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ORAL HEALTH IN NURSING HOMES: WHAT WE KNOW AND WHAT WE NEED TO KNOW

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Abstract: A "silent epidemic» of oral diseases is afflicting older adults. Older adults develop coronal caries at "approximately one new cavity per year". Despite the rapidly growing older adult population, no recent data exist for adults aged ≥ 75 years. Oral disease impacts physical, psychological, and social well-being through pain, diminished function, and reduced quality of life. People of color disproportionately experience oral disease, yet little is known about racial/ethnic disparities in older adults. In the United States, the Health and Human Services Oral Health Strategic Framework proposed concrete steps to eliminate oral health disparities. Notably absent from this strategic plan is explicit consideration of nursing home residents. In the United States, federal regulations require nursing homes to evaluate oral health needs and facilitate access to dental care. Compliance to the regulations is unknown. Data are urgently required to provide essential information for program planning and evaluation on "racial and ethnic minorities, rural populations, and the frail elderly".

Key words: Nursing homes, oral health, dental, dental caries, edentulism.

Introduction

Across the globe, the age distribution of the general population has changed dramatically over the past century. For example, in the United States, 14% of the population is aged ≥ 65 years (1). By 2030, this proportion is expected to increase to 20%, with 5% over age 80 years (2). By 2050, one in four Americans will be aged ≥65 years (3) with those over ≥85 years reaching 17.9 million (4, 5). Communities of color are expected to grow over the coming decades (6).

A "silent epidemic» of oral diseases is looming and our most vulnerable segments of society, older adults, are at greatest risk (7). In the United States, older adults develop coronal caries at a rate of "~one new cavity per year" (8, 9). Despite the rapidly growing older adult population, data for adults aged ≥ 75 years are lacking. For example, in the United States, the most recent national estimate is decades old and indicates that 37.9% of adults aged ≥ 75 years have untreated coronal caries. Further, people of color disproportionately experience oral disease, yet little is known about racial/ethnic disparities in older adults (10). Oral health is an often forgotten, modifiable risk factor that could reduce pervasive and persistent racial/ethnic health disparities.

This article reviews information regarding oral health in nursing home settings. The purpose of the paper is to shed light on a serious, yet understudied issue afflicting nursing home residents. We review the link between oral health and overall health, describe the changing oral health needs of older adults, review the importance of nursing homes as a health care setting, review information regarding oral health care needs in nursing homes, summarize the challenges facing nursing home staff to provide dental hygiene, and discuss regulations relating to oral health of nursing home residents. We conclude with a call for more information regarding oral health in nursing homes.

Oral health is important to overall health

Oral disease impacts physical, psychological, and social well-being through pain, diminished function, and reduced quality of life (11). Robust evidence supports the notion that there is an increased risk of atherosclerotic vascular disease among people with chronic periodontitis (12), and that dental disease affects pulmonary health (specifically COPD and pneumonia) (13). Indeed, orofacial pain may be the sole symptom of stroke in some patients (14). A systematic review also supports the link that periodontal disease, tooth loss, and oral cancer are associated with diabetes (15). Further, the review noted that periodontal care appears to have a short-term, but not a long term beneficial effect on metabolic outcomes (16). Lastly, a systematic review demonstrated that dental hygiene is associated with dementia and that gingivitis, dental caries, tooth loss, edentulousness may be linked increased risk of developing cognitive impairment and dementia (17).

Oral health needs changing

With the aging of the "baby boomers", shifts in oral health needs are expected. Although the rate of edentulism is falling, there now exists a higher risk for root caries with increasing age (18). More complex dental care may be needed by the aging "baby boomers" (19). For example, in the United States, Medicare beneficiaries have coverage for 22 preventive screenings, but Medicare Parts A and B do not cover dental care (e.g., dental procedures, cleanings, fillings, tooth extractions, dentures, dental plates). Among adults ≥ 65

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years of age, 21.8% of non-Hispanic Whites, 40.7% of Black/ African Americans, and 34.4% of Latinos had untreated dental caries, nearly half did not have a dental visit in the past year (range: 43% Whites to 71% Blacks) (20, 21). In 2016 among a non-institutional population, 7.9% of adults aged 65-74 years, and 5.7% of those ≥ 75 years old were unable to receive needed dental care because of cost (22), estimates that doubled in recent years with racial/ethnic minorities at greater risk (23). Oral health is an often forgotten, modifiable risk factor that could reduce pervasive and persistent racial/ethnic health disparities. Older adults have medical conditions (e.g., diabetes, cardiovascular disease), that worsen oral health, and vice versa (24). Poor oral health is the most prevalent risk factor for malnutrition (25). Oral health care reduces the risk of aspiration pneumonia (26).

Nursing homes are an important health care setting

With the aging of the population (27), nursing homes are an increasingly important site of care. There are ~16,000 regulated nursing homes in the United States, with ~1.67 million certified beds (28). Multiple comorbidities often necessitate long term care and currently, about 1.4 million people reside in nursing homes (29). The average length of stay for long-stay nursing home residents is 2.3 years and for the ~3 million short-stay post-acute care residents, the average length of stay is ~28 days (30). While the national health insurance program for older adults in the United States - Medicare - is the primary payor for post-acute care, state-level Medicaid programs predominantly pay for nursing home care (31). The number of nursing home residents are anticipated to increase (32). Informed by the Institute of Medicine reports, Advancing Oral Health in America (33) and Improving Access to Oral Health Care for Vulnerable and Underserved Populations (34), the Health and Human Services Oral Health Strategic Framework proposed concrete steps to eliminate oral health disparities (35). Notably absent is explicit consideration of nursing home residents, despite the need for oral health research in this vulnerable population.

Oral health and nursing home residents

Of those 1.4 million living in nursing homes, only 16% receive oral care with 15% being reported as having very good or better oral hygiene (36). The oral care received by residents consisted primarily of tooth brushing that lasted approximately 1.25 minutes. Sloane, Zimmerman, Chen, et al (2013) conducted a patient-centered of oral health care program in nursing homes (n=3) and found that adequate oral care required 6 minutes to brush, floss, clean, etcetera, in order to maintain oral health (37). A random sample of nursing home residents with dementia or in hospice (n=506) over 14 nursing homes in North Carolina found that plaque covered more than 1/3 of tooth surface and 50% or more of denture surfaces (15). A 2018 study of nursing home care providers (n=195) in Japan suggested that caregivers in tested facilities (n=8) learned dental knowledge on a case-by-case basis while working with residents. The study found that professional training was required to prepare caregivers to adequate address the oral health needs of residents (25).

Nursing home staffing may not be prepared to provide oral health care

Oral health is "disturbingly… misunderstood or neglected" in general and more so in elderly adults with dementia and institutionalized individuals (38). A federal report noted that nursing homes have limited capacity to deliver needed oral health services and most nursing home residents are at an increased risk for oral diseases (39). Direct care staff members in nursing facilities include registered nurses (RNs), licensed practical nurses (LPNs), licensed vocational nurses (LVNs), certified nursing assistants (CNAs), and nurses aides-in-training (40). Nursing homes are an important employer for nurses. For example, in the United States, ~8% of RNs and one-third of LPN and LVNs are employed by nursing facilities (41). In nursing homes, it has been estimated that more than half of nursing staff are CNAs (42). CNAs are the direct care staff responsible for helping residents (most of whom are frail) carry out basic activities of daily living. The extent to which dental hygiene training is widespread among nursing home staff is unknown. Furthermore, staff turnover can be quite high in this setting. For example, within the United States, 38% of nursing home staff expect to leave their position within 2 years (43). Turnover likely contributes to insufficient training of direct care staff (44, 45). Additional staff dedicated to dental hygiene may be prudent. In a study comparing in-person assessments of nursing home residents to MDS, under-reporting was noted with the gingivitis assessment and with tooth fragments and edentulism (46). The MDS underwent an oral health revision from the MDS 2.0 to the MDS 3.0 and the American Dental Association made guidelines recommendations for training and assessment. A recent study provided evidence that regular professional brushing every 2 weeks by a dental nurse improves oral health in nursing home residents and can reduce the development of root caries incidence (47).

Federal mandates regarding oral health in nursing homes in the United States

Federal regulations require nursing homes to evaluate oral health needs and facilitate access to dental care (48). Compliance to federal code is unlikely; nursing homes have limited capacity to do so (49). The seminal Surgeon General's Report on Oral Health in America acknowledged nursing homes role as the primary source of oral health care for its residents and highlighted nursing homes as a target for implementing programs to improve oral health. In the nearly twenty years since the Surgeon General's Report (50), no national data in the United States on oral health of nursing home residents exist. The US Code of Federal Regulations (CFR) requires that all nursing home facilities: 1) conduct

an oral health assessment (on admission and periodically thereafter); 2) meet residents routine and emergency dental service needs (using outside resources); 3) facilitate residents requesting dental appointments to make appointments, arrange for transportation, and apply for dental service reimbursement; and 4) refer residents with lost or damaged dentures within three days (51). Nursing homes are not required to provide routine dental services for all residents. Regulatory guidance states that nursing homes must provide routine dental services to the extent that they are covered under the State Medicaid plan.

Coverage of dental services

In the United States, Medicare is the national health insurance program for older adults and those with disabilities. Routine dental care is not covered by Medicare. As a result, the majority of older adults lack dental insurance which reduces access to dental care or leaves people to endure high expenses for dental care. For those who are covered by Medicaid (~70% of long stay nursing home residents), depending on which state they live in, they may have dental insurance coverage (52). Each state decides whether their Medicaid plans cover routine dental services. In 2016, about one third of the United States provided extensive dental benefits defined as a comprehensive mix of services, including more than 100 American Dental Association approved diagnostic, preventive, and minor and major restorative procedures with per-person annual expenditure caps ≥$1,000 (53). Approximately another third provided limited benefits, with only a handful of states provided no dental benefits at all (54). The remainder of states provided emergency dental benefits.

Compliance to nursing home regulations

State surveyors conduct annual nursing home inspections that are guided by the F-Tags (55). Only two F-Tags exist for oral health and these relate to Routine/Emergency Dental Services (skilled nursing facilities Medicare F-Tag 790; Medicaid F-Tag 791). The Interpretive Guidance states that blanket facility policies of non-responsibility do not meet the federal requirement, nor do policies claiming the facility is only responsible when the dentures are in actual physical possession of facility staff (56). Surveyors may visually observe the lack of or poorly fitting dentures or broken/decaying teeth. Facilities are encouraged to have "a sound system" for annual dental exams and routine monitoring to identify changes in a resident's dental care needs (57). For some areas of care quality, facilities are motivated to change practices because the inspections are available to consumers on the Nursing Home Compare website (58). Not so for oral health measures.

Research on whether or not nursing homes across the nation adhere to federal regulations is scant. On a national level, studies on the extent to which nursing homes are being cited for deficiencies based on F-Tag 790 and/or 791 and facility factors associated with deficiencies have not been conducted. In one state, half of nursing homes had written care plans for resident dental needs and dental professionals reviewed written policies in only 13% of homes. Twenty-eight percent of nursing homes do not conduct oral assessments at admission, and when dental assessments were done, 90% were completed by a charge nurse (42%) or other registered nurse (15%) (59). Federal regulations fall short of naming which provider type should conduct oral health assessments. Typically, certified nursing assistants with little or no training in oral health assessment conduct oral health assessments in nursing homes (60). A national template for nursing home administrators and dental professionals for standardized dental screenings completed by dental professionals at nursing home admission has been proposed (61).

A single state, observational study found that only 16% of residents (N=67) received mouth care (62), in part because many residents resist oral health care (e.g., residents with Alzheimer's disease and other related dementias). In a study conducted in 14 nursing homes in North Carolina, on average, plaque covered more than 1/3rd of the tooth surface and plaque covered >50% of denture surfaces (63). Mild gingival irritation was often present (64). High risk subgroups of poor oral health included those in hospice, with Alzheimer's and other related dementias, and long stay residents (65). Despite oral health being a modifiable risk factor for many adverse health outcomes in older adults, nursing home staff lack awareness of the health benefits of good oral hygiene (66). The lack of dentist availability and cost are barriers to dental care in community dwelling older adults is unknown. The geographic distribution of dentists varies substantially and the variation in dental visits across the rural-urban continuum are shocking. The number of dentists per 10,000 population ranged from 4.2 (Alabama) to 10.8 (District of Columbia) (67). Dental fees can vary widely, even in the same community (68). In 2011, the Institute of Medicine noted that dental coverage is positively tied to access to and use of oral health care, but the extent to which applies to nursing home residents has not been studied.

Conclusion

Contemporary data to describe oral health among long stay nursing home residents is urgently needed. In addition, research to estimate the association between organizational characteristics (e.g., staffing, presence of a full-time medical director, cited deficiencies in delivery of oral health care) and area-based factors (e.g., market-level racial segregation of nursing homes, Medicaid generosity of dental benefits, availability of dentists) on oral health decline experienced by nursing home residents could inform interventions to improve oral health in nursing home residents. Research is needed to characterize the barriers and facilitators of oral health care for nursing home staff regarding employer-based oral health care training and daily oral health care practices of nursing home residents. Exploratory work is also needed to inform the

development of interventions aimed at improving oral health care among older adults residing in nursing homes. In the United States, we believe such foundational knowledge will be essential to design strategies to reduce racial disparities in oral health in nursing homes.

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