

Health Promotion Activity in Primary Care: Performance of Models, and Associated Factors

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Word Length (~2850)

Funding for this research was provided by the Ontario Ministry of Health and Long Term Care Primary Health Care Transition Fund. The views expressed in this report are the views of the authors and do not necessarily reflect those of the Ontario Ministry of Health and Long Term Care

Abstract

Purpose: Lifestyle behaviours have significant health and economic consequences. Primary care (PC) providers play an important role in promoting healthy behaviours. We compared the performance of PC models in delivering health promotion (HP) and identified practice factors associated with superior performance.

Methods: Surveys were conducted in 137 randomly selected PC practices in Ontario, Canada including, 35 Community Health Centres (CHC), 35 fee-for-service (FFS), 35 Family Health Networks (FHN), and 32 Health Service Organizations (HSO). 4,861 adult patients who were visiting their family practice participated. Qualitative nested case studies were also conducted at 2 practices per model.

Main outcome measure: A 7-item question was used to evaluate HP. The main outcome was whether at least one of the 7 HP items was discussed at the survey visit. Logistic regressions were used to compare the models and determine performance related practice factors.

Results: HP was significantly higher in CHCs. This persisted after controlling for patient and provider profile. Factors independently positively associated with HP were: reason for visit (general check up or chronic disease), patients having and seeing their own provider, # practice nurses, % female family physicians, smaller physician clinical caseload, and longer booking interval. Providers in interdisciplinary practices viewed HP as an integral part of PC whereas other providers emphasized the role of relational continuity in effective HP.

Conclusion: We have identified several attributes associated with better performance. These results may assist practice managers and policy makers in modifying practice attributes to improve HP in PC.

Introduction

Cigarette smoking, excessive use of alcohol, poor diet and lack of physical activity contribute to most of the leading causes of death and disability in Canada.⁽¹⁾ Amongst Canadians ages 12 and over, 23% smoke and 21% have alcohol-drinking patterns that can be described as “risky”. Only 39% adhere to the recommendations concerning fruit and vegetable consumption, half lead a sedentary lifestyle, and 59% of Canadian adults are obese or overweight.⁽²⁾ The economic burden of lifestyle-related health disorders is substantial. In 2002, \$2.3 billion was spent in Canada on health care provision for alcohol-related problems alone.⁽³⁾ Nine percent of total health spending in the United States in 1998 was attributable to overweight and obesity.⁽⁴⁾

Health promotion (HP) is commonly defined as “the process of enabling individuals to take control over their health”.⁽⁵⁾ Improving the quality of HP and disease prevention has become a major focus of health care reform efforts internationally.⁽⁶⁻⁹⁾ HP is viewed as an important part of primary care.⁽¹⁰⁾ The Canadian Task Force on Preventive Health Care (CTFPHC) clinical practice guidelines recommend that primary care (PC) providers discuss healthy habits with their patients.⁽¹¹⁾ However, a 1996 study reported that Ontario family physicians (FP) were dissatisfied with the extent to which they adhered to recommended guidelines for preventive care,⁽¹²⁾ and a related study performed on a subset of the same FP found significant deficits in HP activities delivered to their patients.⁽¹³⁾

It is important that practice and organizational structures support the policy objectives of enhancing HP in PC practices. In this report we compare the performance of PC models of service delivery in Ontario (Canada) in delivering HP activities and determine what practice factors are associated with delivery of better care. This paper is part of a larger evaluation funded by the Ontario Ministry of Health and Long Term Care Primary Health Care Transition Fund.

Methods

Design

The study was a cross sectional design with a concurrent nested qualitative component in which several performance parameters were evaluated. Here we focus on the patient self-reported measure of HP. Full details on the methodology of the entire project can be found in a separate publication.⁽¹⁴⁾ The study was approved by the Ottawa Hospital Research Ethics Board. Data collection took place between October 2005 and June 2006.

Sample

Four PC organizational models that serve the great majority of the Ontario population were studied: 1) The traditional Fee For Service (FFS) model in which providers are remunerated based on services rendered (including the newly formed Family Health Groups (FHG) for which limited financial incentives for accessibility are also provided); 2) Health Service Organizations (HSO) where provider income is principally based on capitation for rostered patients 3) Family Health Networks (FHN), a model of blended remuneration primarily based on capitation but including 10% billing of the fee schedule and pay for performance bonuses; and 4) Community Health Centres (CHC), multidisciplinary group practices with strictly salaried providers. HSOs and FHN practices can also bill full FFS for non-rostered patients, which are required to represent a minority of patients. One hundred fifty-five randomly selected eligible FFS practices and all (n) known and eligible FHN (94), CHC (51) and HSO (65) practices were approached with an aim to recruit 35 of each model.

Eligibility

Practices were required to have belonged to their model of care for a minimum of one year prior to enrolment in the study; provide general PC services; and have at least 50% of their PC providers (FP or nurse practitioners (NP)) consent to involvement. Patients of participating providers were eligible if they were ≥ 18 years and not acutely ill or cognitively impaired.

Recruitment

Practices were recruited through mail invitation with careful follow-up. For the nested qualitative case studies, two sites per model were recruited through a typical case sampling strategy. Patients were recruited in the practice waiting room as they presented for their appointment with their PC provider. The patient survey was divided into two sections. The first was completed in the waiting room before the visit with the provider and captured patient descriptive information. The second was completed after their appointment and captured visit-specific information, including waiting time, visit duration and the HP question.

Instruments

Practice, provider and patient surveys were adapted from the Primary Care Assessment Tool (PCAT)-Adult edition.⁽¹⁵⁾ The patient survey was supplemented with a 7 item question addressing HP activities. The question, which was based on the CTFPHC,⁽¹⁶⁾ read: “In today’s visit to your clinic were any of the following subjects discussed with you?” Seven topics were listed to which participants answered “Yes”, “No”, “Don’t know”. The survey was available in French and English, and translators were used to assist individuals not literate in either language in completing the survey. The guides for the in-depth interviews (family physicians, nurse practitioners and patients) comprised open-ended questions about HP processes at the practice level.

Analysis

Descriptive and bivariate analyses: Descriptive analyses detailing patient and practice profiles across models were performed. The percentage of patients reporting discussion of at least one HP subject during their visit was our principal outcome measure. Binary logistic regression analyses evaluated the bivariate relationships between patient, provider and practice factors, and HP. These regressions were repeated for each model individually to evaluate the transferability of the results across models. Linearity of continuous variables was verified.

Comparing the PC models: The performance of the four models in delivering HP was compared using

Chi square analysis and repeated with binary forward stepwise logistic regression analyses (entry and exit criteria of 0.05 and 0.10, respectively) in which we adjusted for 1. patient characteristic; 2. same + provider factors. To avoid case wise deletion, missing values in continuous predictors were imputed with nearest neighbourhood technique, and missing discrete variables formed a separate category.

Evaluating practice factors independently associated with HP: We conducted a forward stepwise multivariate binary logistic regression of variables reported in Tables 1 and 2 to evaluate factors independently associated with HP. Entry and exit criteria were 0.10 and 0.15, respectively.

Qualitative analysis: The interviews were tape-recorded and transcribed verbatim. Transcripts were coded and analyzed with the support of qualitative data analysis software (N6). The coding scheme was developed gradually and the transcript analysis involved using an open coding strategy. Ideas and categories generated after performing line-by-line analysis were tested and further explored in subsequent interviews until saturation was reached.

Results

Descriptive and univariate analyses

Thirty five FFS, FHN, CHC, and 32 HSOs practices were recruited. A comparison of our participants to all physicians practicing in the same model using the Ontario Health Insurance Plan database and the Ontario Physician Manpower database showed little differences for key features.⁽¹⁷⁾

Overall patient response rate was 79% (range 74%-85%); 4,861 responded to the HP question. In-depth interviews were conducted with 40 family physicians, 6 nurse practitioners and 24 patients.

There was considerable variability in patient, provider and practice profile across models (Tables 1 and 2). Several patient factors had significant associations with the HP. Most of these relationships held true across the stratified analysis for each model. However, the higher likelihood of HP being discussed

for individuals living below the low income cut off⁽¹⁸⁾ was only found in CHCs. Several of the relationships between provider and practice characteristics and HP were model dependent. The relationship between HP and number of nurses per FP was only present for CHCs and HSOs, whereas the number of nurse practitioners was not associated with HP in any model. The number of FP in the practice was only associated with higher HP in FHNs.

Comparison of Models

Several HP subjects were more likely to have been discussed in a CHC visit (Table 3). CHCs remained superior in their HP performance after adjusting for patient factors and provider profile (Table 4). CHC patients also reported more frequent visits to their practice during the year (8.3 vs 4.8-7.1 visits) than patients of other models; increasing their overall likelihood of discussing an HP subject.

Predicting HP Performance

Several factors were independently associated with HP (Table 5). In this equation, the addition of the PC model variable did not add significant explanatory power; indicating that much of the reasons for model variation has been captured in the equation. HP activity was reported more frequently by patients attending practices with larger proportions of female FPs and practices employing more nurses. Booking interval for a regular visit was positively associated with HP; each 10 minute increment has a 25% increase in HP. Smaller FP clinical caseload (number of patients in their care) was also positively associated with HP in a linear fashion; patients of practices managing an average caseload of 1,500 per FP were 11% more likely to discuss a HP subject than those attending practices serving 2,500 patients per FP. Finally, HP was higher amongst patients visiting with their own provider and amongst those receiving a general check up or care for a chronic condition. The association between each of the predictive variables in this multivariate equation and HP was consistent across all models.

Qualitative evaluation

Results of the qualitative evaluation provided insights into the quantitative findings.

Compared to the physicians interviewed in CHCs, those in FFS, FHNs and HSO models of care tended to view HP as lower priority. This viewpoint was explained by the arguments that patients are responsible for their own health; that HP activities/strategies have limited impact; and that when time is a constraining factor physicians inevitably get caught in the “tyranny of the urgent”. The latter is reflected in the following quote: *“So I try to do the preventive stuff of you know women’s health ... education of lifestyle, we try to do all of that. Time is a limiting factor. Would I like to do more? Yes. Can I afford to do more economically or realistically with the number of patients that I have? No”* (FFS-FP). Physicians in FFS, FHNs, and HSOs valued relational continuity, feeling that HP can be effective even “at a low dose” if done in the context of a long, exclusive, and trusting patient-doctor relationship.

In contrast, those physicians working in collaborative models of care (CHCs, one interdisciplinary HSO) were more likely to view HP as an integral part of Primary Care. They also valued frequency (repetition) by getting the messages across through different providers, and encouraging patient centred methods and self directed behavioural change. Most physicians working in CHCs firmly believe that interprofessional collaboration strengthens Health Promotion in PC: *“And very often, other professionals are much better at doing the health education and health promotion. For me to take somebody and have a chat about cholesterol versus a dietitian, if the dietitian is available, which is much cheaper than me, it makes sense to me”* (CHC-FP).

Discussion

CHCs were superior to other models in their delivery of HP. These results mirror that of an earlier study relying on provider reported measures of HP within CHCs, FFS practices and HSOs in Ontario,⁽¹⁹⁾ but are inconsistent with that of Hutchison et al who found that adherence to preventive and HP activities was superior in salary and capitation (HSO) based models when compared to traditional FFS.⁽²⁰⁾ We suggest that CHCs have developed a pattern of service delivery matching their mandate of wellness and prevention, and of incorporating clinic based interventions to address the non-medical determinants of health.⁽²¹⁾

The potential for financial incentives to improve preventive outcomes in PC has been documented in other studies.⁽²²⁻²⁴⁾ At the end of our data collection period, the first incentives for the delivery of healthy lifestyle counselling, smoking cessation, was introduced. However this would likely not have had an impact on this study given the anticipated delays in implementing new preventive strategies in PC models.⁽²⁵⁾

Practice influences on prevention

The PC delivery model did not independently predict HP activity in the multivariate model containing patient, provider and organizational factors. The relationship between the predictive factors and HP remained true for each model, indicating that their effect is not due to an association with better performing models, but rather that their impact would hold true across models.

These results help explain the observed differences between the models. CHCs work with smaller clinical caseloads, more nurses, longer booking intervals and a much higher proportion of female providers (nearly three times that of the FFS practices) – all factors increasing the likelihood of HP activities. These factors outweighed any negative influence of lower relational continuity observed in CHCs.

While most physicians interviewed thought inter-professional collaboration would increase HP efforts, several were anxious about the implications of the loss of relational continuity that may follow a move to team based care, concerns reflected in another Canadian study as a barrier to integrating prevention into daily practice.⁽²⁶⁾ In our study, patients attending their regular provider were almost twice as likely to report discussing a HP subject during their visit, independent of the reason for visit. These results are consistent with other studies documenting a positive association between relational continuity and preventive care⁽²⁷⁻³²⁾ Our findings that female providers are more likely to provide preventive services is consistent with those of other authors.⁽³³⁻³⁵⁾ Longer booking intervals and smaller caseloads were also found positively associated with HP in other studies⁽³⁶⁾ and is in keeping with recent work highlighting the time burden of delivery of prevention in primary care.^(37;38) With health professional time remaining constant, smaller patient caseloads and longer booking intervals have clear implications for provision of quality care.

Related to this, one assumption of primary care reform efforts has been that routine tasks could be better managed by non-physician health professionals. Our finding that the number of nurses in a practice was an independent predictor of patient reported HP supports this strategy. The most likely explanation is that that nurses perform HP activities in some practices. An English study found patients were receptive to receiving lifestyle advice from nurses.⁽³⁹⁾ The findings are of particular importance in light of the current interest in primary care reform. Most Canadian province are engaging in an active process of primary health care renewal,⁽⁴⁰⁾ much of it based around organizational and economic changes designed to increase the comprehensiveness, integration and accessibility of PC services. New delivery models frequently incorporate interdisciplinary teams, patient enrolment and active promotion of prevention and chronic disease management.⁽⁴¹⁾ Ontario is using the introduction of allied health professionals in PC as a key component of its recently developed Family Health Teams (FHT).⁽⁴²⁾ FHTs are practices that have received provincial financial support for allied health professionals to assist in the care of the

population they serve. Nurses will form a significant part of that workforce and may be influential in promoting healthy lifestyles. Surprisingly nurse practitioners were not associated with better HP.

Limitations

The study has a number of strengths and limitations. This study provided rich information about practice parameters, provider profile and patient information that allowed an in-depth evaluation of many of the factors associated with HP activities. Data were collected from a large, random sample of practices and patients. The study used qualitative methods to illuminate many of its findings.

Practice participation was low, particularly in the FFS practices. However, a comparison of provider profiles in practices participating in this study and all practices of the same model in Ontario suggested that the study sample was representative (results now shown).⁽¹⁷⁾

As many HP activities performed by providers are not routinely recorded in the patient's chart, we relied on patient reports of HP activities. We did limit recall bias by administering this component of the questionnaire immediately following the encounter with the provider. The question capturing HP activities was broadly worded so that we could capture any discussion around one of the 7 measured items. We were not able to evaluate the quality of these discussions. We chose to administer the patient survey to those patients visiting the practice on a given day. This face-to-face approach likely enhanced participation but admittedly resulted in an over-representation of those patients more likely to frequent the practice. Other provider factors found associated with HP in other studies, such as their awareness of, and agreement with the guidelines,^(43;44) their perceived ability to impact behaviour,^(45;46) and their personal health behaviours⁽⁴⁷⁾ have not been evaluated in the present study.

Conclusions

There was a significant difference between the observed performances of models of primary care when measured by patient reports of HP activity within the consultation. Factors associated with the

organization of the practice and visit specific information outweighed any additional factors associated with the model of the practice.

Several of the factors associated with HP delivery during a patient encounter are potentially modifiable by either the practice or regulatory authorities. Notwithstanding this, any potential benefits from modifications to practice structure stemming from the findings of this study should be weighed against its potential impact on other attributes of PC delivery. For example, limiting FP caseload may improve HP but would it also limit accessibility.

Contributions of the authors;

William Hogg, Laura Muldoon, and Betsy Kristjansson with others conceived the study and oversaw its implementation. They helped with the analysis, participated in the writing, and approved the final version of the manuscript. Grant Russell helped oversee the implementation of the project, helped guide the analysis, participated in the writing and approved the final version of the manuscript. Simone Dahrouge was responsible for the quantitative data collection and analysis, participated in the writing and approved the final version of the manuscript. Robert Geneau was responsible for the qualitative data collection and analysis, participated in the writing and approved the final version of the manuscript. Meltem Tuna performed the data analysis participated in the writing and approved the final version of the manuscript. Sharon Johnston helped guide the analysis, participated in the writing and approved the final version of the manuscript.

Acknowledgements: We wish to acknowledge the valuable contribution of Jennifer Englert and Jennifer Creer for their contribution to the drafting and editing of this manuscript.

Table 1: Patient profile of models and bivariate association of the variables with PRHP

	Profile distribution				Bivariate association	
	CHC	FFS	FHN	HSO	Odds ratio	
Patient profile	n	1219	1375	1494	1273	
Age (years) [†]	46.7	49.9	51.2	51.2	0.997	
Sex [†] (% male)	27	33	34	39	1.20	
Insured in Ontario (%)	92	96	97	97	0.91	
Ethnicity [†] (% white)	77	87	94	95	0.92	
Born in Canada (%)	70	74	86	83	0.97	
Duration in Canada [†] (immigrants only)	19	32	38	37	0.99	
Household income [†] (Median)	\$25k – 35k	\$50k – 65k	\$50k – 65k	\$50k – 65k		
Household income [†] (More than LICO ¹)(%)	75	90	91	91	0.80	
Education level (> high school) (%) [†]	61	66	65	65	0.96	
Quality of life (good – excellent) [†] (%)	76	81	83	87	0.86	
Main provider is a Nurse Practitioner [†]	22	0.2	0.0	2.5	1.24	
Visit specific information						

¹ LICO = Low Income Cut Off

Number of visits per year	8.3	7.1	5.3	4.8	0.994	
Provider for that visit						
Seeing own provider [†]	75	95	94	95	Ref	
Having but not seeing own provider [†]	12	2	4	3	0.61	
Not having a regular provider [†]	8	2	1	1	0.96	
Regular provider information missing [†]	6	1	1	1	1.40	
Wait time prior to visit [†] (min)	13	22	20	18	0.995	
Duration of visit [†] (min)	24.1	15.1	15.4	15.1	1.056	
Reason for visit [†]						
Recent Condition [†]	19	25	25	29	Ref	
General Check Up	25	24	24	22	3.40	
Chronic Condition [†]	21	20	20	16	2.11	
Other [†]	36	32	32	33	1.06	

[†] Indicates factors significantly different between the models (p<0.05)

PRHP – Patient reported health promotion

Table 1: Practice profile of models and bivariate association of the variables with PRHP

	Profile distribution				Bivariate association	
	CHC	FFS	FHN	HSO	Odds ratio	
Practice characteristics n	35	35	35	32		
EMR [†]	29	15	59	45	1.14	
#of nurses FTE ² per FP [†]	0.9	0.2	0.5	0.7	1.15	
Patient workload ³ [†]	1308	1836	1418	2017	0.845	
Booking interval for routine visit (min)	25	13	13	14	1.039	
Group practices [†]	100	71.4	62.9	62.5	1.24	
#Full time equivalent						
Family Physicians [†]	3.2	2.5	4.5	1.7	1.04	
Nurse Practitioners [†]	2.5	.1	.3	.2	1.11	
Nurses ^a [†]	2.7	0.6	2	1.1	1.10	
Setting						
Hospital (<10km)	71.4	85.3	94.1	86.7	0.90	
Rurality index	14	13	16	8	0.999	
Family physician profile n						
Years since graduation (2006) [†]	19 years	22 years	23 years	29 years	0.988	
Female providers (%) [†]	72	44	41	26	1.56	
Provider foreign trained (%) [†]	9.3	18.2	2.5	14.3	1.07	
Provider has CFPC degree (%)	79	86	78	68	1.15	

[†] Indicates factors significantly different between the models (p<0.05)

PRHP – Patient reported health promotion

² Refers to full time equivalent RPN, nurses and nursing assistants.

³ Average number of patients per FP (FTE)

Table 1: Health promotion scores (%) for individual subjects and overall

Subject	CHC	FFS	FHN	HSO	Comparisons
Healthy foods and unhealthy foods	28	17	21	20	CHC, (FHN-HSO), FFS
Home safety	7	4	3	3	CHC, (FFS-FHN-HSO)
Family conflicts	17	10	10	10	CHC, (FFS-FHN-HSO)
Exercise	40	33	34	32	CHC, (FHN-FFS-HSO)
Tobacco/smoking	18	15	18	13	(CHC- FHN), (FFS- HSO)
Alcohol consumption	14	8	12	9	(CHC- FHN), (FFS- HSO)
How to prevent falls ⁴	6	3	3	3	No difference
Overall – At least one subject	59	47	51	46	CHC, FHN, (FFS,HSO)

Health promotion scores reflect the percentage of patients reporting having discussed that subject during their visit that day.

In the “Comparison” column, statistically different models or group of models are separated with a comma. The models in parenthesis are not statistically significantly different.

⁴ Only patients 65 years of age or older were included in analyzing this factor

Table 4: Odds ratio for Model variables from multivariate logistic regression analysis comparing models of primary care

Adjustment level	CHC	Odds ratio (95% confidence intervals)		
		FFS	FHN	HSO
None	1	0.62 (0.53-0.73)	0.72 (0.61-0.84)	0.59 (0.50-0.70)
Patient characteristics	1	0.61 (0.52-0.72)	0.71 (0.60-0.83)	0.58 (0.49-0.69)
Patient and provider characteristics	1	0.69 (0.58-0.81)	0.80 (0.68-0.95)	0.70 (0.58-0.84)

* CHC model is the reference group. Differences between CHC and the other models are statistically significant in each analysis.

Table 5: Multivariate logistic regression analysis results

	Association with PP	
Patient profile	Odds ratio	95% CI
Age (years)	0.996	(0.993-0.999)
Sex	1.31	(1.15-1.49)
Visit specific information		
Reason for visit		
Recent Condition	Ref	
General Check Up	3.31	(2.79-3.93)
Chronic Condition	2.04	(1.71-2.44)
Other	1.04	(0.89-1.22)
Provider during visit		
Seeing own provider	Ref	
Having but not seeing own provider	0.57	(0.43-0.76)
Not having a regular provider [†]	0.68	(0.46-0.99)
Having and seeing regular provider - NP	0.82	(0.61-1.11)
Regular provider information missing	1.19	(0.78-1.83)
Family physician profile		
Female providers (%)	1.47	(1.27-1.71)
Practice characteristics		
Nurses (FTE)	1.06	(1.02-1.1)
Patient workload	0.892	(0.839-0.949)
Booking interval for routine visit (min)	1.025	(1.013-1.038)