

Tobacco Use Cessation Services Provided by Dentists and Dental Hygienists in Manitoba: Part 1. Influence of Practitioner Demographics and Psychosocial Factors

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ABSTRACT

Objective: Despite high rates of tobacco use, overwhelming evidence of detrimental effects on oral health, smokers' desire to stop using tobacco and the availability of efficacious brief intervention counselling (BIC) strategies, the delivery of cessation services by dental practitioners is, at best, inconsistent. The purpose of this part of our study was to assess BIC practice patterns among dentists and dental hygienists in Manitoba and to determine whether demographic or psychosocial factors influence BIC delivery.

Methods: A pre-piloted survey was mailed to all licensed dentists (547) and registered dental hygienists (566) in the province.

Results: In all, 514 oral health practitioners responded for a 46.2% response rate. Most oral health practitioners in Manitoba are not providing consistent BIC; however, 54.9% (279/508) of survey respondents advise smokers to quit. Women clinicians are more likely to ask, assess and assist patients and tend to advise against smoking more frequently than men; younger practitioners are more likely to ask and assess readiness to quit smoking than older practitioners; dental hygienists are more likely to provide assistance to quit than dentists. Assisting is the service least frequently provided by practitioners. The barriers to providing BIC are different for male and female practitioners and for dentists and dental hygienists; practitioners with more psychosocial barriers provide BIC less frequently than those reporting fewer barriers. Only 36.9% (188/510) of practitioners report feeling adequately prepared to assist smokers to quit.

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In 2002, over 37,000 Canadians died from tobacco-related causes, including cancer, heart disease and lung disease. This means that the number of potential years of Canadian life lost from tobacco in 2002 was 515,607. The total economic cost of tobacco use that same year was nearly \$17 billion.¹ Tobacco use is associated with increased risk of oral and pharyngeal cancer,

leukoplakia, periodontitis, delayed wound healing and compromised periodontal treatment outcomes.²⁻⁶

The Canadian Tobacco Use Monitoring Survey 2007 reported that 19.2% of Canadians over 14 years of age were current smokers. Provincially, the rate of smoking ranged from 14.4% in British Columbia to 24.0% in Saskatchewan.⁷

Table 1 Distribution by type of practice, gender and age for respondents who answered this question (*n* = 498)

Type of dental professional	Mean age (SD)	<i>n</i> (%)
General dentist	45.3 (10.9)	235 (100)
Men	47.3 (10.8)	180 (77)
Women	39.0 (8.8)	55 (23)
Specialist	47.5 (10.4)	40 (100)
Men	49.1 (10.1)	34 (85)
Women	38.7 (8.1)	6 (15)
Hygienist	38.8 (8.5)	223 (100)
Men	39.6 (9.7)	8 (4)
Women	38.8 (8.5)	215 (96)
Total	42.6 (10.4)	498 (100)
Men	47.3 (10.7)	222 (45)
Women	38.8 (8.5)	276 (55)

SD = standard deviation.

Most smokers express a desire to quit. In 2005, 54% of Ontario smokers expressed an intention to quit within 6 months and, of those, 25% wanted to quit within the next 30 days.⁸

Primary care clinicians, including oral health professionals have an opportunity and responsibility to encourage their smoking patients to quit.⁹ Brief (3-minute) tobacco use cessation services, also known as brief intervention counselling (BIC), provided by health professionals, including dentists and dental hygienists, increases cessation rates.⁹⁻¹⁶ To be most efficacious, BIC must include the following 4 steps: ask all patients whether they smoke; advise all smokers to quit; assess patients' readiness to quit; offer assistance to smokers ready to quit.⁹ Additional guidance provided by dental professionals during the quit process is also important in maximizing patient success.

Despite the high rate of tobacco use, overwhelming evidence of its negative health consequences, smokers' desire to quit and the availability of effective BIC, the delivery of such services by dental and medical clinicians is, at best, inconsistent.^{9,17-19} This inconsistency may be explained by a number of psychosocial factors, including the practitioner's opinions, attitudes and perceptions about intervening in a patient's choice to use tobacco^{20,21} as well as inadequate training in BIC.²²

The purpose of part 1 of our study was to assess the delivery of BIC by dentists and dental hygienists in Manitoba and to investigate whether their opinions, attitudes or perceptions regarding BIC influence their delivery. In part 2, we will report whether dental school curriculum-based BIC training influences BIC

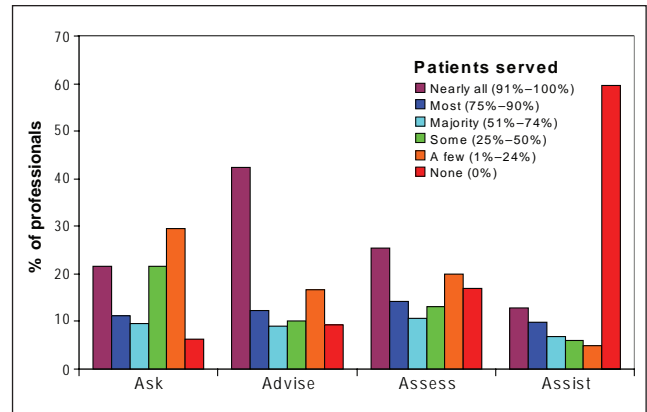


Figure 1: BIC steps provided by Manitoba dental professionals

practice patterns among dentists and dental hygienists following graduation.

Methods

Survey Methods

A sampling frame listing all licensed dentists (*n* = 547) and registered dental hygienists (*n* = 566) in Manitoba was obtained from the provincial licensing body. The frame included all dental professionals who were eligible to practise in the province, as licensing and registration are requirements for practice. On June 6, 2003, a package containing a covering letter confirming support from the provincial licensing body, an information and consent form, a self-administered questionnaire and a self-addressed stamped return envelope was mailed to each person in the sampling frame. An identical follow-up package sent to non-responders on July 9, 2003, resulted in a small number of additional responses.

Survey Instrument

A structured, pre-piloted questionnaire was used to collect demographic information and tobacco-use cessation services delivered as well as perceived barriers associated with providing these services. Many questions required respondents to select from the following 6 choices: nearly all patients (91%–100%), most (75%–90%), majority (51%–74%), some (25%–50%), a few (1%–24%) and none (0%). As it is desirable that dental practitioners provide BIC to most patients (75% or more), the original 6-point scale was collapsed into dichotomous variables used for χ^2 analyses, separating respondents who reported providing services for most patients from those providing the services less frequently.

Statistical Analyses

Data entry for this study was performed by a dental student enrolled in the University of Manitoba's BSc dentistry program, using Statistical Package for the Social

Table 2 Distribution of respondents by sex and strategy used to assist most ($\geq 75\%$) of their patients

Strategy	All, no. (%)	Men, no. (%) ^a	Women, no. (%) ^a
Discuss specific quit strategies ($n = 495$)	78 (15.8)	22 (10.0)	56 (20.4) ^b
Set a quit date ($n = 488$)	45 (9.2)	11 (5.1)	34 (12.5) ^b
Provide self-help materials ($n = 489$)	42 (8.6)	16 (7.4)	26 (9.6)
Suggest nicotine patch ($n = 487$)	50 (10.3)	16 (7.4)	34 (12.6)
Suggest nicotine gum ($n = 485$)	33 (6.8)	11 (5.1)	22 (8.2)
Suggest bupropion ($n = 484$)	43 (8.9)	16 (7.4)	27 (10.0)
Refer to cessation program ($n = 487$)	34 (7.0)	8 (3.7)	26 (9.6) ^c
Follow-up dental appointment ($n = 506$)	42 (8.3)	11 (4.9)	31 (11.1) ^c

^a Percentages for the men and women are based on the total number of male and female respondents for each question.

^b Significant difference between men and women by χ^2 analysis, $p < 0.01$.

^c Significant difference between men and women by χ^2 analysis, $p < 0.05$.

Sciences (SPSS 14.0 for Windows, SPSS Inc. 1989–2005) SPSS was also used to produce frequency distributions and to look for associations between variables (χ^2 and ANOVA). χ^2 analysis was used to compare respondents who reported providing services for most ($\geq 75\%$) of their patients with those providing the services less frequently.

Ethical Approval

The study was approved by the Health Research Ethics Board of the University of Manitoba.

Results

Practitioner response rate was 46.2%. Of the 514 practitioners who responded, 243 were general dentists (47.3%), 41 were dental specialists (8.0%) and 230 were dental hygienists (44.7%). Mean age of respondents was 42.6 years (standard deviation [SD] 10.4); 55.3% (276/498) were women (**Table 1**). Because BIC scores for general dentists and specialists were not statistically different, their scores were collapsed into a single group. Most respondents (84.1%) were graduates of the University of Manitoba.

BIC Practice Patterns

Rates of provision of specific BIC steps by Manitoba dental professionals are shown in **Fig. 1** and dichotomous results are summarized below.

- **Ask:** Only 33.0% (169/512) of respondents reported asking most ($\geq 75\%$) patients if they smoke. Women were significantly more likely ($p < 0.01$) to ask about tobacco use than men (37.6% vs. 26.7%); dentists and hygienists had similar rates (31.4% and 34.9%, respectively; $p > 0.05$). The mean age of those asking most patients about tobacco use was significantly lower ($p < 0.01$) than those who asked less often (40.9 vs. 43.5 years).
- **Advise:** Despite the low proportion of professionals asking about the smoking status of most of their patients,

54.9% (279/508) of respondents reported advising most smoking patients to stop. There was a non-significant tendency for more women than men to advise most patients to quit smoking (58.1% vs. 49.8%; $p > 0.05$). Dentists and hygienists had similar rates (54.4% and 55.5%; $p > 0.05$). The mean age of those advising most patients was not significantly different ($p > 0.05$) from those who advised less often (43.0 and 42.1 years).

- **Assess:** This was not a common BIC service, with only 197 out of 498 (39.6%) responding professionals assessing the cessation interest of most patients. Women were significantly ($p < 0.001$) more likely than men to assess readiness to quit (45.8% vs. 29.5%). Similarly, hygienists assessed more than dentists (47.1% vs. 33.5%; $p < 0.01$). The mean age of those assessing most patients' interest in quitting was significantly lower ($p < 0.01$) than that of those who assessed less often (41.1 vs. 43.5 years).
- **Assist:** Assisting interested smokers to quit was the least common BIC step, with only 116 out of 510 respondents (22.7%) providing this service. Women were significantly ($p < 0.01$) more likely than men to assist interested smokers (27.3% vs. 16.1%). Hygienists assisted at a higher rate than dentists (28.5% vs. 18.1%; $p < 0.01$). There was no significant difference ($p > 0.05$) in the mean age of those assisting most patients compared with those who assisted less often. Assisting strategies used by practitioners for most smokers who were interested in quitting are shown in **Tables 2** and **3**.

Practitioner-Perceived Barriers to the Delivery of BIC

Seven questions in the survey addressed barriers to providing specific BIC. Most providers reported technical barriers (time, patient resistance, training) as shown in **Tables 4** and **5**. Fewer than 50% of respondents reported financial barriers (lack of reimbursement and insurance coverage). Women were more likely than men to report patient resistance (87.8% vs. 76.7%; $p < 0.01$) and fear of alienating patients (73.8% vs. 60.2%; $p < 0.01$) as barriers.

Table 3 Distribution of respondents, by professional group and strategy used to assist most ($\geq 75\%$) of their patients

Strategy	All, no. (%)	Dentists, no. (%) ^a	Hygienists, no. (%) ^a
Discuss specific quit strategies ($n = 503$)	81 (16.1)	30 (10.8)	51 (22.7) ^b
Set a quit date ($n = 496$)	46 (9.3)	16 (5.9)	30 (13.5) ^c
Provide self-help materials ($n = 496$)	42 (8.5)	20 (7.3)	22 (10.0)
Suggest nicotine patch ($n = 495$)	52 (10.5)	20 (7.3)	32 (14.5) ^c
Suggest nicotine gum ($n = 492$)	33 (6.7)	14 (5.1)	19 (8.7)
Suggest bupropion ($n = 492$)	45 (9.1)	15 (5.5)	30 (13.6) ^c
Refer to cessation program ($n = 494$)	34 (6.9)	13 (4.7)	21 (9.5) ^d
Follow-up dental appointment ($n = 514$)	44 (8.6)	23 (8.1)	21 (9.1)

^a Percentages for the dentists and hygienists are based on the total number of dentist and hygienist respondents for each question.

^b Significant difference between dentists and hygienists by χ^2 analysis, $p < 0.001$.

^c Significant difference between dentists and hygienists by χ^2 analysis, $p < 0.01$.

^d Significant difference between dentists and hygienists by χ^2 analysis, $p < 0.05$.

Table 4 Provider-reported barriers to providing cessation services, by sex

Barrier	All, no. (%)	Men, no. (%) ^a	Women, no. (%) ^a
Amount of time required ($n = 487$)	310 (63.7)	135 (63.4)	175 (63.9)
Lack of training ($n = 488$)	411 (84.2)	184 (85.6)	227 (83.2)
Patient resistance ($n = 485$)	402 (82.9)	165 (76.7)	237 (87.8) ^b
Fear of alienating patients ($n = 491$)	333 (67.8)	130 (60.2)	203 (73.8) ^b
Unfamiliar with referral options ($n = 480$)	364 (75.8)	158 (75.2)	206 (76.3)
Lack of adequate reimbursement ($n = 487$)	210 (43.1)	116 (53.7)	94 (34.7) ^c
No insurance coverage for service ($n = 480$)	231 (48.1)	109 (51.2)	122 (45.7)

^a Percentages for the men and women are based on the total number of male and female respondents for each question.

^b Significant difference between men and women by χ^2 analysis, $p < 0.01$.

^c Significant difference between men and women by χ^2 analysis, $p < 0.001$.

Table 5 Provider-reported barriers to providing cessation services, by professional group

Barrier	Overall, no. (%)	Dentists, no. (%) ^a	Hygienists, no. (%) ^a
Amount of time required ($n = 495$)	315 (63.6)	170 (62.7)	145 (64.7)
Lack of training ($n = 496$)	417 (84.1)	230 (84.2)	187 (83.9)
Patient resistance ($n = 493$)	409 (83.0)	215 (78.8)	194 (88.2) ^b
Fear of alienating patients ($n = 499$)	340 (68.1)	171 (62.4)	169 (75.1) ^b
Unfamiliar with referral options ($n = 488$)	370 (75.8)	196 (73.1)	174 (79.1)
Lack of adequate reimbursement ($n = 495$)	212 (42.8)	138 (50.4)	74 (33.5) ^c
No insurance coverage for service ($n = 487$)	234 (48.0)	136 (50.2)	98 (45.4)

^a Percentages for the dentists and hygienists are based on the total number of dentist and hygienist respondents for each question.

^b Significant difference between dentists and hygienists by χ^2 analysis, $p < 0.01$.

^c Significant difference between dentists and hygienists by χ^2 analysis, $p < 0.001$.

Men were more likely to report lack of reimbursement (53.7% vs. 34.7%; $p < 0.001$) as a barrier. Hygienists were significantly more likely than dentists to report patient resistance (88.2% vs. 78.8%; $p < 0.01$) and fear of alienating patients (75.1% vs. 62.4%; $p < 0.01$) as barriers, whereas dentists were significantly more likely to report lack of reimbursement (50.4% vs. 33.5%; $p < 0.001$) as a barrier.

To better understand the degree to which perceived barriers affect delivery of BIC, a perceived-barriers variable was calculated for each provider by adding the number of positive responses from those answering all 7 questions. Ranging in value from 0 to 7, the mean total number of barriers reported was 4.7 (SD 1.8). No significant associations were found between sex or type of provider and the total number of

Table 6 Number of perceived barriers by frequency of BIC service

BIC step	Frequency of service	Mean no. barriers reported (SD)
Ask	Most patients (≥ 75%)	4.3 (2.0)
	Fewer patients (< 75%)	4.9 (1.7) ^a
Advise	Most patients (≥ 75%)	4.5 (1.9)
	Fewer patients (< 75%)	4.9 (1.7) ^b
Assess	Most patients (≥ 75%)	4.3 (1.9)
	Fewer patients (< 75%)	4.9 (1.8) ^c
Assist	Most patients (≥ 75%)	3.9 (1.8)
	Fewer patients (< 75%)	4.9 (1.8) ^c

SD = standard deviation.

^a Significantly different from “Most patients” group by ANOVA, $p < 0.01$.

^b Significantly different from “Most patients” group by ANOVA, $p < 0.05$.

^c Significantly different from “Most patients” group by ANOVA, $p < 0.001$.

barrier reported. As shown in **Table 6**, dental professionals who reported providing BIC to most patients had significantly lower perceived-barrier scores than professionals providing the services less frequently.

Discussion

Most oral health professionals in Manitoba are not providing BIC to most of their patients. This study has identified a number of demographic and psychosocial factors that appear to influence the BIC practice patterns of dental providers in Manitoba.

Influence of Age, Sex and Type of Professional on BIC Delivery

We found differences between sexes, ages and types of professionals in terms of the delivery of certain BIC steps. Women were significantly more likely to ask, assess and assist and had a non-significant tendency to advise against smoking more frequently than men. Dental hygienists are often responsible for patient education and motivation and often have time to devote to BIC. Despite this, they were no more likely than female dentists to ask their patients whether they smoke.

Younger practitioners were more likely to ask and assess readiness to quit smoking than older practitioners. Most respondents (84.1%) were Manitoba graduates and, as all graduates in the province have received tobacco use cessation training since 1998,²³ their BIC training may have influenced their BIC practices. A previous study of delivery of BIC by dental and dental hygiene students at the University of Manitoba showed a significant increase (23%) in students’ advice to quit services after BIC training was included in their curriculum.²⁴

Dental hygienists were significantly more likely than dentists to provide assistance in the patients’ efforts to stop using tobacco. Again, dental hygienists may be

delegated this responsibility as part of patient education and may, therefore, have the time necessary to provide assistance.

There were no significant differences between types of practitioners, ages or genders with regard to advising smokers to quit. With 54.9% of practitioners providing this service, this was the most frequently provided BIC step, possibly because advising patients to quit smoking is becoming a standard of practice and is increasingly expected by patients who smoke.

Assisting was least often delivered by practitioners; this could indicate that becoming involved in this step is often more time consuming than the other steps and requires referral to resource knowledge and pharmacotherapy strategies that some practitioners might not be aware of. These factors should, therefore, be emphasized in BIC training programs within dental schools and in continuing education courses.

It is uncertain why women provide more BIC services than men. Dental hygienists likely provide more BIC services than dentists because these services may be delegated to them as part of patient oral health education. Exposure to BIC training might influence the intensity with which practitioners deliver BIC. Those trained in BIC presumably better understand the importance of their role and have the knowledge and skills to provide BIC comfortably.

Influence of Psychosocial Barriers on BIC Delivery

A number of psychosocial barriers to the provision of BIC have previously been reported, including practitioner opinions, attitudes and perceptions toward tobacco cessation counselling.^{20,21} Other reported barriers include lack of time,^{12,19} lack of training in BIC,²⁵ concern about upsetting the patient^{12,19} and lack of reimbursement.²⁵ Psychosocial barriers examined in the current study are listed in **Tables 4** and **5**.

The results of this study clearly show that the barriers that keep men and dentists from providing BIC are different from those that influence women and dental hygienists. Women and hygienists were significantly more likely to be influenced by fear of patient resistance and alienation, both important considerations in maintaining favourable patient rapport. Men and dentists, on the other hand, reported less concern with factors affecting patient rapport and significantly more concern with reimbursement and insurance coverage, both important considerations in the business–financial aspects of dental practice.

This study also shows that practitioners with more psychosocial barriers deliver BIC less frequently than those with fewer perceived barriers. Dental educators must address each of the following barriers as part of BIC training in dental schools and continuing

Table 7 Providers' preparedness to help patients quit smoking (*n* = 510)

Level of preparedness	No. of respondents (%)
Very well prepared	16 (3.1)
Well prepared	26 (5.1)
Adequately prepared	146 (28.6)
Not well prepared	250 (49.0)
Definitely unprepared	72 (14.1)

education: amount of time required to provide BIC, patient resistance, fear of alienating patients, referral options, reimbursement and insurance coverage for BIC.

As the current study found that only 36.9% of practitioners reported feeling at least adequately prepared to assist smokers to quit (Table 7), the influence of formal BIC training in a dental school has been investigated and will be reported in part 2 of this report.

The limitations of this study include the response rate to the survey, which was 46.2% after 2 mailings. It is unknown how well the respondents represent all dentists and dental hygienists in the province as no attempt was made to contact non-responders. BIC practice patterns may be overestimated as those responding to the survey may provide more BIC than non-responders. Respondents may have over-reported their BIC practices. The results may be generalized only to dental practitioners in Manitoba. The survey did not assess all potential barriers.

Conclusions and Practice Considerations

1. Most oral health professionals in Manitoba are not providing BIC; however, 54.9% advise most smokers to quit.
2. Women are more likely to ask, assess and assist and have a tendency to advise against smoking more frequently than men.
3. Younger practitioners are more likely to ask and assess readiness to quit smoking than older practitioners.
4. Dental hygienists are more likely to provide assistance to quit than dentists.
5. Assisting is the service least frequently delivered by practitioners.
6. The barriers that keep men and dentists from providing BIC are different from those that influence women and dental hygienists.
7. Practitioners with higher total psychosocial barrier scores deliver BIC less frequently than those with lower barrier scores.
8. Only 36.9% of practitioners report feeling adequately prepared to assist smokers to quit.

BIC should be considered a routine part of standard patient care⁹; however, most Manitoba dental practi-

tioners are not consistently providing BIC to their patients who smoke. This study has identified a number of demographic and psychosocial factors that appear to influence BIC practice patterns. Part 2 of this study will report additional factors that could explain why practitioners do not provide BIC and what dental educators need to do to rectify the situation. ♦

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