

# Blood pressure and blood sugar assessment by recent dental school graduates



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**Objective.** Recent dental school graduates' willingness to assess blood pressure and blood sugar in practice is positively influenced by having a workplace policy fostering these assessments. Negative influences toward these assessments include practice culture issues and time management concerns. The aim of this study was to determine whether 2010-2014 graduates of the School of Dental Medicine at Buffalo, NY (UB-SDM) continue to assess blood pressure and capillary blood sugar after graduation.

**Study Design.** Starting in 2010, UB-SDM predoctoral students were required to assess blood pressure (BP) on all patients and capillary blood sugar (CBS) on all patients with diabetes at every clinic appointment. UB-SDM graduates from 2010-2014 were sent an anonymous survey consisting of 34 questions to determine whether these assessments continue after graduation. The survey consisted of BP and CBS assessment parameters, including benefits and barriers to assessments.

**Results.** Although UB-SDM graduates generally assessed BP (77%) and CBS (23%), most did not follow the school's strict educational policies when providing these services. Dental practice policies mandating BP and CBS assessments were positively correlated with UB-SDM graduates' actually providing these services. Lack of time and poor practice support were cited as negative factors toward BP and CBS assessments.

**Conclusions.** Disparities between UB-SDM educational efforts and entrenched dental practice cultures must be addressed in order for our graduates to fully embrace BP and CBS assessments in practice. (Oral Surg Oral Med Oral Pathol Oral Radiol 2017;124:37-44)

The US population is aging at a rapid pace. The Centers for Disease Control and Prevention estimate that about 89 million people in our country will be older than age 65 by the year 2050.<sup>1</sup> Approximately 151,500 US dentists serve as oral health specialists to care for this aging population.<sup>2</sup> Whether US dentists will embrace opportunities to also screen for systemic disease among this sector of our society remains unclear. There are historic references suggesting that dentists should screen for systemic diseases. Among these is William Gies' 1926 landmark report of the dental profession, which stated, "The frequencies of the periodic examinations gives dentists exceptional opportunity to note early signs of many types of illness outside of the domain of dentistry, and by advisory health-service to help their sick patients promptly to obtain suitable medical attention."<sup>3</sup> In 1974, the American Dental Association's House of Delegates passed a novel resolution encouraging its members to assess their patients for hypertension.<sup>4</sup> Dentists have also been encouraged to screen for other major

diseases, such as the human immunodeficiency virus,<sup>5</sup> hepatitis C,<sup>6</sup> diabetes,<sup>7</sup> cardiovascular diseases,<sup>8</sup> and genetic abnormalities.<sup>9</sup> Significant savings in US health care expenditures might ensue if dentists were better integrated into these public health initiatives.<sup>10</sup>

Hypertension and diabetes are 2 chronic conditions that are commonly found in the US aging population. Assessment by the dentist of these specific conditions has been articulated in the literature.<sup>11</sup> In 2010, the School of Dental Medicine at Buffalo, New York (UB-SDM), instituted an educational policy in this regard, requiring that all predoctoral students assess their patients' blood pressure (BP). In addition, they must assess capillary blood sugar (CBS) on all patients with a history of diabetes. Assessments of BP and CBS are required at every patient visit. UB-SDM predoctoral students are taught BP and CBS assessment techniques in their second year and are competency tested in their third and fourth years. All students are required to use wrist-style devices for BP assessment and employ commercially available glucometers

This study was presented at the 70th annual meeting of the American Academy of Oral Medicine, 2016. This is an unfunded study, and there are no author conflicts, financial or otherwise, with the study.

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Received for publication Dec 8, 2016; returned for revision Mar 30, 2017; accepted for publication Apr 5, 2017.

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2212-4403/\$ - see front matter

<http://dx.doi.org/10.1016/j.oooo.2017.04.004>

## Statement of Clinical Relevance

Recent dental school graduates' willingness to assess blood pressure/blood sugar in practice is positively influenced by having a work place policy fostering these assessments. Negative influences towards these assessments include practice culture issues, and time management concerns.

for CBS assessment. UB-SDM had no policy regarding BP and CBS assessment before 2010.

The UB-SDM initiated this policy both as an educational and risk management strategy. Since that time, it has also proven to be a beneficial health service for the school's patients. Students have detected abnormal BP and CBS values, which have warranted urgent physician consultation. They have also detected new-onset hypertension in otherwise asymptomatic patients.<sup>12-14</sup> However, the UB-SDM had not evaluated whether graduates continue to practice BP and CBS assessment protocols that they learned as students. The authors therefore designed this study to ascertain whether the school's graduates from 2010-2014 continued to assess BP and CBS after graduation. We also wanted to determine benefits of and barriers to BP and CBS assessments. The authors hypothesized that the majority of UB-SDM's graduates after 2010 regularly assessed BP and CBS in practice given the key role these assessments had in their predoctoral education. The authors limited the survey to graduated predoctoral students because postdoctoral programs at the school have their own educational practices regarding vital assessments.

## METHODS

All UB-SDM DDS graduates from 2010-2014 (N = 373) with known e-mail addresses were sent a survey consisting of 34 questions via Survey Monkey. The respondents' identities were protected because of the anonymous return protocol of Survey Monkey. Potential respondents were reminded up to 3 times about the opportunity to complete the survey. The Health Sciences Institutional Review Board at the State University of New York at Buffalo approved study procedures.

A thorough literature review failed to find a validated survey tool for our research hypothesis. The authors therefore developed our own instrument using an iterative process of consulting experts. The authors contacted the American Dental Association Survey and Library Services Department, which read and commented on our survey format and its questions. Their suggestions were incorporated into the survey. The authors then pilot tested the survey by administering it to 10 senior dental students and 10 recent graduates who were enrolled in advanced general dental education programs associated with the UB-SDM. The seniors and graduate students understood and were able to answer all survey questions. The authors then incorporated their suggestions into the final survey. These students and recent graduates were excluded from further survey invitations.

## Measures

*Measurement of vital parameters.* Separate parallel questions were asked each for BP and CBS assessments

in the following order. Whether graduates measured BP and CBS was assessed by the question, "Do you, or members of your staff, measure your patient's blood pressure/blood sugar?" The authors ascertained who was responsible for actually measuring BP and CBS with the question, "Who typically measures your patient's blood pressure/blood sugar?" The frequency and context with which BP and CBS were assessed was asked by the question, "When do you measure your patient's blood pressure/blood sugar?"

The authors asked about BP assessment instrumentation using the question, "What method do you use to measure blood pressure?" The authors presumed that CBS was assessed by use of a standard glucometer. The authors asked whether assessment tools were available at the graduate's practice locations using the question, "Does your practice/institution have easily accessible equipment for measuring blood pressure/blood sugar?"

*Responses to abnormal BP/CBS.* The survey inquired about clinical decisions taken when patients had abnormal BP or CBS assessments using the question, "What do you do when a patient has an abnormal blood pressure/blood sugar?"

*Practice policy.* The survey assessed practice policies regarding BP and CBS assessments with the question, "What is your practice's/institution's policy regarding measuring blood pressure/blood sugar?"

*Perceived benefits of assessing BP/CBS.* To assess our graduates perceived benefits of measuring BP and CBS, the authors asked respondents to endorse one or more of the following options: "Increases patient satisfaction with their care/fosters patient's awareness of their overall health/risk management/provides an important basis for modifying patient treatment options/other/no perceived benefit."

*Perceived barriers of assessing BP/CBS.* To assess our graduates perceived barriers toward BP and CBS assessments, respondents endorsed one or more of the following options: "Takes too much time/not an important component of dental practice/lack of reimbursement/patient resistance/not knowing what to do with the data/I am not confident in my staff member's ability to obtain and discuss BP/CBS with patients/not supported by my practice or institution/other/no perceived barriers."

*Influence of UB-SDM training on practice behavior.* The authors asked respondents to endorse to what extent they agreed with the statements, "The UB-SDM influenced my decision to measure blood pressure/blood sugar on my patients."

*Participant characteristics.* The authors assessed whether graduates were currently working as a dentist, the year they graduated from the UB-SDM (converted to an ordinal years-since-graduation scale), whether respondents were generalists or specialists, employment

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