

Medical conditions and medication use in a U.S. dental school clinic population



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Objectives. The aim of the study was to characterize coexisting medical conditions and medication use in patients treated at a US dental school in 2010 and to assess their implications on providing dental care.

Study Design. Data on the types and prevalence of self-reported medical conditions and the use of medications were extracted from the electronic health records of 1797 adult patients and compared against their socioeconomic status (SES).

Results. Within this sample, 8.7% were classified as American Society of Anesthesiologists (ASA) physical status (PS) 1. The remainder were designated PS 2 to PS 4 for smoking, having one or more medical conditions that ranged from myasthenia gravis (<1%) to hypertension (24%), or both. Medications for hypertension were the most frequently reported (23%), followed by more than 40 other classes of drugs.

Conclusions. Dental practitioners must be prepared to treat larger numbers of older patients, whose life expectancies continue to increase as advances in pharmacotherapeutics and biomedical technologies improve the control of their chronic medical conditions. (Oral Surg Oral Med Oral Pathol Oral Radiol 2015;119:379-384)

A pivotal event in the evolution of dental practice to its current status as an integral component of modern health care may have been the 1926 William Gies Report on *Dental Education in the United States and Canada*.¹ In this report, Gies criticized the separation between medicine and dentistry that was attributed to "...the biological ignorance of many dentists, owing to deficient education in the medical sciences and in the requirements of oral medicine...." Dr. Gies then stated that dentistry "...should be made the health service equivalent of an oral specialty of medical practice." Subsequently, major overhauls in dental education and clinical training were undertaken, culminating in our current standards of education and care, including an increased emphasis on oral medicine.²

These transitions were accompanied by monumental developments in medicine, biomedical technology, and pharmacotherapeutics, which have resulted in the control of many chronic diseases, particularly in older adults. This, in turn, has decreased the mortality of the aging population, prolonged its life expectancy, and increased the numbers of its "oldest old," patients over the age of 85 years.^{3,4} As a consequence, dental practitioners must now be prepared to treat increasing numbers of patients with chronic medical conditions that are managed to variable degrees with an extensive

array of new pharmacotherapies or with a variety of structural or organ replacements. This will be accompanied by new concerns with the potential for adverse interactions between patients' medical management and their required dental treatment. Some of these issues may be complex, and at the outset, new therapeutic modalities may not be supported by evidenced-based documentation of their efficacy or potential detrimental side effects.

To minimize the likelihood of adverse interactions between medical management and dental treatment, providers must routinely undertake a comprehensive health assessment of their patients, which includes the patient's health history, medical conditions, and medications being taken. Using such information, this study examined a profile of the types and prevalence of self-reported medical conditions and medications being used by patients seeking care in a dental school clinic.

METHODS

Between January and June, 2010, 2693 patients, primarily from Pittsburgh and the surrounding Allegheny County, presented to the outpatient clinic of the University of Pittsburgh School of Dental Medicine for the first time for treatment. Patients entered their health information on a history questionnaire, which included

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Statement of Clinical Relevance

Clinical health records of dental patients have revealed that 76% had at least one medical condition, were taking a medication, or both. This reflects the current trend of an aging population with chronic medical conditions that practitioners must be prepared to manage.

a checklist of diseases. It also asked patients to list the names of all medications (prescription or over-the-counter [OTC]) currently being taken. After a student reviewed this information with the patient, it was transferred to our electronic health records (EHRs), where it was verified by a faculty supervisor. Approval to access the patients' EHRs was obtained from the University's Institutional Review Board (which granted "exempt" status) and the University's Information Technology Division. The EHRs were de-identified in accordance with the privacy and security guidelines of the Health Insurance Portability and Accountability Act (HIPAA), and the health-related data were retrieved from the first 1797 patients 18 years and older and entered into a Microsoft Excel program.

Patients' physical status (PS) was based on the American Society of Anesthesiologists (ASA) classification system (of ambulatory patients) as ASA PS 1, 2, 3, or 4.⁵ ASA PS 1 included being a nonsmoker, taking no medication, and having no allergies. (Smoking was determined by a self-reported "yes" to currently smoking cigarettes every day or some days and having smoked 100 or more cigarettes up to the present).⁶ The remainder of the patients were classified as PS 2 for only smoking, and PS 2 to PS 4 for having any medical condition, an allergy to a medication or latex, or taking a medication.

More frequently used medications were grouped and delineated by class or therapeutic activity. Antihypertensive agents included diuretics, adrenergic α - or β -antagonists, angiotensin-converting enzyme inhibitors, calcium channel blockers, or vasodilator agents. Mood modifiers included antidepressant selective serotonin reuptake inhibitors, anxiolytics, antipsychotics, tricyclic antidepressants, norepinephrine reuptake inhibitors, and phenothiazines. Gastrointestinal agents comprised antacids, antiulcer therapies, proton pump inhibitors, or a histamine H₂-antagonist. Inhalers consisted of bronchodilators, corticosteroids, or combinations. Hypoglycemic agents included insulins and oral antidiabetic agents. Cardiac drugs included antiarrhythmics, digoxin, or nitroglycerin. Anticonvulsants comprised drugs used to treat seizures or chronic pain and included gabapentin, phenytoin, carbamazepine, oxcarbazepine, topiramate, and valproic acid. Central nervous system agents consisted of drugs being used to manage Parkinson disease and Alzheimer disease. These included reversible cholinesterase inhibitors, dopamine agonists, anticholinergics, and dopamine precursors. Other classes of drugs included anticoagulants (clopidogrel and warfarin) and analgesics (acetaminophen and nonsteroidal anti-inflammatory agents). Specific drugs, such as hypolipemic agents, bisphosphonates, muscle relaxants, sleep aids, antiallergic agents, and opioids, were not individually identified.

Table I. Sociodemographic characteristics of the study patients

	<i>Dental Clinic</i>		<i>Allegheny County*</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Men	814	45.3	585,650	47.9
Women	983	54.7	637,698	52.1
Age:				
18-64	1613	89.8	776,626	79.1
≥65	184	10.2	205,059	20.9
≥80	44	2.4	NA	
Range:				
18-91				
Median age	40			
Mean age:	42.3			
Insurance/pay status				
Medicaid	683	38.0		
Self-pay	699	38.9		
Dental insurance	415	23.1		

NA, not available.

*Based on 2010 US census data.⁷

Data analysis

Patients were classified and ranked into low or high socioeconomic status (SES) categories by using our three clinic fee-for-service options as surrogate markers. Patients with no insurance whose fees for dental care were either "out-of-pocket" (self-pay) (SP) or were reimbursed by Medicaid (MA) were determined to be in the low SES group.⁷ The high SES category patients were those who had an employment-based (commercial) dental insurance (COM).⁷ Bivariate analysis using chi-square tests were applied to determine associations between medical conditions and being in the low or high SES group. Significant relationships between disease and SES were set at a threshold of $P < .01$. Odds ratios and 95% confidence intervals were calculated.

RESULTS

The sociodemographic characteristics of the patients are shown in Table I. Patients' gender distribution and median age were similar to that of Allegheny County based on the 2010 census.⁸ The study population included 18 patients (1%), the "oldest old" (>85 years of age).

Among the 1797 patients, 156 (8.7%) were classified as ASA PS 1. There were 266 patients (14.8%) who smoked cigarettes but reported having no medical conditions, no allergies, and taking no medications. The remaining 1375 (76.5%) were PS 2, 3, or 4 based on having one or more medical conditions, a medication or latex allergy (Table II), taking at least one of the medications listed in Table III, with or without smoking, or all of these criteria. The classes or names of medications being used are listed in Table III. In

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