360

R² = .615
Adjusted R² = .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.

References

Bachmann, M.O.; J. Eachus; C.D. Hopper; G.D. Smith; C. Propper; N.J. Pearson; S. Williams; D. Tallon and S. Frankel (2003). Socio-economic inequalities in diabetes complications, control, attitudes and health service use: a cross-sectional study. *Diabetic Medicine* 20(11): 921-929.

Horowitz, C.R.; Colson, K.A.; Hebert P.L. and K. Lancaster (2004). Barriers to buying healthy foods for people with diabetes: Evidence of environmental disparities. *American Journal of Public Health* 94(9): 1549-1554.

Jetter, K.M. and D.L. Cassady (2008). The availability and cost of healthier food alternatives. *American Journal of Preventive Medicine* 30(1): 38-44.

Nelson, K.; W. Cunningham; R. Andersen; G. Harrison and L. Gelberg (2001). Is Food Insufficiency Associated with Health Status and Health Care Utilization Among Adults with Diabetes? *Journal of General Internal Medicine* 16(6):404-411.

Acknowledgements

Funding was provided by

- University of Alberta Faculty of Medicine and Dentistry and the Department of Rural Economy
- Alberta Health Service, Capital Health Region
- University of Wisconsin-Madison Graduate School

Figure 1. % Dietary Adherence (n = 35)

