ABSTRACT

This telephone survey (n=601) provided baseline data for the development and evaluation of cardiovascular disease (CVD) prevention programming in the City of Hamilton. Questions covered health history, awareness of CVD risk factors, hypertension control, smoking, dietary fat knowledge, physical activity, and preferred sources of health promotion information. Body mass index values over 25 kg/m² were calculated for 55.2% of respondents (n=439). Smoking and poor diet were the most frequently reported CVD risk factors. Lack of time was the main barrier to increased physical activity for nearly 54% of respondents. Print media (55%) and physicians (36%) were preferred sources of healthy eating information, while physical activity information was most likely to be sought from recreation centres (37%) and print media (34%). Smokers who wished to quit would consult a physician. In the City of Hamilton, CVD prevention programming should support healthy body weights through promotion of active lifestyles and healthy eating.

ABRÉGÉ

Un sondage téléphonique a fourni des données de référence pour l'élaboration et l'évaluation de programmes de prévention des maladies cardio-vasculaires à Hamilton. Les questions couvraient les antécédents médicaux, la conscience des facteurs de risque des maladies cardio-vasculaires, le contrôle de l'hypertension, l'usage du tabac, les connaissances sur les graisses alimentaires, l'activité physique et les sources préférées de renseignements sur la santé. Un échantillon aléatoire de 601 participants a répondu au sondage. Nous avons calculé des valeurs d'indice de masse corporelle de plus de 25 kg/m² chez 55,2 % des répondants (n=439). L'usage du tabac et un régime alimentaire de qualité médiocre étaient les facteurs de risque de maladies cardio-vasculaires les plus fréquemment indiqués. Le manque de temps était l'obstacle principal à une augmentation de l'activité physique pour près de 54 % des répondants. La presse écrite (55 %) et les médecins (36 %) étaient les sources préférées de renseignements sur l'alimentation saine; les renseignements sur l'activité physique étaient principalement recherchés dans les centres de loisirs (37 %) et la presse écrite (34 %). Les fumeurs qui désiraient arrêter de fumer ont indiqué qu'ils consulteraient un médecin. À Hamilton, les programmes de prévention des maladies cardio-vasculaires devraient se concentrer sur le soutien à l'atteinte d'une masse corporelle saine en faisant la promotion d'un mode de vie actif et d'une alimentation saine.

Heart Health Hamilton-Wentworth Survey: Programming Implications

Judy A. Paisley, PhD, RD,¹ Corina Midgett, MSc,²
Glenn Brunetti, MBA,³ Helen Hale Tomasik, MSc, RD³

Cardiovascular disease (CVD) accounted for 37% of all deaths in Canada during 1995.¹ In the region of Hamilton-Wentworth,* home to nearly half a million residents, 36% of all deaths and 20% of days spent in hospital in 1996 were attributed to CVD.² Here, as in many other Canadian communities, developing and implementing primary prevention programs that target CVD is a public health priority.

In 1993, the Ontario Heart Health Survey examined the knowledge, behaviour and selected health indicators of Ontarians aged 18 to 74 years.³ At that time, 23% of Ontarians smoked, 42% had hypercholesterolemia, 18% had hypertension, and 33% had body mass index values over 27 kg/m² (health indicators measured by researchers).³ Used in conjunction with regional data (when available), the OHHS has played a key role in the development of heart health programming in Ontario.

1. Assistant Professor, Ryerson University; Public Health Associate, Public Health Research Education and Development Program, City of Hamilton Social and Public Health Services Department, Hamilton, ON
2. Family Relations and Applied Nutrition, University of Guelph, Guelph, ON
3. City of Hamilton Social and Public Health Services Department

Name of the dept to which the work should be attributed: City of Hamilton Social and Public Health Services Department, a Public Health Research Education and Development Program affiliated with McMaster University and the University of Guelph

Correspondence and reprint requests: Dr. Judy A. Paisley, Assistant Professor, School of Nutrition, Ryerson University, 350 Victoria Street, Toronto, ON M5B 2K3, Tel: 416-979-5000, ext. 6942, Fax: 416-979-5204, E-mail: j2paisle@acs.ryerson.ca
Funding for this project was provided by the Ontario Ministry of Health & Long Term Care, Community and Health Promotion Branch and the Ontario Ministry of Health & Long Term Care, Public Health Research, Education, and Development Program, Public Health Branch.

* As of January 1, 2000, the region of Hamilton-Wentworth was amalgamated to become the City of Hamilton.

The prevention of cardiovascular disease begins with awareness of risk factors on both a community-wide and an individual basis. While the high prevalence of modifiable CVD risk factors among City of Hamilton residents had been reported,⁴⁻⁶ little was known about residents' understanding of CVD risk factors, the perceived barriers to behaviour change, and preferred sources of health information.

The purpose of the Heart Health Hamilton-Wentworth Survey (HHWS) was to provide baseline data to inform Heart Health Hamilton-Wentworth, a community-based coalition, on the development and evaluation of heart health programming. The results of this needs assessment were used by the heart health coalition to develop and tailor an array of primary prevention programs and initiatives. Survey questions covered many topics: personal and family health history; the awareness of CVD risk factors; self-perceived CVD risk; awareness of methods of controlling hypertension; behaviours relating to smoking, dietary fat consumption, and physical activity; and preferred sources of information concerning health promotion.

METHODS

In 1998, a random sample of 1,294 residential telephone numbers within the region was generated using the Canada Select Phone Book CD-ROM (Pro CD, Inc., 1997). A target sample size of 600 was determined based on regional census data, previous survey sample sizes, and budget considerations. A university-based research company used computer-assisted telephone interview software to administer a peer-reviewed, pre-tested telephone survey that had been developed by researchers in the City of Hamilton Social and Public Health Services, Healthy Lifestyles and

Disease Prevention Branch.⁷ A university-affiliated ethics review committee granted approval for this project. SPSS 8.0 (1997) was used to generate descriptive and inferential statistics.

RESULTS

Screening questions identified 886 eligible respondents who were older than 17 years and residents of the City of Hamilton. Six hundred and one eligible respondents completed the survey: the response rate was 69%. No information was obtained concerning characteristics of non-respondents.

Characteristics of respondents

The average age of respondents was 47.0 years (45.5 years for males, 48.2 years for females). Respondents' gender, age, marital status, and educational background are presented in Table I. Forty-four percent of respondents were employed full-time, 24% were retired and 4% were unemployed. Of 412 respondents who reported their 1997 household income, 33% reported incomes less than \$30,000, 40% reported between \$30,000 and \$60,000, and 27% reported over \$60,000.

Personal and familial health histories

When respondents were asked about their health histories, 18.1% reported personal diagnoses of hypertension, 14.7% reported hypercholesterolemia, and 7.2% reported heart disease. Hypertension (51.8%), hypercholesterolemia (36.7%) and heart disease (35.9%) were the most frequently reported cardiovascular diseases suffered by respondents' immediate family members (defined as mother, father, brother, sister, half-brother, or half-sister).

Body mass index

Body mass index (BMI) values were calculated for all respondents under age 66 years who provided plausible weight and height data (n=439). Mean BMI values for males and females according to age are given in Table II. In general, increased BMI values were associated with being male and increased age. Using a 10-point Likert scale, respondents with BMI values greater than 32 kg/m² reported higher

TABLE I
Respondents' Gender, Marital Status and Education (n=601)

		%
Gender		
Females (n=345)		57.0
Males (n=256)		43.0
Age (years)	Male (%)	Female (%)
18 to 24	7	9
25 to 34	22	18
35 to 44	26	25
45 to 54	18	11
55 to 64	12	14
> 65	15	23
Marital Status (n=589)		
Married		54.8
Never been married		21.6
Widowed		10.2
Divorced		5.9
Living with partner		4.1
Separated		3.4
Educational Background (n=596)		
Elementary*		6.7
Secondary*		42.8
Post-secondary*		50.5

* partial or completed

TABLE II
Mean Body Mass Index Values by Gender (n=439)

Age	N	Male	Female
		Mean BMI (kg/m ²)	
18-25	56	26.7	22.6
26-35	104	27.0	24.0
36-45	137	26.9	23.8
46-55	67	27.4	26.7
56-65	75	28.8	26.7
Ages 18-65	439	27.3	24.6

TABLE III
Percentage of Respondents Citing CVD Risk Factors (n=601)*

Risk Factor	%
Smoking	51.2
Poor diet	37.9
Heredity or family history	37.6
Lack of exercise	35.4
Other†	30.5
Excess stress, worry or tension	24.3
Overweight	20.1
High blood cholesterol	15.5
Too much fat in diet	12.3
High blood pressure	11.0

* An open-ended question with opportunities for up to seven responses.

† Responses included: eating foods high in cholesterol, hardening of the arteries/atherosclerosis, diabetes, overwork or fatigue, too much salt in diet.

TABLE IV
Barriers to Increased Physical Activity (Percentages) (n=395)*

	%
Lack of time	53.8
Ill health	15.9
Injury or handicap	15.9
Lack of energy	14.9
Cannot get motivated	13.8
Other†	20.5

* An open-ended question with opportunities for up to two responses.

† Responses included family obligations, costs too much, age, inadequacy of local facilities.

self-perceived risk of CVD (M=5.58, SD=2.35) than respondents with BMI values between 20 and 27 kg/m² (M=4.50, SD=2.21; F= 4.002; p=0.008).

Awareness of risk factors for cardiovascular disease

When given an opportunity to name up to seven CVD risk factors (RFs) in

response to an open-ended question, approximately 9% of respondents could identify no RFs, 10.5% identified one RF, 24% identified two RFs, 29.6% identified three RFs, and 26.9% identified four to seven RFs. No gender differences in the number of RFs identified were observed.

Frequently identified RFs included smoking, poor diet, heredity, and lack of exercise (Table III). Higher BMI scores were associated with the identification of overweight as a RF ($\chi^2 = 6.541$, $p < 0.05$)

TABLE V
Preferred Health Promotion Information Sources (Percentages)

Source	Healthy Eating (n=600)* %	Physical Activity (n=596)† %	Smoking Cessation (n=149)*‡ %
Family physician	36.4	30.0	61.7
Family physician's office §	11.3	15.8	12.1
Friend/family member	6.0	5.2	3.4
Internet	11.1	4.9	5.4
Newspapers/books/magazines	54.6	33.6	16.1
Other	29.0	1.1	N/A
Organizations	N/A	N/A	7.4 ¶
Public health nurse	1.0	0.5	0
Public health unit	5.7	3.7	4.7
Recreation/fitness centre/YMCA	N/A	37.4	N/A
Registered dietitian	11.1	N/A	N/A
Television/radio	11.3	4.7	8.1
Workplace	0.2	1.0	0

* An open-ended question with opportunities to provide up to three responses

† An open-ended question with opportunities to provide up to two responses

‡ Among respondents who smoked daily or occasionally

§ Pamphlets, brochures

|| Examples of responses: health food stores, naturopaths, and chiropractors

¶ Lung Association, Canadian Cancer Society, Heart and Stroke Foundation

TABLE VI
Comparable Response Categories for HHHWS and OHHS*6 Data

Response Category	HHHWS %	OHHS %
Personal diagnosis of hypertension	18	20
Personal diagnosis of hypercholesterolemia	15	16
Family history of hypertension	52	49
Cited smoking as CVD risk factor	51	62
Cited lack of exercise as CVD risk factor	35	39
Cited poor diet as CVD risk factor	38	38
Cited overweight as CVD risk factor	20	34
Cited excess dietary fat as CVD risk factor	12	24
Daily or occasional smokers	25	26
Believed dietary fat could affect health	96	97
Cited alcohol as a risk factor for hypertension	3	62
Cited salt intake as a risk factor for hypertension	12	42

* The following demographic data concerning OHHS participants (n=2583) are provided for comparison. Age distribution of respondents = 18 to 74 years. Employment status: 48% full-time employed, 10% part-time employed. Education: 53% reported 7 to 13 years of education, while 44% reported more than 14 years of education.

and respondents who smoked were more likely to identify smoking as a RF ($\chi^2=7.275$, $p<0.01$).

Blood pressure

When asked to recall two methods of controlling high blood pressure, respondents most frequently cited regular exercise (33.3%) and reduction of caloric intake (30.8%). Overall, 32.6% of respondents were not able to recall two methods of controlling high blood pressure. Ninety-seven percent of respondents reported that a health professional had tested their blood pressure.

Smoking

Twenty-five percent of survey respondents indicated that they smoked daily or

occasionally. Smokers, as a group, were younger than non-smokers ($M=42.83$, $SD=15.27$; $M=48.48$, $SD=18.06$, $p=0.001$).

When smokers compared their chances of developing heart disease to non-smokers (using a Likert-type scale ranging from much greater to much less), approximately 30% of daily and occasional smokers rated their chances as "about the same" as non-smokers while 67% rated their chances as somewhat or much greater. These ratings were not associated with smokers' age, gender, household income, or education levels.

Dietary fat

Approximately 96% of respondents believed that the amount of fat a person eats could affect their health. Overall, beef

and red meats were most frequently named as high fat foods (56.1%), followed by pork products (30.6%), and fried foods (30.4%). Cheese, fast food and potato chips and nuts were identified as high fat foods by 16.1%, 15.1% and 14.3% of respondents respectively. More males identified beef/red meat as high fat foods (62.1% of males versus 51.6% of females, $\chi^2=6.597$; $p<0.01$). More females identified butter/margarine (29.9% of females, 15.6% of males, $\chi^2=6.411$; $p<0.001$) as high fat foods.

Physical activity

Approximately 65% of respondents indicated that they wished they were more physically active. When asked what makes it difficult for them to be more physically active, the most frequent response was lack of time (Table IV).

The following is a descriptive profile of those who cited "lack of time" as a barrier to physical activity: 57.5% were female, 60.2% were married, 41.2% were between the ages of 30 and 41 years, 64.7% had some post-secondary education, 42.7% reported annual household incomes between \$30,000 and \$60,000, 54% reported BMI values between 20 and 27 kg/m², and 62.8% worked full-time. Full-time employment was associated with reporting lack of time as a barrier to increased physical activity ($\chi^2=54.821$; $p<0.001$).

Preferred information sources

Newspapers, books, or magazines, as well as family physicians, were frequently identified as preferred sources of *healthy eating* information (Table V). Females were more likely than males to cite newspapers, books and magazines as preferred sources of healthy eating information (60.2% and 47.3% respectively, $\chi^2=9.869$; $p<0.01$).

Preferred sources of *physical activity* information were newspapers, books or magazines, family physicians, and recreation or fitness centres (Table V). Female respondents were more likely than males to seek information about physical activity from pamphlets or brochures in physicians' offices (18.7% of females compared to 11.9% of males, $\chi^2=5.070$; $p<0.05$).

If they wished to *stop smoking*, respondents who smoked (n=149) would be mostly likely to seek information from a family physician (Table V).

DISCUSSION

Since study completion, the survey tool developed for this baseline study has been modified and used by numerous heart health projects and public health units in Ontario, indicating that there was a widespread need for a comprehensive and relevant needs assessment tool. Dissemination of survey results will provide needed comparative data for interpretation of similar heart health needs assessment surveys.

When compared with provincial data, the results of this survey indicate that there has been little improvement in the knowledge and awareness of CVD risk factors among City of Hamilton residents over the past decade. Table VI compares selected HHHWS results to 1993 Ontario Heart Health Survey data (OHHS).³ Our respondents' health histories are comparable to those of OHHS respondents. However, levels of awareness of smoking, overweight, and dietary fat intake as CVD risk factors are lower among City of Hamilton residents. HHHWS respondents cited alcohol and salt intake as mediators of hypertension much less frequently than OHHS respondents. Prevention programming should address awareness of these risk factors as well as the low awareness of diabetes as a CVD risk factor among respondents (3%). Newspapers, books and magazines are appropriate venues for enhancing knowledge of CVD risk factors.

Table VII compares selected BMI values reported by regional and provincial surveys. In 1995, the Hamilton-Wentworth Health Survey (HWHS) reported BMI values over 27 kg/m² for 30% of respondents (37% of males and 24% of females).⁶ Thirty-four percent of our respondents (44% of males and 26% of females) had BMI values over 27.0 kg/m². Average BMI values of City of Hamilton residents are higher than provincial averages and may be rising – particularly among males. This trend signals a need for increased emphasis on the promotion of healthy weights through healthy eating and physical activity. Published accounts of

TABLE VII
Percentages of Respondents (Aged 18 to 64 Years) with Specific BMI Values from HHHWS, OHS,⁸ OHHS³ and HWHS⁶

BMI Values (kg/m ²)	HHHWS* (%)	OHS* (%)	OHHS† (%)	HWHS* (%)
25.0 to 27.0‡	21.2	17	18	N/A
> 27.1 §	34	27	33	30

* Based on respondents' self-reported weight and height
† Based on measured weight and height
‡ BMI values between 25.0 and 26.99 kg/m² may lead to health problems in some people
§ BMI values greater than 27.0 kg/m² may increase one's risk of developing health problems

population-based education programs with obesity prevention/treatment components have reported little or no success.⁹⁻¹² Successful obesity prevention/treatment programming may include multiple, targeted strategies for adults and children with components addressing the individual, the social, physical and work environments, and health, food and social policies.^{13,14}

Since most smokers were aware of their increased CVD risk, heart health programming should focus on supporting behaviour change. Nearly one third of smokers rated their CVD risk as equal to that of non-smokers, despite no observed differences in risk factor awareness based on smoking status. Further research is needed to examine the factors (in addition to awareness) that influence perceived CVD risk among some smokers.

Our results contribute to the understanding of "lack of time" as a self-reported barrier to increased physical activity.¹⁵ "Feelings of overload" relating to being married, full-time employment, and having children, have been associated with lower levels of physical activity among women.¹⁶ Gender differences in perceived physical activity barriers highlight the need for targeted programming.^{15,17,18} This survey did not ascertain whether women (who were most likely to report lack of time for physical activity) included housework, grocery shopping, and running errands as physical activity. Physical activity messages that acknowledge perceptions of "lack of time" and suggest solutions to this problem may be well received by women, those who are married, and those who work full-time. Advocating for supportive workplace initiatives such as flexible work schedules, activity breaks, and 'walk and talk' meetings could help adults integrate physical activity into their lives.

As preferred information sources, family physicians can be engaged in community heart health promotion as direct providers of information and disseminators of educational material through their practice settings. Engaging family physicians as advocates for healthy public policies and as sources of referrals to health promotion programs provided by health educators, dietitians, and fitness experts could expand the impact and reach of CVD prevention programming.

In Hamilton, heart health programming should support achievement of healthy body weights through promotion of healthy eating and physical activity. A comprehensive and coordinated obesity prevention/treatment strategy involving educational, environmental, and policy initiatives will be required to address this challenge.

Limitations

No data were gathered concerning characteristics of non-respondents. Residents without a telephone, with unlisted telephone numbers, and those not fluent in English were excluded from participation by the sampling strategy used. This survey relied on respondents' self-report for information concerning BMI, hypertension, and hypercholesterolemia.

ACKNOWLEDGEMENTS

The authors thank Dr. Andrea Toepell, Brock University, Dr. Susan Evers, University of Guelph, Dr. Larry Chambers, McMaster University, and members of the Heart Health Hamilton-Wentworth Steering Committee for their contributions to the development of this project.

REFERENCES

1. Health Canada. Heart Disease and Stroke in Canada 1997. On-line at http://www.hc-sc.gc.ca/hpb/lcdc/bcrdd/hdsc97/s02_e.html
2. Hamilton-Wentworth Social and Public Health Services Division. Health Issues Report, 1999. Hamilton: City of Hamilton/Region of Hamilton-Wentworth, 1999.
3. Ontario Ministry of Health. Ontario Heart Health Survey. Ontario Ministry of Health, 1993.
4. Public Health and Epidemiology Report Ontario. Leading causes of death: Ontario 1991 to 1995. February 27, 1998;9(2):28-34.
5. Central West Health Planning Information Network (CWHPIN). Heart Disease and Cancer in Hamilton-Wentworth. CWHPIN, February 1997.
6. Hamilton-Wentworth Department of Public Health Services. Hamilton-Wentworth Health Survey. Hamilton-Wentworth Department of Public Health Services, 1995.
7. Larrakas PJ. *Telephone Survey Methods. Sampling Selection and Supervision*. Thousand Oaks, CA: Sage Publications, 1993.
8. Ontario Ministry of Health. Ontario Health Survey 1990. Ontario Ministry of Health, 1995.
9. Barr Taylor C, Fortmann SP, Flora J, Kayman S, Barrett DC, Jatulis D, et al. Effect of long-term community health education on body mass index. *Am J Epidemiol* 1991;134(3):235-49.
10. Jeffery RW, Gray CW, French SA, Hellerstedt WL, Murray D, Luepker RV, et al. Evaluation of weight reduction in a community intervention for cardiovascular disease risk: Changes in body mass index in the Minnesota Heart Health Program. *J Obesity Related Metabolic Disorders* 1995;19:30-39.
11. Jeffrey RW, French SA. Preventing weight gain in adults: The Pound of Prevention Study. *Am J Public Health* 1999;89(5):747-51.
12. Macdonald SM, Reeder BA, Chen Y, Despres J. Canadian Heart Health Surveys Research Group. Obesity in Canada: A descriptive analysis. *CMAJ* 1997;157 (1 Suppl):S3-S9.
13. Gill TP. Key issues in prevention of obesity. *Br Med Bull* 1997;53(2):359-88.
14. James WP. A public health approach to the problem of obesity. *J Obesity Related Metabolic Disorders* 1995;19(3 Suppl):S37-S45.
15. National Institute of Nutrition. How active are Canadians? *Rapport* 1997;12(2):6-7.
16. Verhoef MJ, Love EJ. Women's exercise participation: The relevance of social roles compared to non-role-related determinants. *Can J Public Health* 1992;83(5):367-70.
17. Mosca L, McGillen C, Rubenfire M. Gender differences in barriers to lifestyle change for cardiovascular disease prevention. *J Women's Health* 1998;7(6):711-15.
18. Scharff DP, Homan S, Kreuter M, Brennan L. Factors associated with physical activity in women across the life span: Implications for program development. *Women and Health* 1999;29(2):115-34.

Received: June 29, 2000

Accepted: July 9, 2001

BOOK REVIEW

Fatal Consumption: Rethinking Sustainable Development

Robert Woollard and Aleck Ostry (Eds.), Vancouver, BC: UBC Press, 2000; 280 pp. \$75 (cloth), \$29.95 (paperback)

Despite some personal scepticism about substantive social change and health, I reviewed this book with anticipation and interest. The book is well-organized with articulate papers on the threats to health and social stability of existing, unfettered western material consumption. The polarization of vested interests and politics associated with economic and environmental issues are increasingly entrenched and this is honestly confronted in this very readable, technical work. It is accessible and important reading for an array of professionals and the public, including urban planners, environmentalists, health professionals, and politicians.

Based on work of a number of well-known researchers and a 4-year case study emerging from the UBC Task Force on Healthy and Sustainable Communities with the City of Richmond, this dense text moves systematically from theory to practice in social change.

An excellent introduction outlines the scope and seriousness and urgency of the challenges and a democratic approach to incremental change. Themes range from an initial chapter on the "ecological footprint" and its importance to quantify our dilemma, through current economic and political impacts on population health; social capital and new models needed to integrate economy, social and political process; barriers to social transformation, and the role of public policy.

Health professionals and planners may especially appreciate the section on Social Capital, Civil Society and Transformation (Michael Carr) which provides understanding of the meaning and importance of social capital and caring communities; illustrated in the Mondragon cooperatives of Spain.

The combination of theory and practice culminates in the Case Studies – City of Richmond and a BC Sawmill Industry – describing in constructive detail, the challenges and changes needed in moving from theory to practice across political, cultural and ideological lines as well as working between disciplines. I would like to have seen some of the sustainability indicators used and more on the process of negotiating trade-offs, alluded to in the Richmond case study.

There is no attempt to whitewash either the complexities of the process or the ambiguity of results and the conclusions. The book, and especially Robert Woollard, raises important practical philosophical and ethical issues that should assist many readers to engage in this complex and ultimately necessary activity – beginning with our own attitudes and values and moving out to the community. Ultimately subversive in the best sense, this book can assist practitioners in facilitating a more vital democracy; the basis for sustainable change. It is a hopeful book and it empowered me to continue the struggle.

David Swann, MD, FRCPC
Assistant Clinical Professor, Community Medicine
University of Calgary
c/o 626 3rd Ave NW
Calgary, AB T2N 0J1
E-mail: swann@ucalgary.ca