

Sociodemographic and Workload Characteristics of Dentists Who Participated in National Survey, 1995

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A b s t r a c t

Comprehensive, standardized data on the sociodemographic characteristics and workload of dentists in different provinces and territories in Canada are not available. The authors mailed a survey to a stratified random sample of dentists ($n = 6,444$) with three follow-up attempts. The response rate was 66.4%. Significant provincial and territorial differences in sociodemographic characteristics included gender, age, years since graduation, marital status, population size of town or city where primary practice is located and patient load. There was considerable variation in dentists' workload: more than 10% of dentists from New Brunswick and Prince Edward Island reported seeing ≥ 30 patients per day. The majority of respondents reported seeing patients for 25 to 40 hours per week. British Columbia, Ontario, Saskatchewan and Newfoundland had a greater proportion of respondents ≥ 60 years of age compared with other provinces/territories, indicating that there may be more opportunities in these provinces for younger dentists as a result of retirements.

MeSH Key Words: *Canada; dentistry/manpower; dentists/supply & distribution*

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In the last 20 years there has been considerable debate about projections for a decrease in the need for dental services, an oversupply of dentists in Canada and changes in need and demand for dental services as a result of demographic and epidemiological changes.¹⁻⁵ The aging population base in Canada points to a greater need for adult dental services including diagnostic, preventive, operative, fixed prosthodontics, endodontics, implants and orthodontic services. In addition there is increasing demand for cosmetic dentistry.

The available work for recent graduates who are establishing practices will be affected by the workload and retirements of dentists working in the same geographic area; however, comprehensive, standardized data on the sociodemographic characteristics and workload of dentists in different provinces and territories in Canada are not available. In 1995, we conducted a national survey of dentists in Canada to investigate access to care for patients with bloodborne pathogens and compliance with recommended infection control practices.^{6,7} This paper reports the results of a comparison of sociodemographic and workload characteristics of dentists in different provinces and territories.

Methods

There were 15,232 dentists listed by dental regulatory authorities in Canada in 1995. Dentists who did not actively treat patients were considered ineligible. A stratified random sample of 6,537 dentists was selected to participate in the survey. The strata consisted of the 10 provinces and 2 territories. Lists of licensed dentists were obtained from each provincial or territorial authority. All listed dentists from the smaller provinces/territories (Newfoundland, $n = 149$; Prince Edward Island (PEI), $n = 48$; Nova Scotia, $n = 418$; New Brunswick, $n = 246$; Saskatchewan, $n = 332$; Yukon Territory, $n = 13$; and the Northwest Territories (NWT), $n = 34$) were included. Dentists from the remaining provinces were randomly sampled such that the size of the subsamples would yield reasonably small confidence intervals for the estimates of interest.⁸⁻¹⁰ The final sample size, adjusted for non-delivery of questionnaires, was 6,444.

The survey instrument, tests for reliability, administration of the survey, weighting of the data and investigation of non-response bias have been described elsewhere.^{6,7,11} To ensure anonymity of response, the study was designed such that no individual could link names and responses. Each observation

in the sample was weighted to allow for different probability of selection and nonresponse among the provinces and territories. The expansion weight was calculated for each subject by taking the score for each item, multiplying by the number of dentists in that province or territory, then dividing by the number of respondents in that province/territory who answered that item.¹² While the expansion weight is reasonable for the estimator of the population total, it is inappropriate for the calculation of variance used in test statistics and confidence intervals. Hence, the relative weight was calculated as the expansion weight divided by the mean of the expansion weights over all subjects who responded to that item.¹² All statistical computations were done using the relative weight as the sampling

weight. Pearson's test of association was used to compare categories using SPSS/PC+ (SPSS Inc., Chicago, IL).

Results

The response rate adjusted for non-delivery was 66.4%; a total of 174 respondents were ineligible, leaving 4,107 responses for data analysis. Eighty-nine per cent of survey participants were general dentists. We found significant provincial and territorial differences in sociodemographic characteristics (Table 1) including gender (female: range 10% to 30%), years since graduation (≥ 30 years: 4% to 15%), marital status (married: 40% to 88%), patient load (≥ 20 patients per day: 10% to 52%); number of hours per week seeing patients

Table 1 Provincial differences in sociodemographic and workload characteristics (weighted %) reported by participants in national survey of dentists in Canada (n = 4,107)^a

Province/Territory Variable	NWT n = 23	YT n = 10	BC n = 672	AB n = 546	SK n = 232	MB n = 292	ON n = 987	QC n = 697	NB n = 168	NS n = 296	PEI n = 38	NF n = 100
Gender^b												
Male	78	60	86	86	83	82	84	70	82	80	90	85
Female	22	40	14	14	17	18	16	30	18	20	10	15
Age group^b												
< 30	33	20	8	13	10	14	6	21	14	7	8	13
30-39	33	40	31	35	33	39	34	37	35	43	26	28
40-49	29	20	36	32	34	27	35	26	34	29	45	34
50-59	5	20	18	16	13	15	19	12	14	16	16	15
≥ 60	0	0	7	5	9	5	7	4	4	4	5	10
Years since graduation^b												
< 10 years	61	50	27	32	31	34	23	38	33	36	26	32
10-19 years	26	30	32	36	31	36	34	33	35	33	29	28
20-29 years	9	10	30	23	24	18	28	20	25	23	34	24
≥ 30 years	4	10	11	9	15	13	14	8	7	8	10	15
Marital status^b												
Married	65	40	83	82	86	84	85	74	82	88	87	85
Div./sep.	9	30	6	6	5	4	6	8	4	5	0	2
Single	26	30	11	11	8	13	9	17	14	7	10	11
Population^{c,b}												
< 10K	56	20	11	15	20	18	11	18	30	34	37	33
10-99K	44	80	31	17	22	10	24	36	59	30	60	27
100-500K	0	0	24	2	58	5	32	13	10	36	3	39
> 500K	0	0	33	66	0	67	33	32	0	1	0	0
# Patients/day^{d,b}												
< 10	4	30	14	19	21	20	17	20	10	11	0	5
10-19	78	60	55	56	47	52	56	62	47	50	47	56
20-29	13	10	21	19	26	20	19	14	28	29	42	30
≥ 30	4	0	10	6	6	8	8	4	14	10	10	9
# Hours seeing patients^{b,e}												
< 10 hours	4	0	1	2	6	4	2	3	1	2	3	0
10-24 hours	0	10	10	9	12	8	8	12	9	6	3	6
25-40 hours	39	80	78	78	70	75	76	73	81	79	81	79
> 40 hours	56	10	10	11	12	13	15	11	9	12	14	15

^a Some columns may not add up to 100 due to rounding.

^b $p < 0.001$. Categories for some variables were collapsed for statistical test.

^c Population of the town or city where the primary practice is located.

^d Number of patients seen in a typical day in the last three months.

^e Number of hours during an average week spent seeing patients for the last three months.

(25 to 40 hours: 39% to 81%; > 40 hours: 9% to 56%), population of the town or city where the primary practice is located (> 500,000: 0% to 67%) and age. The proportion of dentists who were aged ≥ 50 at the time of the survey ranged from 5% (NWT) to 26% (Ontario); the number of dentists who were aged ≥ 60 years ranged from 0% (NWT and Yukon Territory) to 10% (Newfoundland). The number of dentists aged 55 to 59 years ranged from 0% (NWT) to 10% (Yukon Territory).

Discussion

Significant differences between provinces/territories were noted for age, gender and marital status. Higher proportions of dentists younger than 30 years were reported from the NWT, Yukon Territory and Quebec. Conversely, fewer than 10% of dentists practising in British Columbia, Ontario, Nova Scotia and PEI were less than 30 years of age. At the other end of the spectrum, more than a quarter of respondents in British Columbia, Ontario and Newfoundland were more than 50 years of age. In addition, British Columbia, Ontario, Saskatchewan and Newfoundland had a greater proportion of respondents ≥ 60 years of age compared with the other provinces and territories. These results indicate that there may be more opportunities in these provinces for younger dentists as a result of retirements. Data for 1998 provided by licensing authorities in British Columbia and Manitoba show that the proportion of dentists more than 50 years of age is continuing to grow in these provinces.

The results of this study indicate that, in 1995, the highest proportion of female dentists were working in the Yukon Territory (40%), Quebec (30%), the NWT (22%) and Nova Scotia (20%), and the lowest proportion were working in PEI. Recent data provided by licensing authorities indicate that there has been little change in the proportion of male to female dentists in Manitoba. However, the proportion of female dentists in the Yukon has dropped. The higher percentages of younger and unmarried dentists practising in the Yukon and the NWT may be influenced by the economic incentives to work in these areas.

There were significant variations in workload across the provinces. Respondents from PEI, New Brunswick, Nova Scotia, Newfoundland and British Columbia reported seeing the most patients per day. In contrast, nearly one-third of dentists in the Yukon reported seeing fewer than 10 patients per day compared with dentists in other provinces or territories. With the exception of the NWT, approximately three-quarters of respondents reported that they saw patients for 25 to 40 hours per week; more than half of respondents from the NWT reported practising more than 40 hours per week.

This study provides cross-sectional data from 1995 that can be used as an indication of sociodemographic and workload differences between dentists in different provinces and territories. In addition, the age data can be used to indicate future requirements for human resources to provide dental services in different parts of Canada. Recall bias was probably minor, as recall related to average number of hours worked per week and

number of patients seen in a typical day was limited to the last three months. Previous investigation revealed minimal evidence of nonresponse bias.¹¹ It is clear, however that further investigations of geographic variations in human resources and workload of dentists are required. In addition, we need updated projections for demand for the dental services and treatment that will be required for the aging population across Canada and elsewhere in the new millennium.^{13,14} ♦

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