



2016 Michigan Assessment of Blood Pressure and Diabetes Screening Practices among Oral Health Professionals

Authors

Beth Anderson, MPH

Kily Buta, BS

Dawn Crane, MS, RN, ACNS-BC, CDE

Susan Deming, RDH, RDA, BS

Nana Ama Aya Erzuah, MPH

Christine Farrell, RDH, MPA

Jed Jacobson, DDS, MS, MPH

Jeffery W. Johnston DDS, MS

Teri Scorcia-Wilson, Ph.D., M.P.H.

Introduction:

An estimated 70 million adults in the United States have high blood pressure (HBP) and over 29 million (9.3%) have diabetes.^{1,2} In 2014, 799,350 (10.4%) Michigan adults reported they had ever been told they had diabetes, and in 2013 34.6% of Michigan adults were ever told they had hypertension.^{3,4} It was also reported that in 2014, 62.0% of adults ages 18-64 and 62.4% adults over ages 65 in the United States had a dental visit.⁵ In 2013, about 60% of Michigan adults with diabetes visited the dentist.³ Dental visits can provide an opportunity to improve both oral health and general health. This report will illustrate the findings and recommendations from the Michigan Assessment of Blood Pressure and Diabetes Screening Practices among oral health professionals conducted by the Michigan Department of Health and Human Services in collaboration with Delta Dental of Michigan, Ohio and Indiana. The results from this assessment will assist in increased awareness, interventions such as education and sharing of best practices to increase the number of Michigan residents screened and referred to primary care providers by oral health professionals for HBP and diabetes.

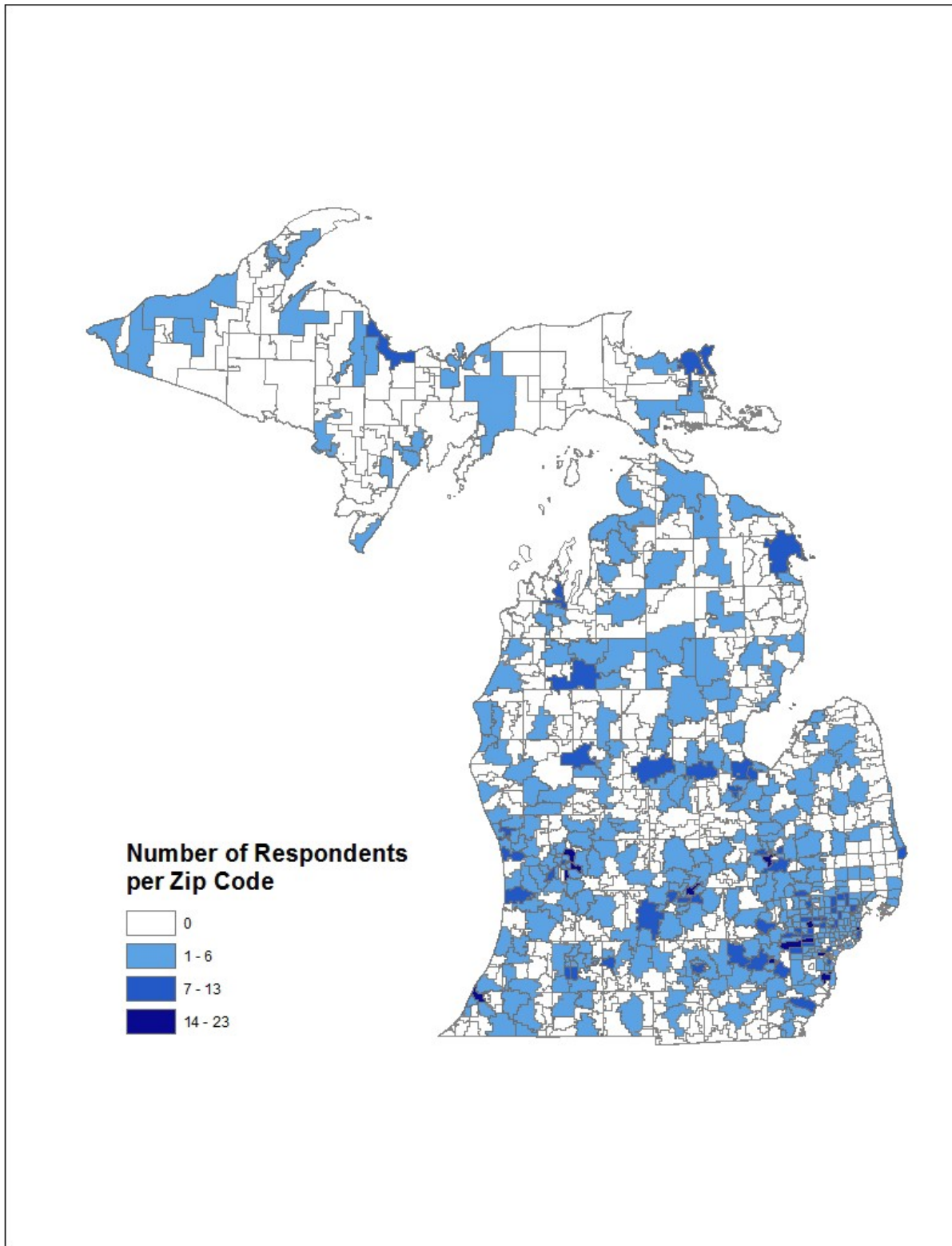
Methodology:

The survey was disseminated among 4,646 dental practices through a contact list provided by Delta Dental of Michigan, Ohio and Indiana. Paper copies of the survey were developed and sent via regular mail by Scantron Survey Services and included a \$2 dollar incentive, funded by Delta Dental. There were 1,452 of these mailed surveys returned in a paid postage envelope to Scantron, which was a 31% response rate.

An e-mail with a Survey Monkey link to an online survey was also sent to dental professional associations, the Michigan Dental Association, the Michigan Dental Hygienists Association, the Michigan Dental Assistants Association, and the Michigan Oral Health Coalition. From these connections another 263 surveys were collected, bringing the total number of surveys returned to 1,715. Due to some surveys returned with zero information, the actual total number of responses was 1,703.

Map 1 shows the geographical representation of this survey. The 1,703 responses covered 465 different zip codes throughout Michigan. The number of respondents from each of these zip codes ranged from 1-23. Over 20 zip codes from the Upper Peninsula were represented.

Map 1. Geographic representation of respondents based on zip codes



Tables 1-3 shows a breakdown of the various professionals who filled the survey based on their roles in the practice, what type of setting they practice and how long they have been practicing.

Table 1. Role in practice		
Answer Options	Response Count	Response Percent
Dentist	1398	82.1%
Dental Hygienist	160	9.4%
Dental Assistant	128	7.5%
Total Answered Questions	1686	99.0%
Missing	17	1.00%

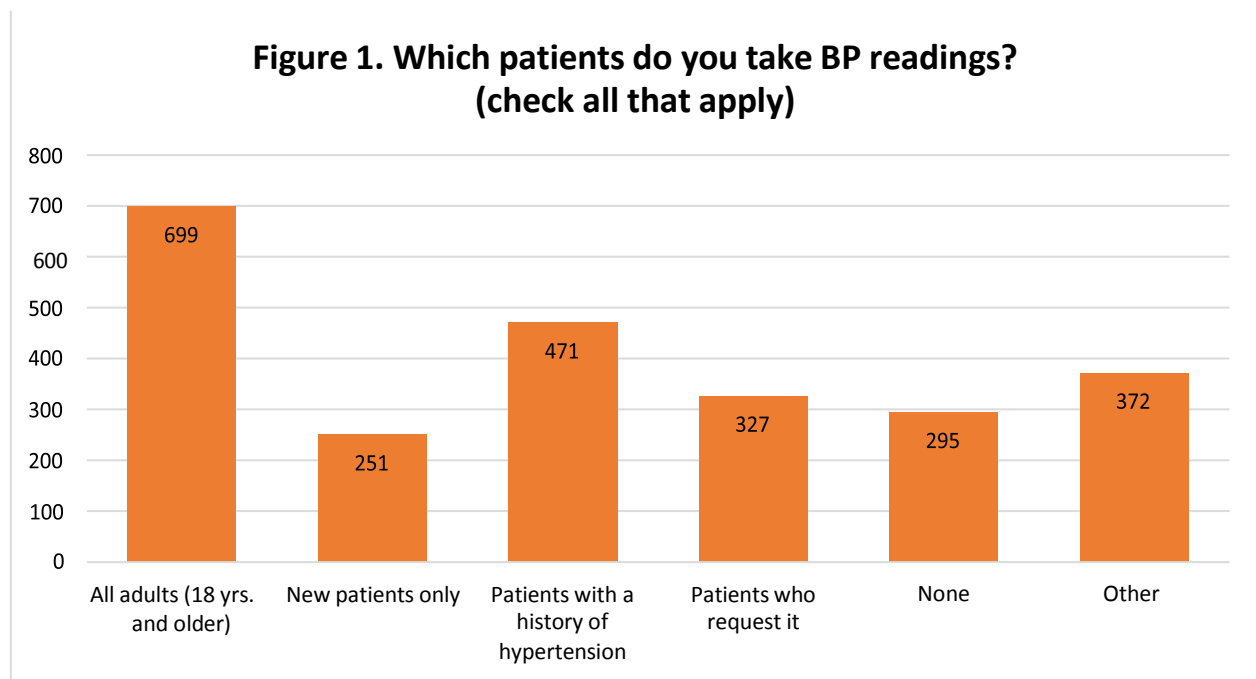
Table 2. Type of practice setting		
Answer Options	Response Count	Response Percent
General Dental Practice	1372	80.6%
Specialty Practice	154	9.0%
Oral Surgery	58	3.4%
Hospital Based Clinic	2	0.1%
Corporate Dentistry	13	0.8%
Academic Institution	30	1.8%
Local Health Department	5	0.3%
FQHC	36	2.1%
Other	16	0.9%
Total Questions Answered	1686	99.0%
Missing	17	1.0%

Table 3. Number of years in practice		
Answered Questions	Response Count	Response Percent
0-5 Years	128	7.5%
6-10 Years	161	9.5%
11-15 Years	153	9.0%
16-20 Years	187	11.0%
21+ Years	1069	62.8%
Total Answered Questions	1698	99.7%
Missing	5	0.03%

Results:

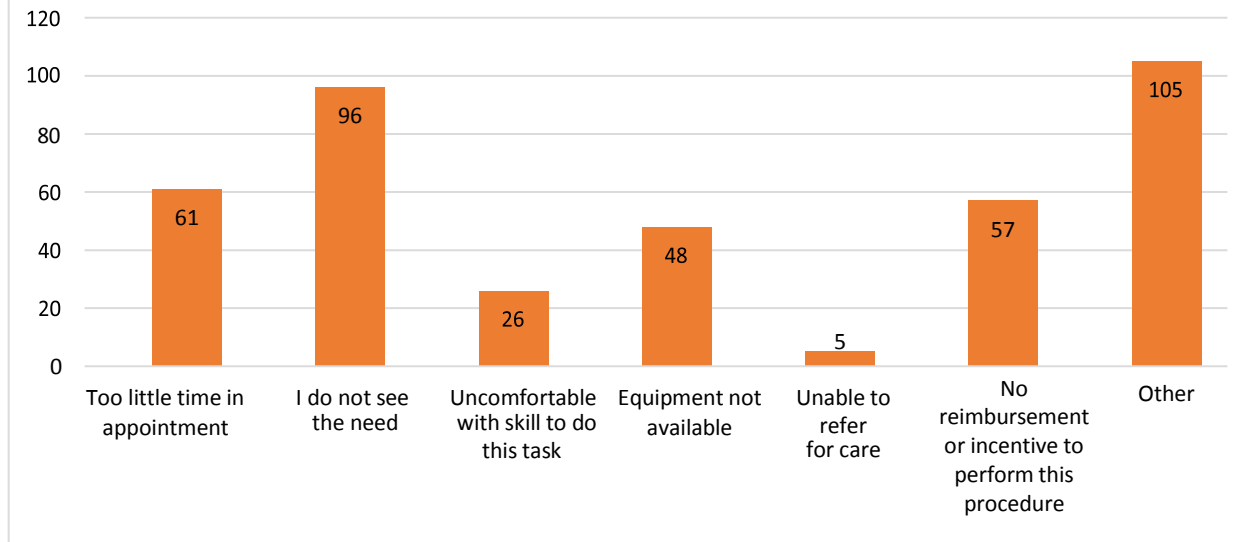
High Blood Pressure:

The majority (699) of participants reported that they take BP readings on all patients 18 years or older, however 295 said that they do not take BP readings at all. Other answers included: patients with a history of hypertension (471), patients who requested it (327), new patients only (251), and the majority of the other comments were prior to surgical procedures, Figure 1. The majority of the other answers were prior to surgery, based on medical history, or they only see patients younger than 18 years old.



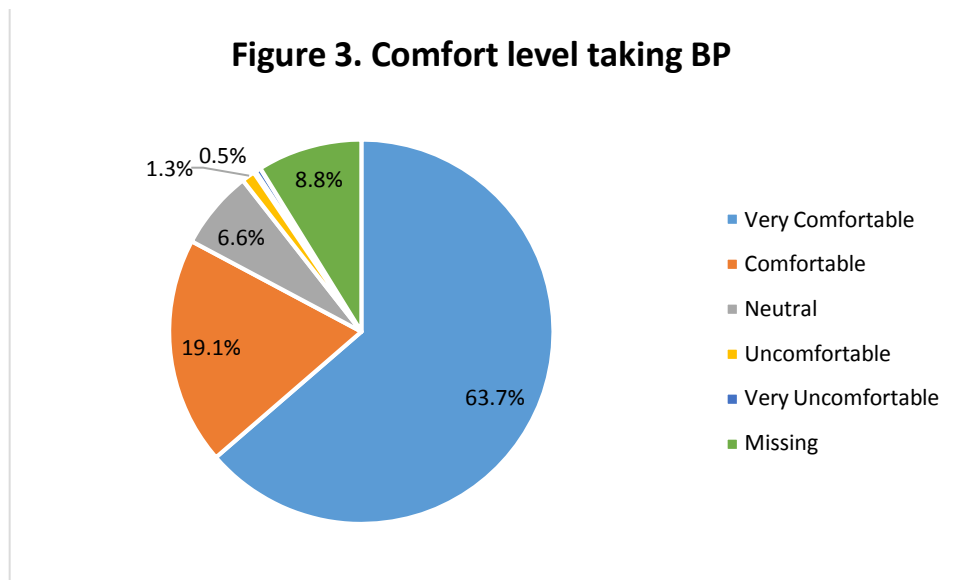
Of those who said they did not take BP readings, the number one response was Other (105). The majority of the Other responses were that it was not applicable to their practice because they only see patients under 18 years old, there was too much patient resistance, and they got too many false readings. Other reasons for not assessing BP included: I do not see a need (96), too little time in the appointment (61), no reimbursement or incentive (57), equipment not available (48), uncomfortable with skill (26), and unable to refer for care (5), Figure 2.

**Figure 2. Why do you not take BP readings?
(Check all that apply)**

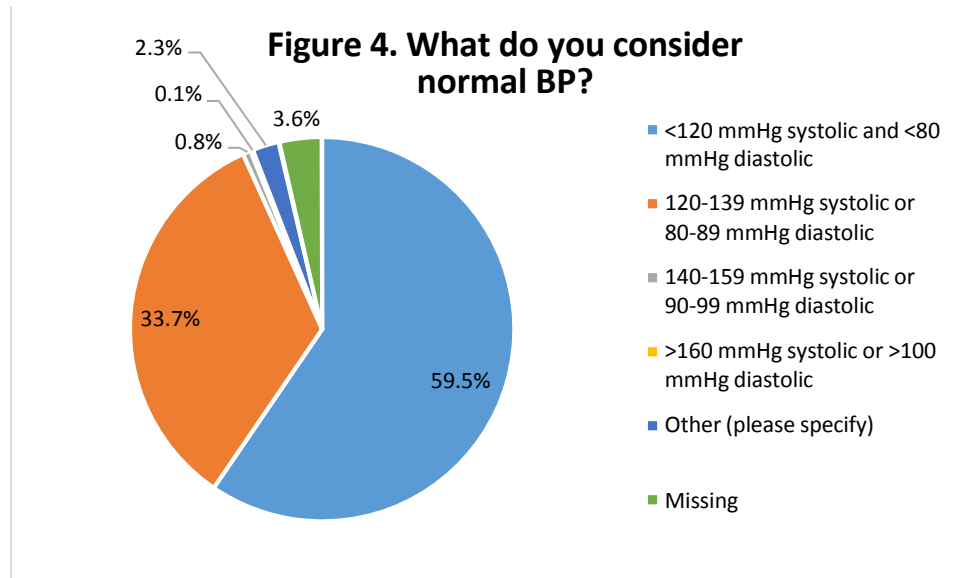


A majority (63.7%) of participants were very comfortable taking BP readings, and another 19.1% were comfortable with it. Only 1.3% were uncomfortable taking BP readings and 0.5% were very uncomfortable. Only 6.6% (113 people) were neutral, and 8.8% did not answer this question, Figure 3.

Figure 3. Comfort level taking BP



When asked what they consider to be a normal blood pressure, 59.5% considered <120 mmHg systolic and <80 mmHg diastolic to be a normal blood pressure reading and 33.7% believed 120-139 mmHg systolic and 80-89 mmHg diastolic to be within normal range. However there are still 0.8% of the participants that believes 140-159 mmHg systolic or 90-99 mmHg diastolic, and only 1 person (0.1%) thought >160 mmHg systolic or >100 mmHg diastolic was a normal reading, Figure 4.



Among the participants that did screen for HBP the majority (62.9%) had 21+ years of experience. The second highest answer (10.8%) for those that screened were 16-20 years of service, followed by 6-10 years (9.5%), 11-15 years (9.1%) and 0-5 years (7.8%), Table 4. Of those that did not screen patients for HBP the majority (68.7%) was also 21+ years of service. The second highest answer (10.5%) was 6-10 years, followed by 16-20 years (9.9%), 0-5 years (5.8%) and 11-15 years (5.1%), Table 4. However of all of the respondents, the majority (62.8%) had 21+ years of service.

Table 4. Comparison of screening for HBP and years in service		
Years of Service	Screen at least some of their patients for HBP n(%)	Does not screen patients for HBP n(%)
0-5 years	165 (7.8)	17 (5.8)
6-10 years	201 (9.5)	31 (10.5)
11-15 years	192 (9.1)	15 (5.1)
16-20 years	228 (10.8)	29 (9.9)
21 years	1330 (62.9)	202 (68.7)

Among the participants that did screen for HBP the majority (75.0%) were very comfortable with taking blood pressure. Of the participants who screened for HBP 19.6% were comfortable and 4.4% were neutral. Only 0.7% were uncomfortable and 0.3% were very uncomfortable screening, Table 5. The results of those that did not screen for HBP, were a little more spread out with their comfort levels. The majority of participants (31.8%) were still very comfortable screening, but the second most popular answer was neutral (31.2%) and following close behind were those that were comfortable (27.9%). Only 7.1% were uncomfortable and 1.9% were very uncomfortable Table 5.

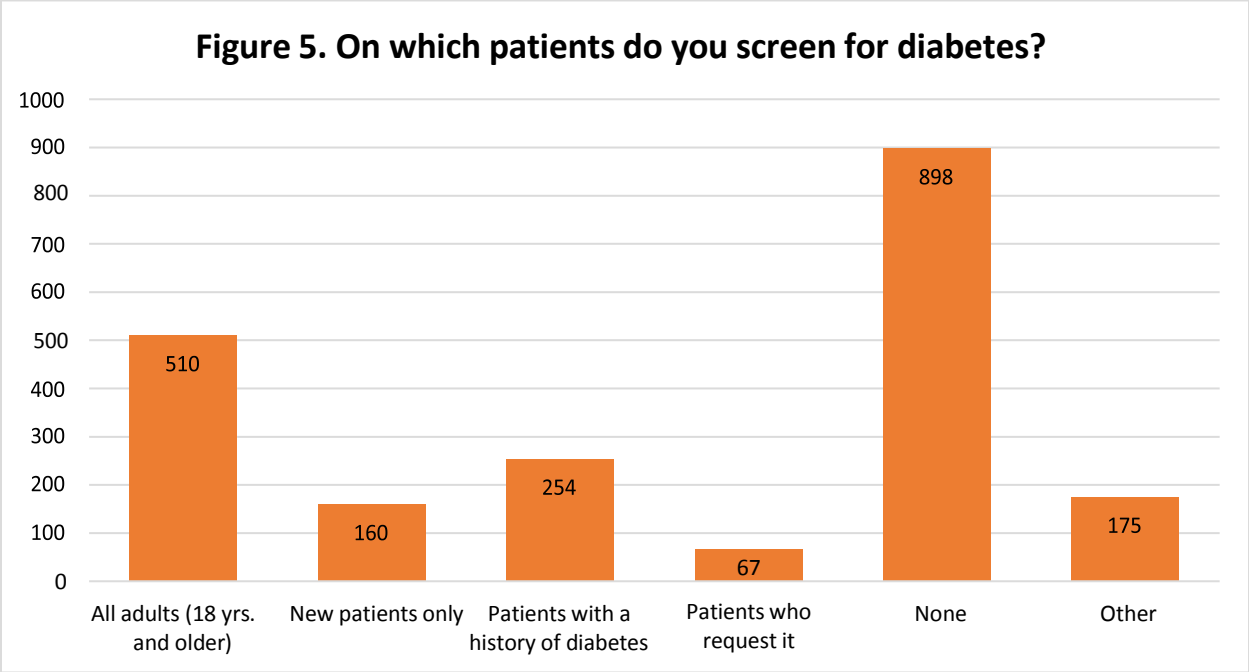
Comfort level taking BP	Screen at least some of their patients for HBP n(%)	Does not screen patients for HBP n(%)
Very Uncomfortable	6 (0.3)	3 (1.9)
Uncomfortable	15 (0.7)	11 (7.1)
Neutral	92 (4.4)	48 (31.2)
Comfortable	413 (19.6)	43 (27.9)
Very Comfortable	1581 (75.0)	49 (31.8)

Of the participants that screened at least some of their patients for HBP the majority (62.2%) believed normal blood pressure to be <120 mmHg systolic and <80 mmHg diastolic. The second most prevalent answer (34.1%) was 120-139 mmHg systolic or 80-89 mmHg diastolic, followed by 140-159 mmHg systolic or 90-99 mmHg diastolic (0.9%), and only one person (0.1%) believed that >160 mmHg systolic and >100 mmHg diastolic was normal, Table 6. Of the participants that did not screen their patients for HBP the majority (62.2%) also believed that <120 mmHg systolic and <80 mmHg diastolic was normal BP. Only 35.1% believed it was 120-139 mmHg systolic or 80-89 mmHg diastolic, and 1.1% believed 140-159 mmHg systolic or 90-99 mmHg diastolic, Table 6. Of those that did not screen for HBP no one believed that normal was >160 mmHg systolic and >100 mmHg diastolic.

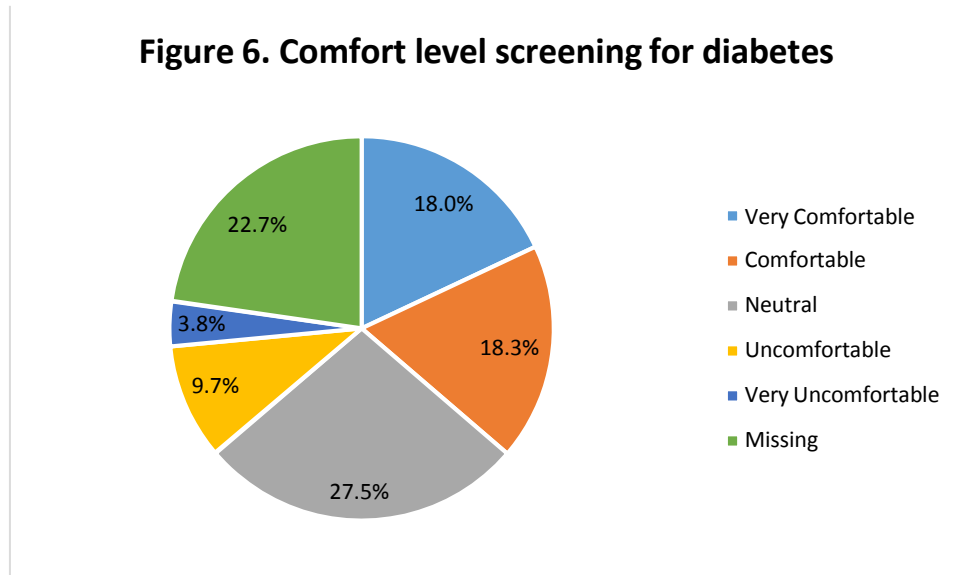
What is normal BP reading	Screen at least some of their patients for HBP n(%)	Does not screen patients for HBP n(%)
<120 mmHg systolic and <80 mmHg diastolic	1052 (62.2)	169 (62.2)
120-139 mmHg systolic or 80-89 mmHg diastolic	577 (34.1)	97 (35.1)
140-159 mmHg systolic or 90-99 mmHg diastolic	16 (0.9)	3 (1.1)
≥160 mmHg systolic and ≥100 mmHg diastolic	1 (0.1)	0 (0.0)
Other	45 (2.7)	7 (2.5)

Diabetes:

Unlike with high blood pressure, the majority of participants 898 responded that they do not screen for diabetes, and only 510 said they screen all adults above 18 years old. Other answers included: only patients with history of diabetes (254), new patients only (160), and patients who requested it (67), Figure 5.

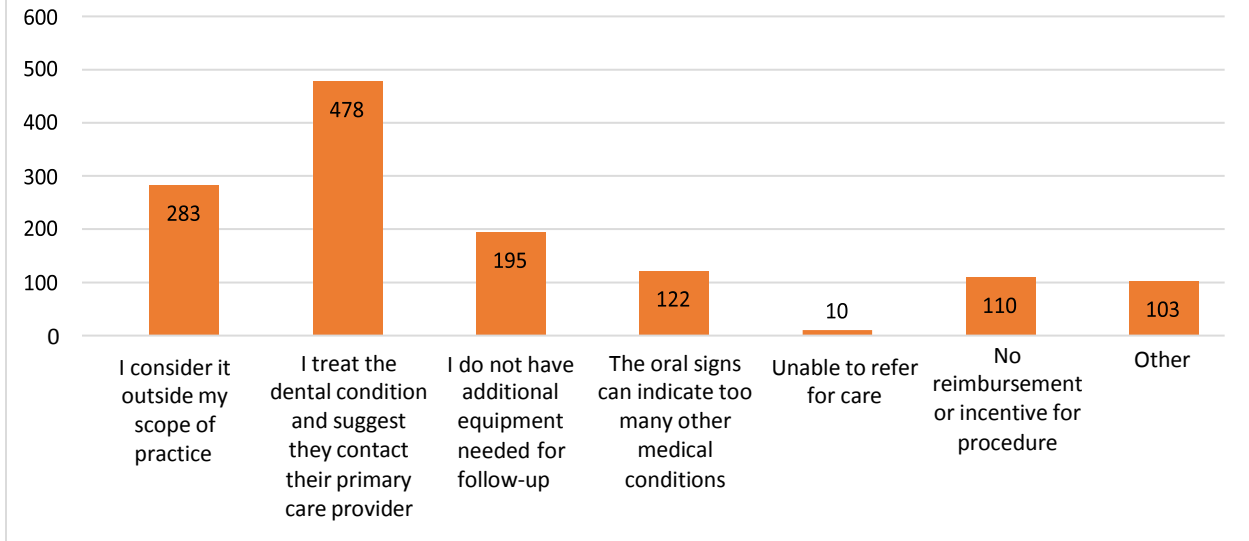


The majority (27.5%) of participants' comfort level was neutral when screening for diabetes. 9.7% were uncomfortable, 3.8% were very uncomfortable and 22.7% of participants skipped this question. On the other hand, only 18.0% were very comfortable and 18.3% were comfortable, Figure 6.

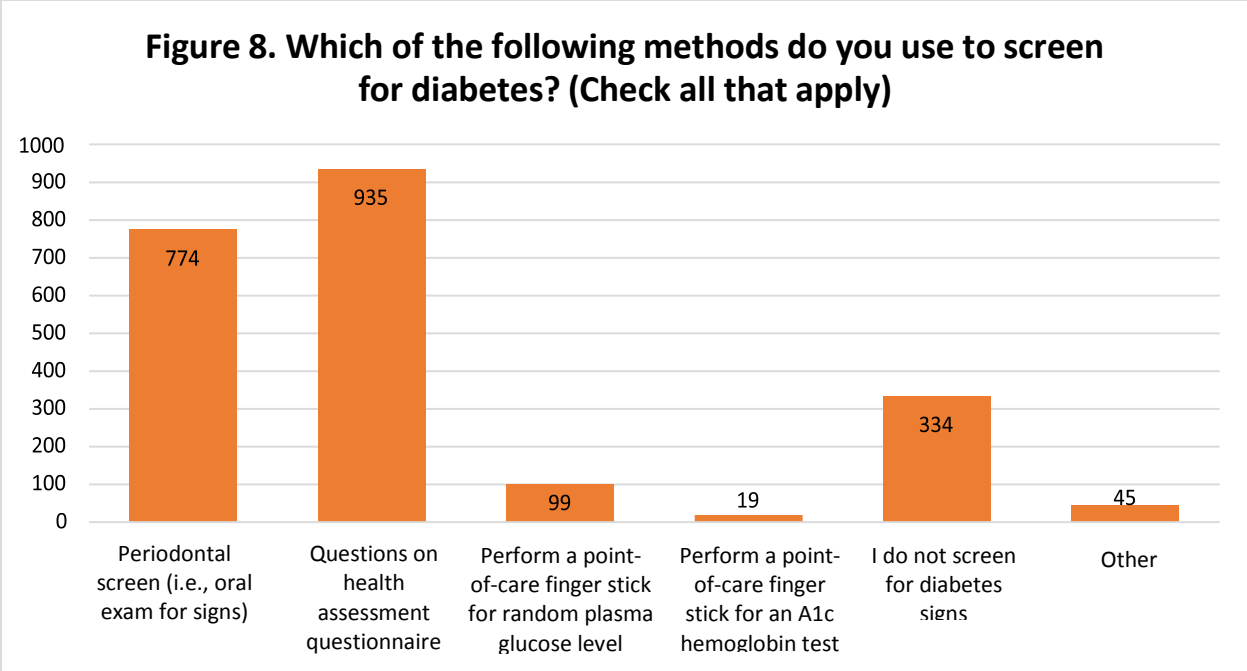


Of those who selected that they do not screen for diabetes, the majority (478) said they treat the dental condition and suggest the patient contact their primary care provider. Other responses as to why they did not screen for diabetes include: I consider it outside my scope of practice (283), I do not have additional equipment needed for follow-up (195), the oral signs can indicate too many other medical conditions (122), no reimbursement or incentive for procedure (110), unable to refer for care (10), and other (103), Figure 7. The majority of the other responses were that they do not know how to screen and need training, or they do not want to be legally liable for treatment.

**Figure 7. If you do not screen for diabetes, please answer why.
(Check all that apply)**

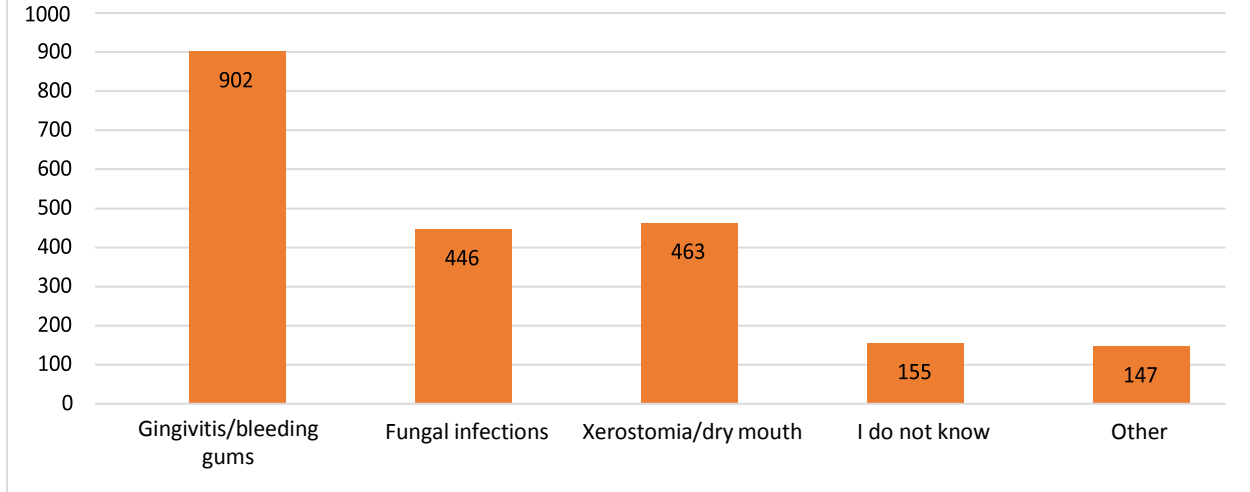


When they do screen for diabetes the majority of participants use questions on health assessment questionnaire (935), while others (774) use a periodontal screen (i.e., oral exam for signs). Other methods participants reported using include: performing a point-of-care finger stick for random plasma glucose level (99), and performing a point-of-care finger stick for an A1c hemoglobin test (19), Figure 8.



Besides the above mentioned methods the participants also mentioned the following oral signs of elevated blood glucose levels when screening for diabetes: gingivitis/bleeding gums (902), xerostomia/dry mouth (463) and fungal infections (446). In addition, 155 did not know what signs to use and 147 replied Other, Figure 9. The majority of the other responses included: poor healing, acetone/sweet smelling breath, or medical history.

Figure 9. Of the choices below, what oral signs of elevated blood glucose levels do you primarily use when screening for diabetes? (Check all that apply)



Of the participants that screened for diabetes the majority (58.2%) had 21+ years of service. The most common answer was 16-20 years (11.7%), followed by 11-15 years (10.7%), 6-10 years (10.6%), and 0-5 years (8.9%), Table 7. The results of those who did not screen were slightly different. The majority of participants (66.2%) still had 21+ years of service, and the second highest answer was 16-20 years (10.8%). The third most popular answer was 6-10 years of service (8.9%), then 11-15 years (7.4), followed by 0-5 years (6.7%), Table 7.

Table 7. Comparison of screening for diabetes and years of service		
Years of service	Screen at least some of their patients for diabetes n(%)	Does not screen patients for diabetes n(%)
0-5 years	104 (8.9)	60 (6.7)
6-10 years	123 (10.6)	80 (8.9)
11-15 years	124 (10.7)	66 (7.4)
16-20 years	136 (11.7)	97 (10.8)
21 years	677 (58.2)	593 (66.2)

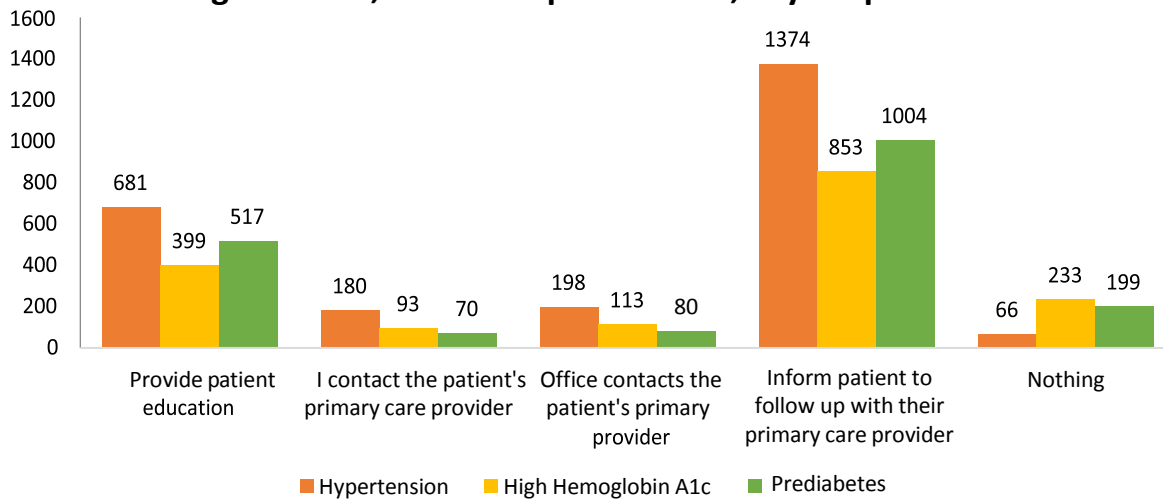
Among the participants that screened at least some of their patients for diabetes the majority (32.1%) were comfortable screening, followed closely by those that were very comfortable (31.8%) and those that were neutral (30.6%). As indicated in Table 8, only 5.1% were uncomfortable and 0.4% were very uncomfortable. However the answers for those that did not screen their patients for diabetes were very different. The majority (45.2%) were neutral about screening, and the second most popular answer was uncomfortable (23.5%). These were followed by comfortable (12.2%), very uncomfortable (11.3%), and very comfortable (7.8%), Table 8.

Table 8. Comparison of screening for diabetes and comfort level		
Comfort level screening diabetes	Screen at least some of their patients for diabetes n(%)	Does not screen patients for diabetes n(%)
Very Uncomfortable	5 (0.4)	61 (11.3)
Uncomfortable	57 (5.1)	127 (23.5)
Neutral	344 (30.6)	244 (45.2)
Comfortable	362 (32.1)	66 (12.2)
Very Comfortable	358 (31.8)	42 (7.8)

Referrals:

When screening reveals a patient with hypertension, high hemoglobin A1c or a risk for prediabetes a majority of the participants reported that they inform the patient to follow up with their primary care provider. The second most reported answer was providing patient education. For findings of hypertension the third most reported response was that their office contacts the patient’s primary care provider, however, for high hemoglobin A1c and prediabetes the third most popular response was Nothing, Figure 10. An answer of “nothing” could be of concern and providers may benefit from additional information.

Figure 10. Check all the options below that you normally would do when a screening reveals a patient with hypertension, high hemoglobin A1c, or risk for prediabetes, in your practice?



As seen in figure 11 below, only 26.1 % of oral health professionals perform any type of follow-up after making referrals for patients with high blood pressure readings or elevated glucose findings. The majority (30.9%) only provide follow-up sometimes and 29.5% do not provide any follow-up at all, Figure 11. Of those that do provide follow-up, the majority (805) follow up with the patients, 126 follow up with the providers and 239 follow up with both, Figure 12. Participants reported that most follow-up occurs at the next appointment, however, normally the next appointment is not until 6 months after the original appointment. The answers to the data referred to in Figure 12 has limitations because some of the participants that answered questions referred to in Figure 11 “No, they do not perform a follow-up after referral” continued on to answer the question referred to in Figure 12. This means that Figure 12 is not an accurate representation of oral health professionals that do follow-up after referrals and who they follow up with.

Figure 11. Do you perform a follow-up after making a referral for HBP or high risk of diabetes?

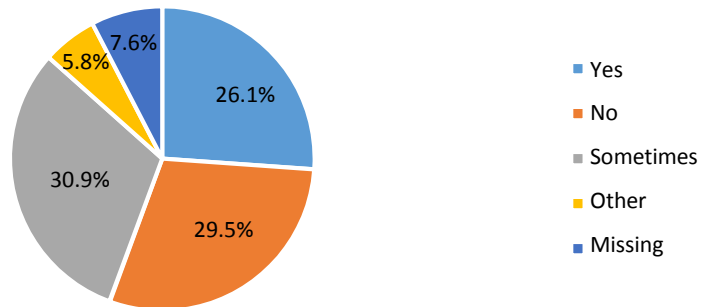
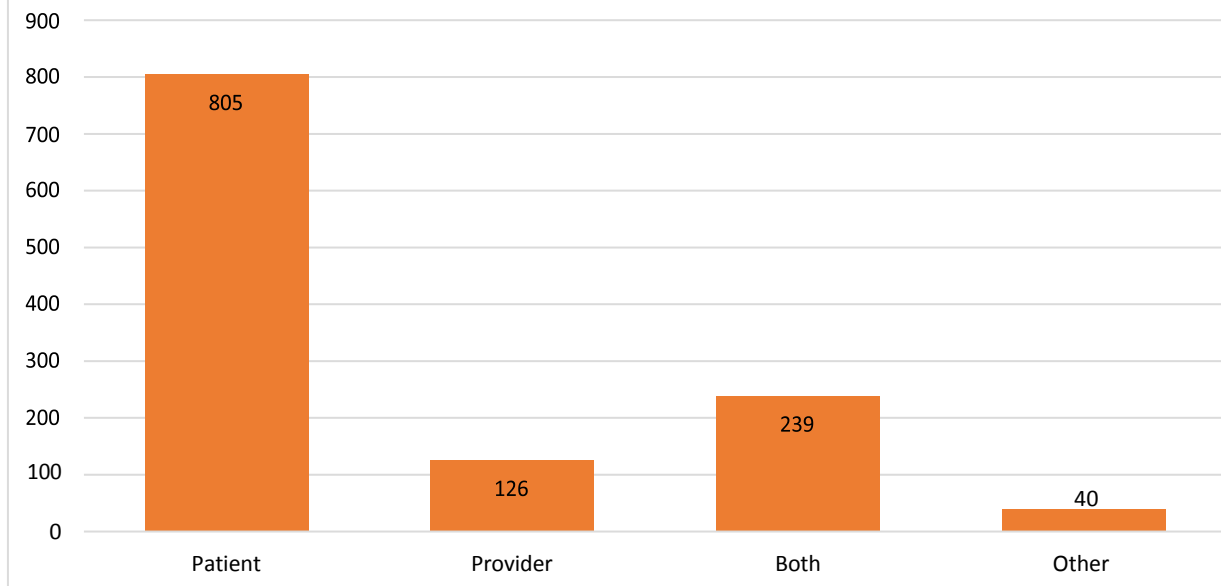


Figure 12. After referral with whom do you follow-up?

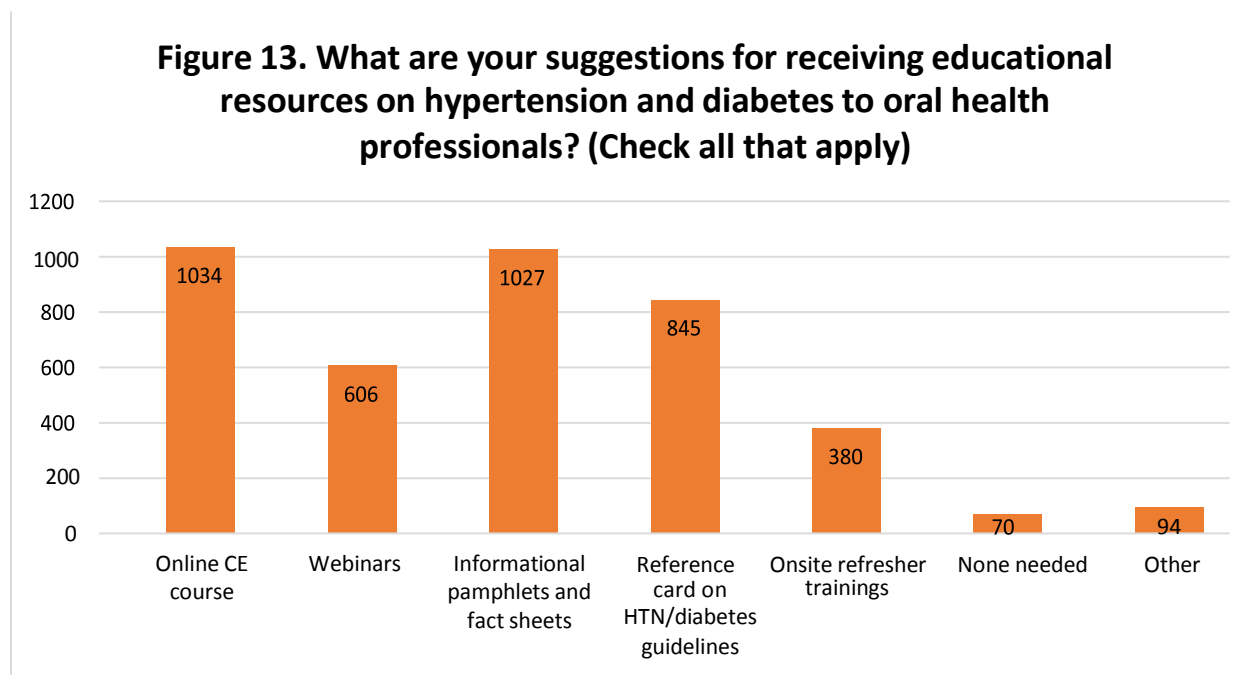


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Discussion:

As seen in the above results, oral health professionals are more comfortable screening for high blood pressure than they are for diabetes. In addition, practicing oral health professionals are inconsistent in the use of current, predetermined values that define hypertension and diabetes when screening for the conditions. When examining the providers who do screen for HBP and diabetes compared to those that do not there were large differences in comfort level for screening for these diseases. Those that did screen had a higher comfort level than those that did not. Furthermore, for both those that screened and those that did not the percentage of those that were comfortable or very comfortable were higher for HBP screening than diabetes screening. This suggests that there is a need for more education opportunities, especially for screening diabetes. Continuing education courses and hands on experience might be beneficial for these providers to increase their comfort level and possibly increase the number of providers who provide these screenings in their practices.

When asked about suggestions on receiving educational resources on hypertension and diabetes, a majority of participants reported that they would like online continuing education course opportunities (1,034), and informational pamphlets and fact sheets (1,027). Other recommendations included: a reference card on hypertension/diabetes guidelines (845), webinars (606), and onsite refresher trainings (380). Only 70 thought that no additional resources were needed, Figure 13.



Most oral health professionals do inform patients when they have high blood pressure, high hemoglobin A1c, or are at risk for prediabetes and some do provide patient education. However, most do not refer them to a primary care provider nor does the oral health professional contact the medical care providers. Furthermore, 29.5% do not follow up after referrals. This suggests that statewide guidelines for screening and referrals should be set up.

Recommendations/next steps:

Recommendations for the future include:

- Creating statewide guidelines for blood pressure readings and diabetes screenings for dental practices.
- Referral guidelines and materials can be created for oral health professionals to use when referring for medical care.
- Referral guidelines and materials can be created for medical providers to use when referring for oral health care.
- Chairside reference cards can be developed for oral health professionals advising them on when to refer a patient.
- Continuing education course opportunities can be created to educate oral health professionals on proper screening methods for both hypertension and diabetes.
- Pilot interventions could be developed between oral health practices and primary care sites to incorporate best practices and successful methods of referral to increase the number of Michigan residents that are screened and referred.
- Connections with oral health practices to community resources for people with hypertension and diabetes could be encouraged.

Conclusion:

It is important to include hypertension and diabetes screening as part of routine oral health care. Doing so will increase the role of dental professionals in managing their patient's oral health, as well as general health care needs. Most survey responders already check blood pressure and are comfortable with it, however there is a significantly lower number who screen for diabetes and many oral health providers are reporting they do not have the necessary knowledge, comfort level, or skill set to do so.

The results of this survey show there is currently a need for awareness of screening for hypertension and diabetes as part of the dental assessment with referral protocols and follow-up processes in place for oral health professionals to follow. With the development of statewide screening guidelines for oral health professionals along with a recommended referral process, and continuing education course opportunities, Michigan's overall health can be greatly improved.

References

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For questions please contact:

Susan Deming, RDH, RDA, BS

MI Department of Health and Human Services

Oral Health Unit

demings@michigan.gov

517-373-3624

