

The use of sedation agents by Canadian pediatric dentists

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Abstract

Members of the Canadian Academy of Paediatric Dentistry were surveyed about their current use of pharmacological agents for child management. The survey questioned the frequency of drug usage with patients, the most commonly used drugs and the methods of drug administration. The purpose of this paper is to report the results of that survey.

The data revealed that 49% of the pediatric dentists received their postdoctoral education in the United States. The majority were trained in postdoctoral university based programs and primarily are engaged in private practice. Oral sedation remains the most popular method of drug administration. Chloral hydrate and diazepam were reported as the main oral sedation agents. The next most popular method was inhalation sedation.

Skin color and respiration were monitored. Apparently, 25% of the dentists did not routinely use monitoring methods with their patients.

Eighty-five per cent of pediatric dentists indicated that they treated patients in the hospital. Of this group, 46 attended the hospital at least twice monthly and 29% provided hospital patient care weekly or more often.

Surveys have been conducted to examine sedation practices of pediatric dentists (Duncan et al. 1983; Houpt 1986). Since these surveys have taken place in the United States, they do not necessarily reflect Canadian activity. This paper reports the results of a survey which obtained information about the use of sedation agents by Canadian pediatric dental specialists.

Materials and Methods

A paper and pencil questionnaire (Fig 1, page 309) was mailed to 113 members of the Canadian Academy of Paediatric Dentistry (CAPD) who were resident in Canada. Accompanying the questionnaire was an introductory letter informing the participants of the nature of the survey and urging them to reply anonymously.

The primary objectives of the questionnaire were to

determine: (1) the most commonly used sedation agents; (2) the most common routes of drug administration; and (3) variables influencing sedation practices.

In the process of developing the questionnaire, consideration was given to the oral and parenteral medications in common usage in the United States. Separate questions also were directed toward nitrous oxide (N₂O) usage. Although this agent could simply be considered as another premedicating drug, its armamentarium and method of administration make it unique from other agents used in pediatric dentistry. Questions also were posed about the utilization of hospitals, because this could have some bearing on the need for sedation in practice.

Results

Eighty questionnaires were received, representing a return of 70.8%. The majority of replies (68.7%) were from pediatric dentists who were mainly in private practice. The balance was derived from university teachers, researchers, and hospital practitioners-teachers. Analysis of their backgrounds revealed that their specialty trainings were primarily university based (72.5%). Only 6.0% were trained in hospitals exclusively, while 17.5% received both hospital and university training. The remainder had no formal training. Almost one-half of Canadian pediatric dentists received specialty training out of the country, i.e., 48.75% obtained American training while 51.25% received Canadian training.

Figure 2 (page 313) describes the reported utilization for seven different drug types. It takes into account drugs administered as sole premedicants and as comedocants, and it shows that chloral hydrate and diazepam are the most popular agents. The narcotics, meperidine and alphaprodine, are used by 14% and 4% of the respondents, respectively. There was a slight preference for office administration of drugs rather than home administration (46% vs. 36%).

Six routes of drug administration were listed in the

<ol style="list-style-type: none"> 1. What is your specialty training? University based Hospital based Grandfathered 2. Where was your specialty training? Canada United States No formal training 3. In which situation is the majority of your time spent? Private practice Hospital practice Researcher University teacher Hospital teacher 4. How many years have you been in specialty practice? 5. Which of these methods of administration do you use in practice? Inhalation Oral Intramuscular Subcutaneous Rectal 6. Of those patients receiving sedation, what percentage are of the following ages? 0-2 3 4-5 6-10 10+ 7. Approximately what percentage of your patients receive oral or parenteral sedative agents? 8. If you use oral agents, where are they usually administered? Office 	<p>Patient's home Both office and home</p> <ol style="list-style-type: none"> 9. Which methods do you use to monitor patients during sedation (yes or no)? Evaluate color Precordial stethoscope Blood pressure Pulse rate Respiration rate 10. Which of the following drugs do you use (alone or in combination)? Hydroxyzine (Atarax or Vistaril) Chloral hydrate (Noctec) Promethazine (Phenergan) Meperidine (Demerol) Alphaprodine (Nisentil) Diazepam (Valium) Barbiturates (Phenobarb, Seconal, etc.) Other 11. In reference to N₂O* sedation, indicate the following: Presently using Plan to use in future Do not use * If you do not use N₂O, skip to question 13. 12. What is the percentage of patients using N₂O? 13. Do you treat patients under general anesthesia in the hospital (yes or no)? 14. How frequently do you attend the hospital? Weekly (or more often) Twice monthly Monthly Less than once a month
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FIG 1. Questionnaire on the use of sedation agents sent to members of the Canadian Academy of Paediatric Dentistry.

questionnaire. The preferences which were checked by the participants are illustrated in Figure 3. The graph shows that oral medication was the most popular route for drug medications. The oral route is used by 60% of the respondents. Fifty per cent used inhalation sedation and less than 15% used all of the other four administration methods.

Information also was obtained concerning the various methods for monitoring patients. The most popular methods routinely used by pediatric dentists are shown in Figure 4. Apparently, 25% of the dentists did not routinely use monitoring methods with their patients.

Since hospitalization utilization could influence sedation practices, inquiry was made into this practice aspect. Eighty-five per cent (68) of pediatric dentists

indicated that they treated patients in the hospital. Of this group, 46 attended the hospital at least twice monthly and 28.75% provided hospital patient care weekly or more often.

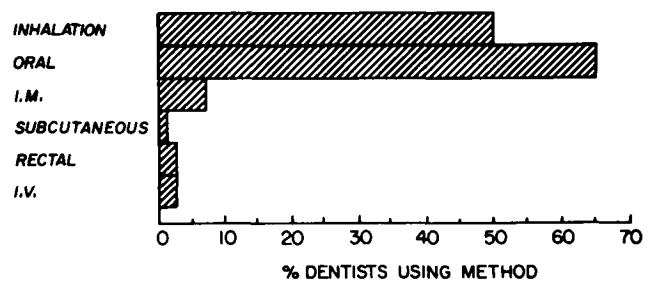


FIG 3. Administration routes preferred by Canadian pediatric dentists when using sedation drugs.

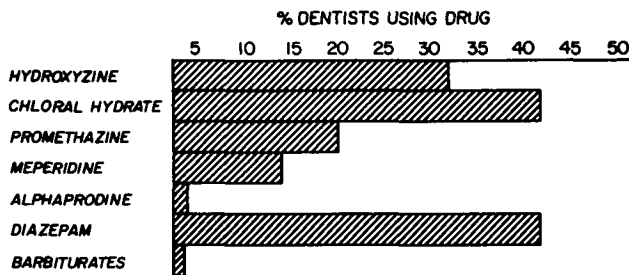


FIG 2. Utilization of sedation agents by Canadian pediatric dentists.

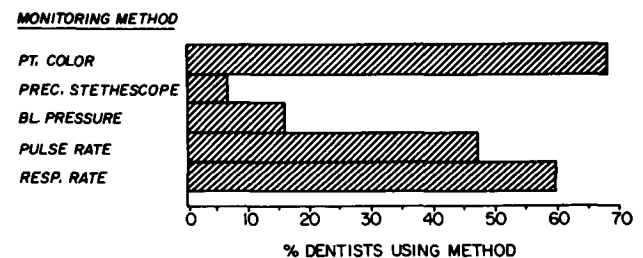


FIG 4. Monitoring methods used by Canadian pediatric dentists when using sedation drugs.

Discussion

Over the past 15 years, there have been surveys to determine the drugs used for sedating children in the dental environment (Wright and McAulay 1973; Association of Pedodontic Diplomates 1981). These surveys provide important information, because reporting the popularity of various treatment procedures helps to guide clinical practice. However, drug availability and laws governing drug usage differ between nations and the findings from American pediatric dentists cannot be generalized to those of other countries. For these reasons, the present survey was undertaken. The results are based upon 70.8% of the membership of the CAPD, a high return which compares favorably with survey returns that were conducted in the United States (Duncan et al. 1983; Wright and McAulay 1973).

When the questionnaire was designed, it was assumed that most clinicians tended to use a few drugs in their practices rather than a wide range of premedicating agents. Therefore, the participants were asked to indicate on a checklist of seven drugs which sedation agents were currently used with their child patients. The opportunity was available to identify other drug usage, but this occurred only once. They were also asked to identify whether these drugs were employed as the sole premedicating agent or whether they were used in combination with other drugs.

Chloral hydrate and diazepam were found to be most popular, having a 42% utilization rate. However, chloral hydrate was used alone and as a comedication by more than half the dentists. The utilization rate is less than reported by Duncan et al. (1983) who found that 62% of the Diplomates of the American Board of Pedodontics used the drug, 52% using it as a comedication.

A surprising finding was the popularity of diazepam. Thirty per cent of the respondents used this drug by itself. This is more than double the utilization rate previously reported by American specialists (Wright and McAulay 1973) and it may be related to the fact that an emulsion form of the drug is available in Canada. Based upon the high preference for the oral medication route, in all likelihood most diazepam sedations are given by mouth. The high diazepam utilization rate suggests that clinical results are being achieved. Since only one controlled study (Lindsay and Yates 1983) with children has investigated the sedation effects of this agent when orally administered, and inconsistent sedation results were achieved, it is apparent that more research is needed with diazepam.

Another major difference in the present survey is the low utilization of narcotics by Canadian pediatric dentists. Only 14% reported meperidine hydrochloride usage, whereas two previous reports (Haupt 1986; Association of Pedodontic Diplomates 1981) found that it was used by 52% and 45% of American dentists. Thus,

the Canadian trend seems to be toward drugs with wider safety margins (chloral hydrate, diazepam).

Hydroxyzine and promethazine also are used by many pediatric dentists. Both sole and comedication administration approaches were equally popular with both agents. The popularity seems less than previously reported (Duncan et al 1983; Wright and McAulay 1973). Consistent with other surveys, barbiturates are seldom used by Canadian pediatric dentists.

When the participants were asked to indicate on a checklist the methods used to administer drugs, the popularity of the oral route was anticipated. The finding closely resembles other survey results (Wright and McAulay 1973). What was unexpected, however, was the low usage of the inhalation administration route. This suggests that only 50% of Canadian dentists use nitrous oxide and oxygen sedation with their child patients. This is similar to the usage reported by American pediatric dentists when N₂O was becoming an accepted technique and apparently increasing in popularity (Wright and McAulay 1973).

Few surveys in the United States have described hospital utilization by pediatric dentists. A recent finding (Mazurek 1986), however, points to a 75% utilization rate. This is less than the 85% utilization reported by Canadian dentists in this survey. However, these data can be open to different interpretations. In the American survey, 29% reported performing 11-20 cases annually and 34% stated that they performed more than 20 cases per year. In the present survey, inquiry was not based upon the number of cases, but rather upon hospital attendance and 28.75% reported providing hospital patient care weekly or more often. While attending the hospital, more than one patient may be treated because some pediatric dentists have block booking times for operating room utilization.

When designing the present survey it was considered to be a strong possibility that Canadian pediatric dentists used hospitals more frequently for patient care and performed fewer deep sedations in private offices than their American counterparts. The present data tend to support this hypothesis. While there are many reasons for this difference, undoubtedly the Canadian national health care system is a major factor. Socialized medicine provides an advantage because the practicing dentist seldom is prevented from operating on an eligible child because of anesthesia or hospital costs. Accessibility to hospitals relieves much of the need to follow potentially risky sedation practices.

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Smokeless tobacco: a pinch of trouble

Snuff dipping and tobacco chewing are not safe alternatives to smoking. All forms of smokeless tobacco contain high concentrations of certain carcinogens. An increased risk of cancer of the oral cavity, pharynx, larynx, and esophagus has been associated with all forms of smokeless tobacco.

Damage to periodontal tissue has been noted at the place where the tobacco is held in the mouth. The irritating tobacco juices could cause gums to recede, exposing the roots and making the teeth more cavity prone. Also, teeth could lose gum and bone support, increasing the risk of periodontal disease.

Tooth abrasion may be caused by the presence of grit and sand which are not fully removed from the tobacco during the curing process. Because sugar is added to smokeless tobaccos to improve taste, the user runs the added risk of caries formation.

Nicotine in the tobacco can affect a number of normal body functions. Increases in heart rate and blood pressure, as well as nicotine dependence are noted in frequent users. Athletes should be aware that athletic performance may be affected by the use of smokeless tobacco.

Bad breath and discolored teeth, as well as the constant need to spit, make chewers and dippers unpleasant to be around.

According to the Surgeon General's report, youths start using smokeless tobacco at the average age of 10. While they believe the products may be harmful, they don't necessarily believe it will be harmful *to them*.

Congress has passed a law requiring warning labels on all smokeless tobacco products to alert the public to their harmful effects. Three rotating warning labels state: "This product may cause gum disease and tooth loss," "This product may cause mouth cancer," and "This product is not a safe alternative to cigarettes." In addition, radio and TV ads for these products have been banned.