Psychoactive substance use among American anesthesiologists: a 30-year retrospective study

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The purpose of this study was to assess the cumulative incidence of substance use among anesthesiologists during training and practice, the effect of stress on drug use, and deterrent efficacy of institutional prevention programmes. The 260 anesthesiologists who had trained at the Medical College of Wisconsin between 1958–1988 were surveyed by mail regarding psychoactive substance use. Analysis of 183 responses focused on demographic and psychosocial factors. Substances used most frequently included: alcohol (91.6%), marijuana (30.8%) and cocaine (9.4%). Twenty-nine (15.8%) anesthesiologists were identified as being substance-dependent: 19 were alcohol-impaired; six were drug-impaired, and four were dependent on both alcohol and drugs. Impairment was more prevalent in anesthesiologists who had completed their training after 1975. Fifty-eight (32%) anesthesiologists had used illicit drugs to "get high"; 11 acknowledged daily use for two weeks or more, with eight admitting dependency. Substance abuse was more common in parents of impaired anesthesiologists (35.7%) than in unimpaired colleagues (8.1%; $P < 0.001$). The divorce rate for impaired anesthesiologists (24.1%) was greater than for unimpaired anesthesiologists (5.2%; $P < 0.001$). Increased stress during training was not reflected by increased substance use. Few recalled any drug counseling whatsoever. Seventy percent assessed hospital drug control policies as fair or poor. Younger respondents (born after 1951) were more critical of drug control programmes than their older cohort. Incidents of substance abuse were reported for both residents and faculty. Psychoactive substance abuse remains a serious problem among anesthesiologists.

Cette étude avait pour objectif la recherche de la vérité sur la toxicomanie des anesthésistes pendant leur formation et l'exercice de leur profession lors de périodes de stress et l'efficacité des programmes de prévention. Les 260 anesthésistes formés au collège de médecine du Wisconsin entre 1958 et 1988 ont reçu par la poste un questionnaire sur l'utilisation des drogues psychoactives. Les 183 réponses reçues ont été analysées en tenant compte de facteurs démographiques et psychosociaux. Les produits les plus utilisés ont été dans l'ordre: l'alcool (91,6%), la marijuana (30.8%) et la cocaïne (9,4%). Vingt-neuf anesthésistes s'identifiaient comme toxicomanes: 19 par l'alcool, six par les drogues, et quatre par les deux substances associées. Les plus grands usagers sont ceux qui ont terminé après 1975. Cinquante-huit (32%) ont recherché l'effet euphorisant; onze ont reconnu leur utilisation pendant deux semaines ou plus. Huit se disent dépendants. L'abus des toxiques était plus fréquent chez les parents des anesthésistes toxicomanes (35%) que chez les non-utilisateurs (8,1%, $P < 0.001$). Le taux de divorces chez les anesthésistes utilisateurs (24,1%) était plus élevé que chez les non-utilisateurs (5,2%, $P < 0.001$). L'augmentation du stress pendant la formation ne coïncidait pas avec l'utilisation de narcotiques. Peu se sont rappelé d'avoir eu des conseils sur le sujet. Soixante-dix pourcent ont jugé la politique de contrôle hospitalier des narcotiques de moyenne à pauvre. Les plus jeunes parmi les répondants (nés après 1951) étaient plus critiques des programmes de contrôles des narcotiques que leurs confrères plus âgées. Des épisodes d'usage abusif ont été signalées tant chez les résidents que chez les professeurs. L'abus des substance psychoactives demeure un problème d'importance chez les anesthésistes.

Key words
ANESTHETISTS: drug abuse.

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The use of psychoactive substances among medical students,[1-5] residents,[6-10] and practicing physicians[11-15] has been well documented. Anaesthesia is recognized among medical specialty groups as having a high risk for the development of chemical dependence.[6] While in the USA, only 3% of practicing physicians are anesthesiologists, 13% of a treated sample of drug-dependent physicians practiced in that specialty.[17] Although no generally accepted reasons for such over-representation have been put forth, the ease of occupational access to opioids, anaesthetics, and other psychotropic medication has been thought to contribute to this phenomenon.[11,18]

In a preliminary report[19] we described substance abuse in anesthesiology residents as a serious ongoing problem. In order to define further the natural history of this problem, and as an initial step in identifying the variables that may contribute to substance use, questionnaires were mailed to 260 anesthesiologists who had trained at the Medical College of Wisconsin. The survey, approved by the Human Research Review Committee, focused on the use of alcohol and other psychoactive substances. The objectives of this study were: to determine the influence of personal stress on substance use; to assess the impact of institutional drug control policies and educational programmes in deterring substance use; and to determine the prevalence of substance use during training and to relate this to substance use by practicing anesthesiologists.

Methods

A 55-item multiple choice questionnaire, developed for use in this survey was sent to 260 anesthesiologists who had completed their training at the Medical College of Wisconsin between 1958 and 1988. The questionnaire requested current professional status, socio-demographic information, self-reported past and present patterns of substance use, and a report of perceived substance use by peers and faculty supervisors.

Respondents were assured of anonymity, and questions were formulated so as to preclude identification of individuals. A completed questionnaire was sealed in a blank envelope and inserted into a second previously postmarked envelope to be returned to a rented Post Office Box. Other surveys of drug use have shown that little responses bias occurs when respondents are certain that their anonymity has been safeguarded.[20] A second questionnaire was sent to the same population two months after the initial mailing, along with a revised cover letter requesting participation, if they had not complied previously.

Questionnaire data were compiled on a computerized spreadsheet, and analyzed statistically by chi-square analysis. Three subject groups were analyzed: (1) all respondents; (2) impaired versus unimpaired MD's; and (3) impaired and unimpaired MD's stratified by year of birth (before 1951 and after 1951).

Anesthesiologists were considered drug-impaired, if they met one or more of the following four criteria for drug impairment: (a) acknowledgement that psychoactive drug use, prescribed or not prescribed, had impaired their ability to function professionally; (b) two or more "yes" responses to "CAGE"[21] questions concerning drugs; (c) acknowledgement of inpatient and/or outpatient treatment for drugs; or (d) acknowledgement of drug dependence.

TABLE I Demographic information concerning 183 anesthesiologists completing the questionnaire

	Unimpaired (154) *(n)*	*Impaired (29)* *(n)*	*Impaired* *(%)*	*P*
Sex				
- Male	128	26	16.9	NS
- Female	26	3	10.3	
Race				
- Caucasian	116	25	17.7	NS
- Non-Caucasian	34	3	8.1	
Decade of birth				
- Before 1950	98	13	11.7	<0.05
- After 1950	55	16	22.5	
Country of birth				
- USA	106	25	19.1	<0.05
- Other	45	3	6.3	

TABLE II Substance use in the study population ($n = 183$)

Population	*(n)*	*(%)*
Unimpaired anesthesiologists (non-users)	154	84.2
Impaired anesthesiologists (users)	29	15.8
Serious drug problem	10*	
Serious alcohol problem	23	

*Includes 4 MD's with dual problem (alcohol *plus* drugs).

Impairment due to alcohol was based on: (a) acknowledgement that alcohol had impaired their professional function; (b) two or more "yes" responses to "CAGE" questions on alcohol; or (c) inpatient and outpatient treatment status for an alcohol problem.

Results

Over 70% of the questionnaires sent were returned completed, 147 in reply to the first mailing, and 36 to the second. Completed questionnaires were compared for possible duplication; only five of the 183 returned (2.7%) were possible duplicates. Demographic data of the respondents are shown in Table I. Thirty-nine percent of those responding were born after 1951, 79.2% were Caucasian, and 73.2% were born in the United States. Men comprised 84.2% of the sample as compared with the U.S. physician population of 87% men.

Based on our criteria for impairment, ten anesthesiologists (5.5% of the sample) were identified as drug impaired and 23 (12.6%) were alcohol-impaired. Among the 23 alcohol-impaired anesthesiologists were four who also had drug dependence. Thus, a pooled group of 29 impaired physicians (15.8% of the sample) was identified (Table II).

The rate of divorce among impaired anesthesiologists, 24.1%, was higher than in the unimpaired group, 5.2%

($P < 0.001$) (Table III). The presence of a domestic support system was not different between the two groups, nor did its existence appear to correlate with a lower incidence of substance abuse.

A chronological distribution of the years in which training was completed is shown in Table IV. The percent of impaired physicians who completed their training after 1975 was 19.4% compared with 11.0% for those who completed training in 1975 or before. Among 43 anesthesiologists acknowledging the use of illicit drugs (other than barbiturates and tranquilizers), 46.3 initiated their use between the ages of 21 and 25 yr (usual age in medical school).

Alcohol and other drug use patterns were evaluated among the entire sample ($n = 183$). Alcohol use occurred in 91.8%, 30.0% had used marijuana, 9.4% had used cocaine, 5.6% had used opioids, 6.1% had used hallucinogens, 6.7% had used stimulants, and 5.6% had used sedative/hypnotics. None had ever used heroin or morphine; nor had they employed PCP, DMT, mescaline, peyote, or psylogical as psychedelics. Comparative rates of use among impaired and unimpaired respondents are displayed in Table V.

When anesthesiologists were asked whether they had ever used drugs to "get high," either without a prescription or in amounts larger than had been prescribed, 58 of 181 survey respondents (32.0%) replied affirmatively. Among impaired anesthesiologists, 48.3% used psychoactive drugs not prescribed by a physician. Forty-six (26.3%) indicated independent use (without prescription) of these drugs more than five times in their lifetimes, while 11/172 (6.4%) acknowledged daily use for two weeks or more. Eight of these 11 daily users regularly employed drugs which they had obtained without another physician's prescription, and acknowledged that their need for these substances represented a dependency. The drugs they employed were usually opioids (fentanyl, meperidine and hydrocodone). Four of these eight drug-dependent anesthesiologists experienced withdrawal symptoms when they stopped or reduced their use of fentanyl or meperidine. Ten of 29 impaired anesthesiologists stated that they used two or more drugs concomitantly.

Impaired physicians had 8–6 times greater prevalence of history of alcohol and drug problems in one or both parents relative to the unimpaired group (Table VI). A 3.3-fold greater prevalence of alcohol and drug problems in other members of the family was also noted in the impaired group. Impaired physicians also had a 3.9-fold greater prevalence of a family history of mental illness than did the unimpaired physicians. A history of chronic illness was more prevalent, (3.6 times), among parents of impaired anesthesiologists. A family background of attempted suicide did not appear to be related to self-reported impairment.

TABLE III Marital history and current domestic status of 183 anesthesiologists

	Unimpaired (n = 154)		*Impaired (n = 29)*	
	(n)	*(%)*	*(n)*	*(%)*
Marital history				
Single (never married)	13	8.4	1	3.4
Married	131	85.1	20	69.0
Divorced and remarried	2	1.3	0	–
Divorced	6	3.9	7	24.1†
Widowed	2	1.3	0	–
Separated	0	–	1	3.4
Domestic status				
Single with close partner*	4	2.6	2	6.9
Married*	128	83.7	18	62.1
Divorced/separated with close partner*	3	2.0	3	10.3
Living with family member*	2	1.3	1	3.4
Single without close partner	11	7.2	2	6.9
Divorced/separated without close partner	5	3.3	2	6.9
Other	0	–	1	3.4

*Presence of a domestic support system.
†$P < 0.001$.

TABLE IV Substance use as related to completion of training

Completion of anesthesiology training	*Unimpaired (n)*	*Impaired (n)*	*Impaired (%)*
Before 1960	4	1	20.0
1961–1965	14	3	17.6
1966–1970	14	2	12.5
1971–1975	33	2	5.7
1976–1980	25	5	16.7
1981–1985	42	10	19.2
After 1985	20	6	23.1

The relative importance of various actual and potential problems (personal, financial, or physical) were assessed by respondents for three stages of their professional career: before residency, during residency, and during practice (Table VII). Their greatest concern as medical students involved financial problems (37.0%) which apparently continued during residency (37.7%), falling to 24.6% during practice years. While residents, their greatest areas of concern included financial issues, interpersonal problems at work, marital problems, emotional, psychiatric or behavioural problems, and professional competence (Table VII). Finally, as mature practitioners of their specialty, their major concerns were aging, interpersonal problems at work, marital problems and malpractice.

TABLE V Substance use as related to impairment

	Unimpaired (n = 154) 183 – 29 = 154		*Impaired (n = 29)*		*Alcohol impaired (n = 23)*	*Drug impaired (n = 10)*
	(n)	*(%)*	*(n)*	*(%)*	*(n)*	*(n)*
Substance						
Alcohol	139	90.3	29	100.0	23	10
Marijuana	38	25.0	16	55.2	12	7
Amphetamines or ritalin	7	4.6	5	17.2	12	4
Cocaine	13	8.6	4	13.8	3	2
Sedatives (barbiturates and benzodiazepines)	2	1.3	8	27.6	6	6
Opiates						
Codeine	0		2	6.9	2	2
Meperidine HCl	0		1	3.4	0	1
Opium	0		1	3.4	1	0
Hydrocodone	0		1	3.4	1	1
Oxycodone	0		1	3.4	1	1
"Other" opioids	0		1	3.4	0	1
Fentanyl; sufantanil alfentanil	0		3		2	3
Overall opiate use	0	0.00	10	34.5	7	9
Psychedelics						
LSD	6	3.9	5	17.2	3	3

TABLE VI Relation of familial problems on impairment among 183 anesthesiologists

	Unimpaired (n = 154)		*Impaired (n = 29)*	
	(n)	*(%)*	*(n)*	*(%)*
History of alcohol/drug abuse				
None	114	77.0	11	39.3
Self	1	0.7	3	10.7
Spouse/significant other	4	2.7	2	7.1
Child	1	0.7	0	0
Parent	12	8.1	10	35.7
Grandparent	9	6.1	6	21.4
Sibling	12	8.1	3	10.7
No response	6	4.1	1	3.6
History of mental illness				
None	120	82.2	23	85.2
Self	5	3.4	0	0
Spouse/significant other	7	4.8	0	0
Child	2	1.4	0	0
Parent	4	2.7	3	11.1
Grandparent	4	2.7	0	0
Sibling	11	7.1	1	3.7
No response	8	5.2	2	7.4
History of chronic illness/handicap				
None	118	81.4	22	78.6
Self	7	4.8	0	0
Spouse/significant other	4	2.8	0	0
Child	2	1.4	0	0
Parent	6	4.1	4	14.3
Grandparent	3	2.1	0	0
Sibling	6	4.1	4	14.3

The increased stress and change in concerns before and during specialty training, however, were not reflected in a concomitant increase in substance abuse. In actuality, the use of marijuana, cocaine and alcohol was reduced during this period (Table VIII).

When asked if drug counseling was considered to have been an important part of their training programme, fewer than 15% of the anesthesiologists recalled any counseling whatsoever.

More than 50% of the sample population (99 respondents) indicated that while in residency training they had observed fellow residents using psychoactive substances. Thirty-five respondents also noted psychoactive substance use by faculty members whom they judged to be detrimentally affected. Incidents of faculty substance use were more likely to be observed by impaired residents (34.4%) than by unimpaired residents (16.2%); however, proportionally these infractions were less frequently reported to the administration by the impaired group (30.0% vs 68.0%).

Discussion

The frequency of alcohol and other drug problems during residency and in medical practice supports the observation that physicians are more at risk for substance use problems than are members of the general population.[17,22,23] Because of the over-representation of anesthesiologists among substance-abusing physicians in treatment, it is important to determine the causal and correlated variables contributing to that statistic.

TABLE VII Personal concerns of anesthesiologists at various stages of their careers

Problem area	*Before residency*	*Rank*	*During residency*	*Rank*	*Medical practice*	*Rank*
Financial	37.0%	1	37.7%	1	24.6%	5
Marital problems	16.2%	2	19.1%	3	29.4%	3
Emotional, psychiatric, behaviour	13.5%	3	18.5%	4	17.0%	10
Sexual issues	11.7%	4	16.8%	6	20.7%	8
Competence	11.1%	5	17.9%	5	19.1%	9
Death	10.6%	6	9.4%	7	23.5%	6
Alcohol and/or drugs	9.4%	7	8.3%	8	6.7%	13
Interpersonal work problems	7.8%	8	19.7%	2	31.6%	2
Divorce	4.4%	9	3.9%	11.5	11.2%	11
Physical problems	2.2%	10	6.1%	10	22.9%	7
Malpractice	2.8%	11	7.9%	9	27.7%	4
Disciplinary problems	1.7%	12	3.9%	11.5	1.7%	14
Legal problems	1.1%	13	1.7%	14	10.1%	12
Aging concern	0.6%	14	4.4%	13	32.4%	1

TABLE VIII Percent* of anesthesiology residents reporting changes in substance use during training

	Substances					
	Alcohol	*Marijuana*	*Cocaine*	*Sedatives*	*Stimulants*	*Opiates*
Use increased	5.8	0	1.3	1.8	0.6	1.2
Use level unchanged	45.6	7.5	3.8	1.8	4.3	2.4
Use decreased	25.1	12.5	10.8	1.2	0	0.6
No prior or current use	23.4	80	84.2	95.1	95.1	95.7

*Percentages based on number of respondents.

Our survey data provides the following profile of an impaired anesthesiologist (IA): a physician, most likely a male Caucasian, born in the United States after 1950, who completed his anesthesiology training after 1975 and has been divorced. He is more likely to have a family history of substance abuse, most often in a parent (35.7%). This observation coincides with reports of a 39% rate of parental alcoholism among known alcoholics.[23] The IA is also more likely to have a family history of mental or chronic illness.

The observation by respondents that substance abuse information and/or counseling appeared to be nonexistent during training is disturbing. Increasing their knowledge and awareness of the problems of impairment may yet prove to be a useful preventive measure. Approximately one-half of those using illicit drugs acknowledged that their substance use was initiated before residency, suggesting that attempts at counseling during residency training might represent an exercise in futility.

Relationships between drugs of choice and accessibility of psychoactive substances are obscure. One survey[16] suggests that workplace availability of narcotics may make them more attractive to anesthesiologists; fentanyl citrate and unspecified opioids were reported respectively as the first- and second-most widely abused drugs among anesthesiology residents; our data do not confirm this observation. Among our sample of IA's, twice as many used alcohol as their sole substance of abuse, as used drugs alone or in combination with alcohol. Fentanyl, an opioid readily accessible to anesthesiologists, was used by 10.3% of the IA's in our study.

An apparent overall decrease in general drug use in the United States has recently been noted. A survey of the National Institute of Drug Abuse[25] indicated that the number of Americans using cocaine decreased by half from 1985 to 1988.[26] The number of people using any illicit drug, including marijuana, declined in that same period from 12% of the population to 7%. The reduced recreational use of marijuana and cocaine by anesthesiologists in our survey would appear to parallel this general trend. With drugs closely associated with the practice of anaesthesiology, e.g., fentanyl, a greater use level was seen among the anesthesiologists in our survey than reported in the general public.[24]

The cumulative incidence of psychoactive drug and/or alcohol-associated impairment in our survey was 15.8%. This is comparable to addiction rates for physicians previously reported.[23] None of the 183 respondents

had ever been asked to surrender a medical license or a controlled substance registration. None had ever had a medical certificate or license suspended, nor had any experienced disciplinary action related to substance abuse. Three physicians among 29 impaired anesthesiologists left anesthesiology; all are still actively practicing, but in other fields of medicine. Two acknowledged that their alcohol and/or drug disability was the primary cause for them leaving anesthesiology, the third indicated that he was merely "seeking another career," but did not indicate that his drug dependence was the motivating reason.

While we may conjecture that an impaired physician can more easily identify a substance-abusing colleague, he may be more reluctant than his unimpaired colleagues to report these infractions. While we do not know how many of the respondents chose to individually confront their substance-using peers, it is known that physicians often fail to act in the case of impaired colleagues.[26]

The structure of our survey instrument may have led to over-enumeration with several respondents reporting the same incident of substance use; thus this occurrence data must be interpreted with some caution. It is disturbing from a standpoint of intervention and recovery that a substantial number of incidents of substance abuse involving residents ($n = 63$) and faculty ($n = 20$) went unreported. While approximately 70% of the infractions involving faculty members were reported, it was not possible to determine whether these occurred at a social event or in the workplace.

In summary, it appears that substance abuse is a rather common problem among anesthesiologists. About half the anesthesiologists who admitted to impairment had substance abuse problems that began before residency. Alcohol was abused by more respondents than were other substances. Despite admitted impairment by 29 anesthesiologist physicians, none was ever required to surrender a medical license. Thirty-five respondents reported observing faculty members abusing psychoactive substances. The programmes created to identify and treat substance abuse problems during specialty training were perceived by the large majority of respondents as inadequate.

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