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ABSTRACT

This study was undertaken to determine practices and perceived barriers to access related to oral health by surveying administrators in Michigan *alternative* long-term care facilities (ALTCF). A 24-item questionnaire was mailed to all 2,275 Michigan ALTCF serving residents aged 60+. Facility response rate was 22% (n = 508). Eleven percent of facilities had a written dental care plan; 18% stated a dentist examined new residents; and 19% of facilities had an agreement with a dentist to come to the facility, with 52% of those being for emergency care only. The greatest perceived barriers were willingness of general and specialty dentists to treat residents at the nursing facility and/or private offices as well as financial concerns. Substantial barriers to care were uniformly perceived.

Oral health policies and practices within Michigan ALTCF vary, as measured by resources, attitudes, and the availability of professional care. There is limited involvement by dental professionals in creating policy and providing consultation and service.

KEY WORDS: geriatric dentistry, oral health, long-term care facilities, assisted living, barriers, survey

Oral healthcare access and adequacy in alternative long-term care facilities

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Introduction

Demographic trends show that people aged 85 and older are the fastest growing segment of the elderly population and are more likely to require long-term care services.[1] These services may be provided in a nursing home (NH) or in one of many alternative living arrangements.

Depending on location, these alternative long-term care facilities (ALTCF) may be called group homes, adult foster care homes, assisted living, etc. The number of individuals being cared for in ALTCF is substantial. In 2006, there were 36,541 assisted living facilities with 937,601 beds nationwide. Developed in the late 1980s as a new housing and service model, assisted living facilities tend to be smaller than nursing homes and resident care needs are managed in a home-like environment. Individuals may move to ALTCF following a significant health- or memory-related concern. In contrast to ALTCF, the number of nursing homes is declining. In 2008, there were 15,728 nursing care facilities across the U.S., compared to 16,715 in 2000. This national trend is reflected in individual states where the number of ALTCF beds may equal or exceed nursing home beds. For example, in the state of Michigan, there are approximately 48,270 licensed nursing home beds and 48,797 ALTCF beds.[2-3]

More is known about the oral health status of individuals living in NH than of the ALTCF population. Many studies have reported that older adults living in nursing facilities tend to be at great risk for tooth loss, periodontal disease and attachment loss, poor oral hygiene, caries, periapical pathology, soft tissue lesions, alveolar ridge resorption, and ill-fitting or missing dentures.[4-10] The impact of compromised oral health in the nursing home population is far from trivial, with effects including diminished quality of life, impaired function, and the potential for increased morbidity and mortality.

Dolan and Atchison described elders who were frail and functionally dependent as having significant dental needs and experiencing greater barriers to

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receiving dental care than independent elders.[11] Dental utilization research highlights these barriers, reporting that only one in five NH residents had visited a dentist in the last year,[12] with a mean time of 4.9 years since the last visit.[13]

Surveys of decision makers in nursing homes in the U.S. and other countries have provided insights into how administrator and caregiver attitudes and perceptions may influence oral health care in their facilities. Low regard for the importance of oral health and its relationship to overall health was identified as a barrier to oral health promotion efforts in Switzerland and Australia.[14-15] A survey of Ohio nursing home executive directors revealed a discrepancy between perceived levels of oral health and satisfaction with oral care:[16] 53% rated their residents' oral health as fair or poor but were still satisfied with the oral care provided at their facilities. Similar inconsistencies were found by Berkey *et al.* in a nine-state study, which reported that a majority of directors of nursing were satisfied with their facility's ability to meet the oral health needs of residents, despite reporting levels of access significantly below those expected by dental professionals. In a survey of directors of nursing in Nebraska, Johnson *et al.*[18] found that only 36% of nursing homes had onsite dental services.

Compared to research in nursing homes, there has been very little research published about ALTCF. Jones and Kiyak surveyed boarding homes,[19] adult family homes, and home healthcare agencies in the state of Washington to determine the status of oral health services in these ALTCF. Less than one-third of the facilities had a regular staff member trained and/or responsible for assisting the residents with regular cleaning of their teeth/dentures or providing dental screening. Only 21% of the survey respondents reported having a policy on providing dental care for their residents.

Nursing homes in the U.S. are highly regulated and include specific regulations for oral health care. The federal law that regulates oral health care in nursing homes is the Omnibus Budget Reconciliation Act of 1987 (OBRA '87), a comprehensive piece of legislation directed at nursing home reform. These guidelines state, "A skilled nursing facility must directly or under agreements with others provide for the provision of routine and emergency dental services to meet the needs of each resident."[20] Many states, including Michigan, require that nursing homes have "a written policy governing the nursing care and other services provided to a patient…"[21] Dental services are specified among the services to be governed by those written policies and procedures. Despite regulation, the state of oral health in nursing homes is generally described as poor. Residents are not routinely seen for care and extensive pathology is consistently reported in the literature.[22-28] In contrast to nursing homes, there is no federal law governing oral care for the elderly in ALTCF. State licensure may include general guidelines for personal care assistance which includes "mouth and teeth," as is the case in Michigan's Licensing Rules for Homes for the Aged.[29] As a result, there is justifiable concern regarding the state of oral health of ALTCF residents where few, if any, regulations are present. This paper reports the results of a census survey of administrators in Michigan ALTCF regarding perceptions of oral healthcare access, adequacy, and barriers to improved oral health in their facilities.

Methods

A complete listing of the state's 4,529 ALTCF was downloaded from the Michigan Department of Human Services Web site and included information on all licensed facilities. The sampling frame for the survey was limited to the 2,275 facilities licensed to serve residents aged 60 and older with complete, valid mailing addresses. ALTCF in the state of Michigan include homes for the aged (>20 residents), congregate homes (>20 residents), and adult foster care homes, which are categorized by type and size (family homes and small group homes: 1–6 residents; medium group homes: 7–12 residents; and large group homes: 13–20 residents). For ease of discussion in this report, the facilities will be described in general terms: 1- to 6-resident facilities will be referred to as "small," 7–12 "medium," 13–20 "large," and facilities over 20 "very large."

Sufficient resources were available for the cross-sectional census survey of all 2,275 ALTCF using questionnaires mailed to the facility administrator. This University of Michigan (UM) IRB-approved study was funded by a UM Geriatrics Center grant through the Claude Pepper Older Americans Independence Center.

Survey instrument

A four-page questionnaire containing 24 close-ended items was developed to explore different aspects of oral health in ALTCF. The questionnaire was modified from an instrument with a similar purpose developed at the University of Washington.[19] In addition to demographics, the survey addressed facility oral health barriers, resources, policies and procedures, and administrators' knowledge and perceptions.

Study design

Pilot testing and refinement of the survey instrument was achieved through input from selected ALTCF administrators recommended by the Michigan Assisted Living Association (MALA). Feedback on the survey was sought by requesting pilot sites from MALA. Concerns were minimal and based on responses, survey items were modified to improve clarity. Those who piloted the survey were not excluded from participation in the completed survey. One week prior to the questionnaire mailing, a postcard was sent advising facilities of the nature of the upcoming study. The survey packet mailed to the facilities contained: (1) the four-page questionnaire, (2) a cover letter from the UM researchers, (3) a letter of support from the MALA, and (4) a stamped return envelope. A reminder postcard was mailed 1 week after the survey packet. Follow-up phone calling was targeted to obtain a uniform distribution of results across all ALTCF groups by facility size. Efforts were made to obtain correct addresses of facilities when mailings were returned due to

Table 1. Respondent alternative long-term care facilities characteristics in Michigan by facility size.

	Overall	Small	Medium	Large	Very large
		1–6 residents	7–12 residents	13–20 residents	>20 residents
Surveys mailed, n	2,275	1,337	409	332	197
Surveys received/response rate, n (%)	508 (22%)	276 (21%)	84 (21%)	75 (23%)	73 (37%)
Person completing survey					
Administrator/owner, n (%)	436 (90%)	245 (93%)	78 (96%)	63 (85%)	50 (73%)
Director of nursing, n (%)	7 (1%)	0 (0%)	0 (0%)	0 (0%)	7 (10%)
Social worker, n (%)	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)
[a]Other, n (%)	43 (9%)	18 (7%)	3 (4%)	11 (15%)	11 (16%)
Location					
Urban, n (%)	365 (76%)	192 (74%)	54 (68%)	62 (85%)	57 (88%)
Rural, n (%)	114 (24%)	69 (26%)	26 (32%)	11 (15%)	8 (12%)
Ownership type: for profit/proprietary, %	69%	67%	84%	78%	54%
Resident payment source: % private pay, *mean (SD)*	49% (44%)	40% (43%)	41% (43%)	63% (45%)	78% (34%)
Organization					
Multiple facilities, %	32%	23%	28%	45%	56%
No. of facilities, *mean (SD)*	6 (31)	2 (4)	2 (2)	10 (42)	20 (70)
Resident characteristics					
% Over the age of 60, *mean (SD)*	62% (39%)	55% (39%)	53% (39%)	73% (37%)	92% (24%)
% Frail elderly, *mean (SD)*	37% (40%)	29% (37%)	33% (39%)	48% (42%)	64% (39%)
% Have dementia, *mean (SD)*	30% (33%)	26% (32%)	23% (28%)	41% (37%)	45% (30%)
% Persons with developmental disabilities, *mean (SD)*	28% (38%)	38% (40%)	24% (33%)	17% (31%)	5% (20%)
% Person with psychiatric disabilities, *mean (SD)*	30% (36%)	34% (38%)	38% (38%)	25% (32%)	12% (24%)
% Persons with traumatic brain injuries, *mean (SD)*	2% (8%)	3% (9%)	2% (5%)	2% (7%)	1% (3%)
% White/Caucasian, *mean (SD)*	90% (21%)	88% (24%)	89% (21%)	93% (18%)	95% (7%)

[a]Other titles/roles: charge nurse, clinical manager, director of health care, medical coordinator, nurse, nurse manager, provider, resident care supervisor, staff.

incorrect or nonexistent addresses. Additional questionnaires were sent to these facilities as well as when ALTCF administrators requested replacement of misplaced forms.

Data management and analysis

Surveys were mailed to the ALTCF in November 2005 with responses received through January 2006. To ensure anonymity, all returned envelopes were separated from the surveys, and questionnaires were assigned an anonymous identification number. Using the response envelopes allowed us to identify nonresponders for additional follow-up phone calls. Data from returned surveys were double entered into an Access database. Discrepancies from the double entry were corrected. Where possible, data were further cleaned by resolving inconsistencies in responses. Data were analyzed with SAS software (Version 9.1, SAS Institute, Inc., Cary, NC). Descriptive statistics were generated to characterize the population of ALTCF in Michigan.

Respondent estimates were used to calculate overall mean percentages where applicable. This paper presents univariate and bivariate distributions of results for categorical and continuous response items in the questionnaire. The urbanicity variable used (Table 1) was based on Rural Urban Commuting Area (RUCA) Codes. A dichotomous variable was created: "Metropolitan" (≥50,000) and "Micropolitan" (10,000 to 49,999) RUCA categories represented urban areas. "Small Town" (2,500 to 9,999) and "Rural" (commuting flow not to an Urbanized Area or Urban Cluster) RUCA categories represented rural areas.

Results

Completed questionnaires were returned by 508 of the 2,275 surveyed facilities (Table 1). This 22% return rate varied by facility size, ranging from 21% to 37%, with the smallest number but largest

Table 2. Oral health practices in Michigan alternative long-term care facilities.

	Overall	Small	Medium	Large	Very large
		1–6 residents	7–12 residents	13–20 residents	>20 residents
Plan of care for oral health:					
Percentage with written plan	11%	11%	11%	9%	14%
Percentage of plans drafted with dental input	20%	22%	38%	13%	9%
Dental examination/screening at admission	18%	18%	21%	16%	17%
Agreement with dentist to provide care	19%	14%	17%	19%	40%
Dentist visits facility regularly	48%	28%	0%	42%	83%
Dentist visits for emergency care only	52%	72%	100%	58%	17%
Facility pays for service	5%	5%	6%	6%	3%
Resident pays for service	95%	93%	88%	94%	80%
Regular staff with primary responsibility to:					
Check patients' mouths/monitor problems	30%	35%	28%	22%	25%
Clean patients' mouths/dentures daily	57%	55%	53%	56%	69%
Regular staff with training in daily cleaning/monitoring oral health	27%	23%	12%	33%	48%

percentage of returned surveys coming from the very large facilities. Based on the reported average facility census from responding facilities and available state data, an estimated 10,385 (21%) of the approximately 48,797 total ALTCF licensed beds in the state were among the facilities responding to the survey.[3] Most of the questionnaires were completed by the group targeted for the survey: facility administrators and owners (90%).

Characteristics of the respondent ALTCF are reported in Table 1. Facility characteristics varied widely based on size. Other characteristics, specifically urban/rural, nonprofit status, and organizational structure were evaluated but not found to have important differences. Compared to the small facilities, the very large facilities had a greater proportion in urban locations, were less likely to be for profit, had a greater proportion of private pay residents, and were more likely to report being part of a multiple-facility organization. Resident characteristics also varied based on facility size (Table 1). Compared to the small facilities, the very large facilities had a greater proportion of residents who were over the age of 60, were frail elderly, had dementia, and were of "white" ethnicity. Small facilities had a larger proportion of residents with developmental or psychiatric disabilities and traumatic brain injuries.

Oral health practices in Michigan ALTCF are summarized in Table 2. Only 11% of ALTCF had a written plan of care for dental needs; dental professionals had helped develop the written care plans in only 20% of those facilities. Only 18% of the facilities reported that a dentist would examine new residents upon admission to the facility. Very large ALTCF were more likely to have an agreement with a dentist to provide care and to have regular facility dental visits. Small facilities were more likely to have a dentist visit for emergency care only. When faced with a dental problem, the ALTCF assumed the responsibility of calling either the private dentist or family member to coordinate care. However, the financial responsibility to pay for dental services fell to the resident rather than the ALTCF. Only 30% of ALTCF had regular staff members whose primary responsibility was to monitor patients' mouths and potential problems, while a larger percentage (57%) indicated having regular staff members responsible for cleaning patients' mouths and dentures daily. Of the staff responsible for oral care, those in the very large facilities were more likely (48%) to have received formal training in daily cleaning and monitoring of oral health.

Table 3 details resident oral healthcare characteristics. Only 52% of all residents were likely to have received dental treatment beyond an examination in the past year. While over half of all residents were able to perform daily oral hygiene independently, 25% needed some assistance, and 17% needed complete assistance. The greatest dental service payment source in the small facilities was Medicaid, followed by the resident. In the very large facilities, the resident was the greatest dental service payment source, with Medicaid, private insurance, and the resident's family also contributing. For all ALTCF, very little was contributed to dental service payment by either the facility (1%) or free dental care (2%).

Administrative perception and satisfaction with aspects of oral healthcare practices are summarized in Table 4. In general, small facilities were more satisfied than very large facilities. The recognition that dental problems could lead to serious illness was acknowledged

Table 3. Resident oral healthcare characteristics in Michigan alternative long-term care facilities.

	Overall	Small	Medium	Large	Very large
		1–6 residents	7–12 residents	13–20 residents	>20 residents
Received dental treatment in past 12 months, *mean (SD)*	52% (38%)	56% (39%)	45% (40%)	50% (36%)	50% (34%)
Able to perform daily oral hygiene:[a]					
Independently, *mean (SD)*	54% (37%)	56% (40%)	55% (38%)	54% (32%)	49% (31%)
With some assistance, *mean (SD)*	25% (28%)	25% (32%)	26% (27%)	25% (19%)	27% (18%)
With complete assistance, *mean (SD)*	17% (28%)	16% (31%)	14% (24%)	18% (24%)	18% (25%)
Dental service payment source:[b]					
Facility, *mean (SD)*	1% (8%)	1% (7%)	3% (14%)	0% (1%)	1% (6%)
Medicaid, *mean (SD)*	50% (43%)	60% (41%)	56% (43%)	29% (41%)	20% (34%)
Private dental/health insurance, *mean (SD)*	20% (31%)	19% (31%)	16% (33%)	19% (25%)	32% (31%)
Resident, *mean (SD)*	34% (39%)	33% (40%)	29% (39%)	32% (36%)	49% (34%)
Resident's family, *mean (SD)*	15% (28%)	12% (25%)	21% (37%)	15% (27%)	21% (29%)
Free dental care, *mean (SD)*	2% (12%)	2% (13%)	2% (14%)	0% (1%)	3% (16%)
Unknown source of payment, *mean (SD)*	38% (46%)	20% (38%)	30% (46%)	46% (46%)	72% (45%)
Other[c], *mean (SD)*	14% (30%)	8% (22%)	29% (41%)	23% (40%)	0% (0%)

[a]Responses from survey respondents often did not total 100%.
[b]Percentages do not total 100% due to multiple funding sources per resident.
[c]Other: veterans administration medical center; grants.

by more than 90% of all ALTCF respondents. Overall, 80% were satisfied with the way oral hygiene needs were met at their facility (90% in small facilities vs. 66% in very large facilities); 78% were satisfied with the quality of dental treatment provided to residents by dental professionals (81% in small facilities vs. 69% in very large facilities). Similarly, satisfaction for how the facility obtains dental care for residents was also high (81% in small facilities vs. 66% in very large facilities).

The questionnaire listed a series of 14 potential barriers to good oral health for facility residents. Respondents were asked to scale the significance of those barriers from "0" (not significant) to "5" (highly significant). Table 5 provides percentages of respondents who rated the barriers to care as 3 or greater. The willingness of specialty and general dentists to provide care at facilities was seen as the most significant barrier to care. Sixty-four percent of respondents cited financial concerns as a significant barrier. Overall responses were consistent across facility type; however, a larger proportion of rural facilities, especially smaller rural facilities, saw willingness of general and specialist dentists to see facility residents (both at the facility and at private offices) as a significant barrier (data not shown).

Table 6 reveals administrators' thoughts on improving oral health care in ALTCF. Responses were markedly higher for resources that would be provided free of charge, volunteered, or paid for by the resident. Very large facilities were more likely to desire free training for staff compared to small facilities. In addition, very large facilities favored dental services provided at the facility and paid for by the resident.

The most frequently reported source of dental care for residents was the private dentist, with family members assuming responsibility for transportation. Having a dentist visit the facility occurred rarely but was more likely in very large facilities. At least one-third of respondents, regardless of facility size, reported having no regular source of care.

Discussion

The oral health status of frail and functionally dependent elderly living in ALTCF is influenced by policy, the availability and commitment of resources, and the knowledge and perceptions of decision makers. Results of this survey demonstrate inadequacies in each of these areas, as well as limited involvement of the dental profession. Twenty percent or fewer of responding facilities had written plans of care, provided an oral evaluation on admission, or had an agreement with a dentist to provide care. Regulation requiring oversight of oral health in nursing homes, as found in OBRA '87 federal law, is ineffectual if not enforced.[30] However, the total lack of any regulation requiring routine assessment of oral health in ALTCF may contribute to inadequacies in oral health care in these facilities. Administrator levels of satisfaction are not consistent with what would be considered a minimum standard of care by the dental profession. For example, administrators indicated that 42% of their resident populations needed

Table 4. Administrative perception and satisfaction in Michigan alternative long-term care facilities.[a]

	Overall	Small	Medium	Large	Very large
		1–6 residents	7–12 residents	13–20 residents	>20 residents
Prompt treatment of resident dental problems would prevent serious illness					
Definitely yes	57%	66%	56%	44%	40%
Probably yes	36%	28%	36%	45%	54%
Probably no	7%	5%	6%	11%	7%
Definitely no	1%	1%	1%	0%	0%
How oral hygiene needs are met					
Very satisfied	33%	44%	30%	23%	13%
Somewhat satisfied	47%	46%	43%	48%	53%
Somewhat dissatisfied	13%	5%	20%	19%	28%
Very dissatisfied	7%	6%	8%	10%	7%
Quality of treatment provided by dental professionals					
Very satisfied	37%	43%	28%	30%	34%
Somewhat satisfied	41%	38%	45%	52%	35%
Somewhat dissatisfied	12%	8%	19%	6%	23%
Very dissatisfied	10%	11%	9%	11%	8%
How facility obtains dental care for residents					
Very satisfied	41%	50%	30%	34%	29%
Somewhat satisfied	36%	31%	44%	42%	37%
Somewhat dissatisfied	15%	10%	17%	15%	29%
Very dissatisfied	8%	9%	9%	9%	4%

[a]Due to rounding, total percentages may not equal 100%.

assistance with daily oral hygiene. Less than two-thirds of the facilities reported having regular staff responsible for daily oral hygiene, and fewer than half of those staff members had training in providing the service. Yet, despite identified need and limited trained personnel to address that need, there was a high level of satisfaction with the way oral hygiene needs were being met. (Less than 20% indicated any dissatisfaction.) Satisfaction might reflect resignation to the status quo. Administrators may recognize that daily oral hygiene is less than adequate but see change unlikely given available resources, including properly trained staff. Explanations for this disparity may also result from oral hygiene having a low priority among the many care needs of the residents.

Administrators were nearly unanimous (91%) in affirming that prompt treatment of residents' dental problems would prevent serious illness and expressed satisfaction with how their facilities obtained care for the resident. Yet substantial barriers to improving oral health identified by ALTCF administrators included the lack of professional dental involvement in the identification and treatment of oral disease within their facilities. Helgeson *et al.*[31] identified a number of barriers that prevent the dental profession from providing adequate care to frail and functionally dependent elderly. Among them are inadequate facilities and equipment, lack of properly trained oral health providers, lack of integration of oral health care into medical care, and lack of financial resources. Lack of suitable dental treatment space and equipment were also identified as barriers by more than half of the respondents in this survey.

In our study, financial concerns of the resident or family were also considered an important barrier. Overall, half of the residents were described as relying on private resources for dental care. There was also heavy reliance on Medicaid as a payment source, particularly in smaller facilities. Financial constraints combined with difficulty in finding dentists willing to accept Medicaid contribute to the high rating of financial concerns of the resident or family as a significant barrier. Michigan currently includes adult dental benefits in its Medicaid program, but the program is dependent on funding from the ever-changing state budget. For example, this survey happened to be administered during a window of time when the only allowable adult dental benefit was extractions. More comprehensive benefits were reinstated after the study was completed. The historical instability of this funding likely resulted in more responses regarding the inadequacy of Medicaid than might otherwise be expected. The impact

Table 5. Barriers considered significant to good oral health of alternative long-term care facilities residents.

	Overall*	Small	Medium	Large	Very large
		1–6 residents*	7–12 residents*	13–20 residents*	>20 residents*
Willingness of specialty dentist (i.e., oral surgeon or denture specialist) to treat residents at facility	80%	77%	80%	78%	89%
Willingness of general dentist to treat residents at facility	78%	77%	76%	82%	77%
Financial concerns of resident or family	64%	63%	73%	56%	67%
Availability of suitable dental treatment space	52%	49%	51%	59%	57%
Availability of suitable treatment equipment	53%	46%	55%	60%	66%
Willingness of specialty dentist (i.e., oral surgeon or denture specialist) to treat residents at private office	44%	45%	53%	47%	29%
Resistance to getting dental care by resident	43%	37%	39%	56%	57%
Time constraints on facility staff	42%	36%	47%	52%	47%
Willingness of general dentist to treat residents at private office	42%	43%	49%	43%	28%
Transporting resident to dentist or hygienist	39%	33%	40%	55%	45%
Apathy of dental consultant	39%	38%	50%	38%	32%
Resistance to getting dental care by resident's family	32%	29%	31%	41%	36%
Apathy of facility staff	23%	20%	28%	25%	23%
Apathy of facility administration	23%	22%	29%	24%	16%
Other (n = 48): (11 of the 48 responses listed dentists who accept Medicaid)	60%	59%	90%	29%	50%

*Percentage of respondents who rated the barrier as 3 or greater on a 6-point scale 0–5.

of such infrastructure shifts is occasioned by both administrators and dentists needing to adjust to changes in the law. There may also be a delay in facilities seeking dental appointments when the availability of that option comes and goes with economic swings.

The responsibility for day-to-day coordination of services to meet resident needs includes arranging for dental care. This task is difficult, given the lack of willingness of either general dentists or specialists to provide care at the residents' facilities and, to a lesser extent, their lack of willingness to treat residents in their private office. Overall, these perceptions of resource scarcity in provider availability and finances for oral care underscore the inadequacy of the current dental delivery system to meet the needs of elderly residents in Michigan ALTCF.

Response to the survey was low despite the use of postcards sent prior to the mailing and as a reminder. The survey's response rate of 22% was disappointing. Response rates varying from 33% to 69% have been obtained in comparable nursing home surveys.[14,16,18] Surveys of ALTCF are limited. Whether the low response rate of this survey reflects a low priority for resident oral health, lack of time, or survey overload is unknown. The timing of the mailings, in November near the holiday season, may have negatively impacted survey returns. The use of a smaller sample with incentives for completion may have yielded a better response rate. A shorter, simpler questionnaire would likely have yielded a better return but would have limited the information derived. Using an electronic format rather than a written one may also have improved response.

With lower response rate comes increased potential for nonresponse bias. Response bias is a potential limitation and raises concern that those who did respond are not representative of nonresponding ALTCF in Michigan. Comparisons between responding ALTCF and all ALTCF in the state serving residents over the age of 60 were possible based on information included in the sample frame data files obtained from the state. Addresses/ZIP codes were used to evaluate RUCA-based urbanicity status. Two-category urban/rural status between the responders and the state were very similar: responders 76.2% urban and 23.8% rural versus state 77.5% and 22.5%. Similarly, the urbanicity four-category variable was similar between responders: 62.4% metropolitan (63.7% statewide), 13.8% micropolitan (13.9%), 14.0% small town (12.9%), 9.8% rural (9.6%). Facility type and size information as categorized in the state ALTC facility "Type" variable allowed for a comparison of ALTCF responders with

Table 6. Administrators' thoughts on improvement of oral health care in alternative long-term care facilities.

Percentage who thought oral care of residents could be improved by:	Overall	Small	Medium	Large	Very large
		1–6 residents	7–12 residents	13–20 residents	>20 residents
Free training by a dentist or hygienist for your staff	47%	38%	46%	59%	74%
Dentist or hygienist you pay to provide training for your staff	7%	5%	7%	9%	8%
Dentist you pay to visit facility and serve residents on a regular schedule	6%	7%	5%	7%	5%
Dentist the residents pay to visit facility and provide treatment on a regular schedule	37%	29%	33%	45%	62%
Dentist you pay to visit your facility and serve your residents as needed	5%	5%	7%	3%	4%
Dentist the residents pay to visit your facility and provide treatment as needed	35%	27%	37%	44%	52%
Volunteer dentist to visit your facility and serve your residents as needed	51%	49%	60%	49%	48%
Hygienist you pay to visit your facility and clean residents' teeth regularly	5%	4%	8%	4%	5%
Hygienist the residents pay to visit your facility and clean teeth regularly	36%	28%	36%	47%	56%
Hygienist you pay to visit your facility and clean your residents' teeth as needed	4%	3%	5%	8%	4%
Hygienist the residents pay to visit your facility and clean teeth as needed	30%	23%	29%	47%	38%
Volunteer hygienist to visit your facility and clean your residents' teeth as needed	52%	46%	60%	59%	59%
Other responses: Improved dental insurance coverage, Improved Medicaid coverage, More dentists who accept residents' dental insurance and Medicaid, Dentists trained in geriatric dentistry, Dentists who will treat developmentally disabled patients, Free clinic, Free oral hygiene aids (tooth-brush), More frequent recall teeth cleaning	24%	26%	31%	15%	19%

all state ALTCF: 38.5% AF = family home (37.3% for the state); .5% AG = congregate home (.5% state); 8.1% AH = homes for the aged (7.9%); .1% AI = county infirmary (.1%); 14.6% AL = large group home (16.9%); 18.0% AM = medium group home (17.7%); 20.3% AS = small group home (19.7%). Although other factors related to the survey responses and possibly contributing to response bias are possible, these comparisons show that the responding facilities were representative of all state ALTCF in terms of urbanicity of facility location, and type and size of facility.

For this study, a census mail survey (surveys sent to all facilities) was implemented for ALTCF serving those over age 60 in the state. This project represents a point-in-time census study of Michigan ALTCF. Although there is nonresponse, there is no sampling error upon which statistical tests and precision estimates are based. Furthermore, with facility types and regulations varying by state, the Michigan facilities in this study cannot be considered as a random sample in any statistical sense of similar facilities in the U.S. Therefore, estimates of precision, confidence intervals, and statistical tests of differences are not appropriate and are not included.[32] The presentation of the descriptive analysis is based on this statistical premise that the estimates and differences presented for our target population at the point in time that the survey was conducted are not subject to sampling error.

In addition to possible error in the results due to nonresponse bias, as already discussed, there could also be measurement error. Any survey instrument is limited by the accuracy of interpretation of terms by the respondents. Further clarification of terminology used in the survey would have added to the overall length but likely aided in the interpretation. For example, the survey addressed whether a facility had a "written plan of care" for dental needs. As written, the term could have been interpreted as having a daily oral care plan for individual residents or as having a contractual agreement with a dentist. Both aspects are important but have very different implications for day-to-day attention to oral health versus episodic treatment events.

Conclusion

This study generated several key findings. Oral health policies and practices within Michigan ALTCF vary, as measured by

resources, attitudes, and the availability of professional care. ALTCF have no specific regulations regarding oral health and are struggling to meet residents' oral health needs. Facility administrators' perceptions of the adequacy of oral health policy and practice are not consistent with dental professional standards. Facility administrators perceive significant barriers to obtaining dental services to improve the oral health of frail elderly residents. Dental involvement in policy creation and provision of consultation and service is limited. These findings should be considered in guiding policies to improve the oral health of elderly ALTCF residents.

The population of elderly requiring long-term care services will continue to grow in absolute number due to the aging of the 78 million "baby boomers." Orally, what will differentiate this group from previous cohorts is that they will have had the advantages of better access to dental care, exposure to fluorides, and more aggressive preventive care. In short, they will have more teeth and higher expectations (and need) for access to dental care. The inadequacy of the current system can only become more severe in the future unless changes occur. The recent economic downturn has further eroded state resources. Waves of budget cuts jeopardize safety net providers who have often been the only providers able or willing to provide care to vulnerable populations. Without changes to the system, whether through increased funding for government-supported programs, increased collaborative arrangements between long-term care facilities and dental providers, or some other innovative approach, there is no reason to expect the situation in the coming years to improve. Many baby boomers, unlike those in previous generations, have been able to maintain their dentitions for a lifetime. As they become recipients of long-term care services, they will have expectations of continued oral health and the availability of dental services. Without system change, their expectations and demands will go unmet.

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