A Comparison of Certain Practice Characteristics of Dental Anesthesiologists in Canada and the United States

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An existing database was used to compare aspects of dental anesthesiology practice of dental anesthesiologists in Canada (n = 32) and the United States (n = 123). Data focusing on percutaneous injuries were obtained through a mailed questionnaire that was returned anonymously. Respondents provided information on the treatment of patients under deep sedation or general anesthesia only. Eighty-one percent of Canadians and 61% of Americans returned the questionnaire. The vast majority (84%) of injuries reported were due to sharps associated with general dentistry compared with those associated with anesthesiology. Canadians were more likely to be operator-anesthetists (P < .01) and to experience a percutaneous injury (P < .01) than US practitioners. American practitioners were more likely to have a greater proportion of the caseload under the age of 20 (P < .02). No other significant differences were observed. These results illustrate a number of unique attributes of the practice of dental anesthesiology in these 2 countries.

Key Words: Dental anesthesiologists; practice characteristics; training; injury.

The practice of dental anesthesiology has progressed over the years and continues to serve an important need. At present, dentists can obtain extensive training in anesthesiology by being accepted into one of approximately 11 postgraduate dental anesthesiology programs in the United States and Canada. Although all of these latter postgraduate programs teach the concepts of anesthesiology, each is unique, and graduates from different schools may practice anesthesiology diversely. A number of graduates practice anesthesiology and general dentistry concurrently (ie, are operator-anesthetists), while others practice anesthesiology only. As well, state and provincial governing bodies may dictate how dental anesthesiologists practice.

A database compiled from a previous study (J.P.S., oral communication, July, 1999) containing information that has not been reported on dental anesthesiology practice. The purpose of this study was to compare selected aspects of dental anesthesiology practice in Canada and the United States to identify similarities and differences.

METHODS

A database compiled from a previous study (J.P.S., oral communication, July, 1999) investigating the occupational risk of acquiring specific bloodborne pathogens was used. Approval by the Human Subjects Review Committee of the University of Toronto was obtained. Members of the Canadian Academy of Dental Anesthesia (CADA) (n = 32) and the American Society of Dentist Anesthesiologists (ASDA) (n = 123) as of December 1997 received a mailing consisting of a cover letter, a questionnaire, and a return self-addressed, stamped envelope. Each was asked to provide information based on the treatment of patients under deep sedation or general anesthesia, as well as other general practice information. Deep sedation and general anesthesia were defined as "a state of depressed consciousness or unconsciousness accompanied by partial or
Table 1. Canadian–US Practice Differences Noted*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Canadian (%)</th>
<th>US (%)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiologist 100% of cases</td>
<td>8</td>
<td>62</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Operator-anesthetist (at least part time)</td>
<td>92</td>
<td>38</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Operator-anesthetist, 100% of cases</td>
<td>32</td>
<td>14</td>
<td>&lt;0.07</td>
</tr>
<tr>
<td>Reports of &gt;60% of caseload of patients &lt;20 years old</td>
<td>20</td>
<td>61</td>
<td>&lt;0.02</td>
</tr>
<tr>
<td>Reports of &gt;77% of caseload of patients &gt;20 years old</td>
<td>80</td>
<td>41</td>
<td>&lt;0.02</td>
</tr>
<tr>
<td>Reports of percutaneous injury in past 6 months</td>
<td>76</td>
<td>30</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

* The variables selected above are those that either showed statistically significant (P < .05) differences or a trend toward a difference (ie, operator-anesthetist, 100% of cases).
See text for details.

complete loss of protective reflexes, including an ability
to respond to verbal command.11 Experiences treating
patients with conscious sedation or solely with local an-
esthesia were excluded from the responses. All individ-
uals received a reminder letter mailed 7 days after the
initial mailing. Returned questionnaires remained anon-
ymous.

For this study, differences between the two groups
were tested using a chi-square analysis. Continuous and
ordinal independent variables were dichotomized using
the upper and lower thirds, as opposed to merely com-
paring upper and lower halves of the distribution, and
tested similarly. Differences between groups were de-
termined to be significant at P < .05.

RESULTS

The response rate among Canadian dental anesthesi-
ologists was 81% (26 out of 32), and it was 61% (75
out of 123) among practitioners in the United States,
with an overall rate of 65% (101 out of 155). Three
individuals (1 Canadian and 2 from the United States)
had not practiced dental anesthesiology recently and did
not provide further information for this study.

Results that demonstrated a difference between the 2
groups of practitioners are summarized in Table 1. Sig-
nificantly more Canadians than Americans were oper-
ator-anesthetists for at least a portion of their practice
(P < .01). There was a nonsignificant trend (P < .07)
for more Canadians being operator-anesthetists exclu-
sively (ie, for 100% of cases).

The age range of patients treated was also assessed.
To determine if there were significant differences, the
age distribution was dichotomized into upper and lower
thirds and then compared. In examining the variable of
patients under the age of 20 years, the upper one-third
of practitioners reported that at least 60% of their case-
load was in this group, and dental anesthesiologists from
the United States were significantly more likely to report
this than practitioners from Canada (P < .02). It then
followed that Canadians reported that a greater pro-
portion of their caseload involved the treatment of pa-
tients who were 20 years of age and older, and this
differed significantly from the caseload of Americans (P
< .02). For this latter variable, the upper one-third of
practitioners had at least 77% of their caseload in this
age group.

The database used contained information on percu-
taneous injuries. At least one such injury within the pre-
vious 6 months was reported by 41 practitioners. In to-
tal, 89 percutaneous injuries were reported. Of these,
only 16% were from an extraoral needle, winged infu-
sion set (Butterfly), or indwelling catheter (Angiocath).
The remainder, 84%, were from sharps associated with
the practice of general dentistry, such as a bur, dental
instrument, suture needle, or intraoral needle. When as-
sessing practitioners whose main caseload was adult pa-
tients, defined as 20 years of age or older, a stratified
analysis showed that Canadian dental anesthesiologists
were more likely to report such an injury than were
practitioners from the United States (P < .01).

Table 2 lists the variables assessed where no statisti-
cally significant differences were observed between Ca-
nadian and US practitioners.

DISCUSSION

Obtaining an accurate listing of those dentists who have
received postgraduate anesthesiology training is difficult,
because neither the Canadian nor the US dental asso-
ciations currently recognize dental anesthesiology as a
dental specialty. Although CADA and ASDA member-
ship is voluntary, these groups were approached be-
cause members must prove advanced anesthesia train-
ing prior to joining. Thus, these groups supplied the
most comprehensive listing of dental anesthesiologists.

A greater proportion of cases performed by Canadian
practitioners involved the treatment of adult patients,
compared with practitioners from the United States. Ca-
nadians also experienced more percutaneous injuries
while treating adults. This may be related to the finding
that significantly more Canadians were operator-anes-
Table 2. Canadian–US Practice Similarities Noted*

- number of cases performed
- years in practice
- weekly hours worked
- proportion of practice encompassing deep sedation/general anesthesia
- percentage of cases for physically or mentally challenged patients
- experiencing a mucocutaneous or nonintact skin exposure
- self-assessment of the busyness of one’s anesthesiology practice

* No statistically significant differences were observed between Canadian and US practitioners for the above characteristics.

Anesthetists, which would predispose the practitioners to exposure to sharps associated with general dentistry. This could also be because older individuals, in general, require more complex, multistep dental procedures. Those dental anesthesiologists whose practice is composed of a significant proportion of adults could therefore be more prone to accidental injury.

The finding that significantly more dental anesthesiologists in the United States were sole anesthesiologists can also be explained by the fact that the majority of Canadian practitioners were graduates of the University of Toronto program. This program currently teaches, and has always taught, an operator-anesthetist technique. Also, most Canadian dental anesthesiologists in the study were located in the province of Ontario, where current regulations permit dentists to practice as operator-anesthetists.

The small sample size used in this study cannot be ignored, as this may be the reason that differences were noted between Canadian and US practitioners. Despite these contrasts, no significant differences were noted when many other practice characteristics were compared. This demonstrates that there are likely more similarities than differences in the practice of dental anesthesia in the United States and Canada.

ACKNOWLEDGMENTS

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REFERENCES