Title : ANESTHETIC HEALTH HAZARDS IN THE DENTAL OPERATORY

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The past decade has witnessed a growing concern regarding significant health problems associated with work in the operating room and dental operatory. It is estimated that in the United States alone in excess of 214,000 physicians, nurses, technicians, dentists and chairside assistants are occupationally at risk. Although these health hazards have been suggested to include increased spontaneous abortion, congenital abnormalities, liver disease, female cancer and decreased mental performance, firm evidence associating their etiology with the waste anesthetic gases remains to be established.

Recently, a large national survey was initiated to examine the health of dental professionals in the United States. The dental population offers many advantages to study health effects associated with chronic exposure to trace anesthetic gases:

1. The study population is large, in excess of 100,000 male dentists and 150,000 female chairside assistants.

2. The population is readily divided into an anesthetic-exposed and a nonanesthetic-exposed control group, with the former using inhalation anesthetics in their practice and the latter working in similar dental operatories using only intravenous sedatives and local anesthetics.

3. The level of exposure to high concentrations of the waste anesthetics in the dental operatory is at least two to three times greater than that found in hospital operating rooms.

4. A significant number of dentists employing inhalation anesthetics limit their practice to the use of nitrous oxide permitting separate analysis of this anesthetic.

The present study utilized two mail questionnaires, plus a telephone follow-up, to survey a large random sample of the dentists and their chairside assistants. The return rate was 71 percent for the dentists and ranged from 63-75 percent for the dental chairside assistants. Preliminary analysis of this data indicates the following increases in health hazards for individuals exposed to the dental operatory 9 or more hours per week.

Percent Increase in Disease Incidence
(anesthetic exposed/nonanesthetic-exposed)

Male Dentists:

Liver disease	75%*
Kidney disease	22%
Neurologic disease	70%*
Cancer	0
Spontaneous abortion (wives)	55%*
Congenital abnormalities	11%

*P < 0.01

Female Chairside Assistants:

Liver disease	63%*
Kidney disease	73%*
Neurologic disease	163%*
Cancer	90%*
Spontaneous abortion	155%*
Congenital abnormalities	80%*

*P < 0.01

Data regarding use of various inhalation anesthetics in the dental operatory indicate that nitrous oxide is used as the exclusive agent in 92.2 percent of cases and in combination with potent agents in 7.8 percent of administrations. Analysis of reproductive health difficulties in the anesthetic-exposed female chairside assistants versus the nonanesthetic exposed females suggests that these health problems may be present following the use of nitrous oxide alone, although there appears to be a further increase (not statistically significant) when nitrous oxide is combined with more potent inhalation anesthetics.

	% Increase in Spontaneous Abortion	% Increase in Congenital Abnormalities
N_2O alone	111%*	50%*
N_2O, plus a potent inhalation agent	215%*	90%*

*P < 0.01

The implications of these findings to the health of occupationally exposed health professionals will be considered.