Diabetes Management and Oral Health among Older Adults Experiencing Homelessness

Promising and Evidence-Based Practices for Health Centers in Diabetes Management and Oral Care

Overview

Individuals living with diabetes are at increased risk of periodontal disease and poor oral health, which may affect their overall health, functional status and quality of life. Age is a well-known risk factor for many chronic diseases, including diabetes. Adults over the age of 50 experiencing homelessness have rates of chronic disease in middle age that are comparable to adults several decades older.[1] There is a growing consensus that persons aged 50 and over should be included in the "older homeless" category.[2] Adults 50+ have been identified as the benchmark for “older” people experiencing homelessness and are much more vulnerable as they are not old enough to qualify for Medicare or social security, and therefore more likely to fall through the cracks of government safety nets.[3] Many do not live long enough to become part of the 65+ group referred to as “elderly”; poor nutrition and harsh living conditions exacerbate both acute and chronic conditions which causes the individual’s “functional age” to be older than their “chronological age.”[4] For older adults experiencing homelessness and living with chronic and acute diseases, care and management of their health often takes a backseat to more immediate concerns such as finding food and shelter.

This publication highlights the diabetes disease burden and gum (periodontal) disease among older adults (50+) who have experienced or are experiencing homelessness and explores promising and evidence-based practices health centers can adopt, aimed at improving overall oral health among this population.

Oral Complications Associated with Diabetes among Vulnerable Older Adults

According to the most recent National Diabetes Statistics Report, in 2015 the prevalence of diabetes among U.S. adults aged 65 and older was 25%, and nearly half (48.3%) of adults aged 65 years or older have prediabetes.[5] Diabetes is the seventh leading cause of death, and often shortens the lifespan

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[1] Gelberg L, Linn L, Mayer-Oakes S. Differences in health status between older and younger homeless adults. J Am Geriatric Soc. 1990; 38(11):1220–1229.
[2] National Coalition for the Homeless, Homelessness Among Elderly Persons, 2009. Retrieved from: https://www.nationalhomeless.org/factsheets/Elderly.pdf
[3] Part 2 of the 2015 Annual Homeless Assessment Report. https://www.hudexchange.info/onecpd/assets/File/2015-AHAR-Part-2.pdf
[4] Health & Housing Partnerships for Older Adults: Aging In Place Supportive Housing. Prepared by CSH and National Health Care for the Homeless Council, 2017. Retrieved from: https://www.csh.org/resources/health-housing-partnerships-for-older-adults-aging-in-place-in-supportive-housing/
[5]Centers for Disease Control and Prevention. (2017). National diabetes statistics report, 2017. *Atlanta, GA: Centers for Disease Control and Prevention* Retrieved from:https://www.cdc.gov/diabete s/pdfs/data/statistics/national-diabetes-statistics-report.pdf

of older adults as many do not survive beyond age 85.[6,7] Older adults with diabetes have an elevated risk of oral complications such as periodontal disease that can exacerbate existing health complications. Periodontal disease is defined by the National Institute of Dental and Craniofacial Research (NIDCR) as "an infection of the tissues and surrounding structures that hold the teeth in place which can lead to sore, bleeding gums, painful chewing, and even tooth loss".[8] Recent National Health and Nutritional Examination Survey (NHANES) data (2009-2014) shows that 42% of U.S. adults aged 30 years and older had periodontitis, but severe periodontitis was most prevalent in older adults aged 65 years and older.[9] One study found that 8% of people experiencing homelessness have diabetes – not significantly different from the general population; however, adults experiencing homelessness are 12 times more likely than individuals with stable housing to have dental problems.[10,11] This same study observed trends of increasing prevalence of diabetes in the homeless and general population over time (30 years). However, the data suggest a widening gap in the rate of increase of diabetes between the homeless and general population - an expected consequence of the aging of the homeless population relative to the general US population.[12] The 2009 Patient Survey conducted by the Health Resources and Services Administration (HRSA), found that nearly 90% of homeless health center patients reported having dental problems in the past six months.[13] Persons who are experiencing homelessness have more grossly decayed and missing teeth than the general population, even those living in poverty.[14] Age has been found to be positively associated with dental caries. One study found the most severe cases of untreated caries were highest among individuals 60 and older who experienced homelessness.[15] Based on the Uniform Data System (UDS) homeless population/health centers' reports, rates of diabetes among people experiencing homelessness has increased over the years (12.78% in 2015, 14.45% in 2016, and 16.80% in 2017).[16]

A ripple effect occurs when a person with diabetes also experiences poor oral health, further complicating efforts to eat healthy food required to control blood sugar level.[9] For diabetic individuals experiencing homelessness, barriers to oral health may include lack of access to professional care, reliance on food donations and inadequate storage for medications, food insecurity and other difficulties associated with self-care. Additionally, lack of knowledge of oral health risks, inability to brush their teeth regularly and limited access to toothbrushes, toothpaste and clean water, are compounding factors.[17] These individuals, due to poor oral health, have difficulty eating fruits, vegetables and whole grains, which can help control their blood sugar but instead opt for softer foods like Jell-O, puddings, etc. These

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[6] American Diabetes Association. Statistics About Diabetes Retrieved from: http://www.diabetes.org/diabetes-basics/statistics/

[7] Aging, Diabetes, and the Public Health System in the United States Caspersen et al. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3464829/pdf/AJPH.2011.300616.pdf

[8] National Institute of Dental and Craniofacial Research. Gum Disease. Retrieved from: https://www.nidcr.nih.gov/health-info/gum-disease/more-info

[9] Eke PI, Thornton-Evans GO, Wei L, Borgnakke WS, Dye BA, Genco RJ. Periodontitis in US Adults: National Health and Nutrition Examination Survey 2009-2014. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/29957185

[10] Bernstein RS, Meurer LN, Plumb EJ, Jackson JL. Diabetes and hypertension prevalence in homeless adults in the United States: a systematic review and meta-analysis. Am J Public Health 2015; 105:e46. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318300/

[11] Ferenchick GS. 1992. The medical problems of homeless clinic patients: A comparative study. Journal of General Internal Medicine 7(3):294–297.

[12] Bernstein (2015)

[13] Lebrun-Harris LA, Baggett TP, Jenkins DM, et al. Health status and health care experiences among homeless patients in Federally Supported Health Centers: Findings from the 2009 Patient Survey. Health Serv Res. 2013; 48(3):992-1017 Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3681240/

[14] Gelberg L, Linn LS, Rosenburg DJ. 1988. Dental health of homeless adults. Special Care in Dentistry 8(4):167–172.

[15] Seirawan H1, Elizondo LK, Nathason N, Mulligan R. The oral health conditions of the homeless in downtown Los Angeles. *CDA Journal*... 2010 Sep; 38(9):681-8.

[16] HRSA Health Center Program. (2017). 2017 Health Care for the Homeless Health Center Program Awardee Data. Retrieved from: https://bphc.hrsa.gov/uds/datacenter.aspx?q=d&bid=031690&state=MD&year=2017

[17] National Health Care for the Homeless Council (NHCHC) & National Network for Oral Health Access (NNOHA). (2019). Oral Health and Diabetes in Patients Experiencing Homelessness. Retrieved from http://www.nnoha.org/nnoha-content/uploads/2019/04/NHCHC-NNOHA-FAQ_final_2019.pdf

types of processed foods are usually full of simple sugars that would further elevate their blood sugar levels, increasing the risk of health complications from diabetes. In addition, people experiencing homelessness often have meals consisting only of what is available; meals are irregular (1-2 per day), and with limited or no dietary choices.[18] Lastly, dental services can be cost prohibitive and difficult to access by people experiencing homelessness, due to either a lack of health insurance or limited options available through Medicaid/Medicare. Unstable living and economic situations coupled with the lack of access to regular oral care leave people experiencing homelessness with limited options and often resort to having their teeth extracted.[19]

Bi-directionality of Diabetes and Periodontal Disease

Epidemiological studies establish a bi-directional relationship between diabetes and periodontal disease.[20] Not only are people with diabetes more susceptible to gum disease because they are more prone to infections, but gum disease in turn makes it difficult to maintain glycemic control.[21] As a result, periodontal disease has a major impact on an older adult's quality of life as it affects the integrity of the gums leading to swelling, soreness, and loose teeth further impairing their nutritional status and glycemic control.[22] Periodontal disease is also cited as the leading cause for tooth loss among people with diabetes.[23] Periodontal interventions such as professional debridement "scaling and root planning" (deep teeth cleaning below the gum line), antimicrobial therapy (special mouth rinses or medications), or surgery could potentially reduce the risks associated with diabetes by improving glycemic control.[24] A meta-analysis of fourteen studies demonstrated that periodontal intervention led to a 0.29 percent decrease in the HbA1c at three to four months that was not sustained at six months, suggesting the need for ongoing professional care.[25]

Promising and Evidence-Based Practices

Managing diabetes and oral health while experiencing homelessness is challenging and impacts overall health and quality of life. What follows are case examples of community-based providers who sought to innovatively address oral health-related complications among older adults with housing instability and experiences of homelessness.

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[20] Eke PI, Thornton-Evans GO, Wei L, Borgnakke WS, Dye BA, Genco RJ. Periodontitis in US Adults: National Health and Nutrition Examination Survey 2009-2014. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/29957185

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[22] Simpson TC, Needleman I, Wild SH, Moles DR, Mills EJ. Treatment of periodontal disease for glycemic control in people with diabetes. *Australian Dental Journal.* 2010;55(4):472-474

[23] Greater diet quality is associated with more optimal glycemic control in a longitudinal study of youth with type 1 diabetes Nansel et al, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4919526/pdf/ajcn126136.pdf

[24] Lamster, I. (2014). Diabetes mellitus and oral health: An interprofessional approach. Ames, Iowa: Wiley Blackwell.

[25] Erickson LE. The Mouth-Body Connection ASA *Generations* (2016) Retrieved from: https://www.asaging.org/blog/mouth%E2%88%92body-connection

Case Study

Capital City Diabetes Collaborative, Trenton NJ: A Community-Collaborative Approach to Care

Led by the Trenton Health Team and funded by the Merck Foundation, The Capital City Diabetes Collaborative (CCDC), is addressing major issues identified with treatment of diabetes through the Bridging the Gap: Reducing Disparities in Diabetes Care program in Trenton, New Jersey. Thirteen percent of adults in Trenton have diabetes, which exceeded both the national rate of 10.8% (2016) and the New Jersey rate of 11% in 2018.[26] Oral health has gained attention in recent years, as evidence demonstrates the link between periodontal disease and chronic conditions like diabetes. Rutgers Center for Health Policy study found Trenton to have the third highest rate of Emergency Department utilization for non-traumatic dental health visits when compared to nine other low-income regions in the state.[27] The CCDC is comprised of strategic partnerships with social, behavioral, educational, and faith-based and government organizations. Their aim is to create equity in diabetes care by focusing on three main domains: 1) clinical outcomes and transformation, 2) social conditions and engagement, and 3) the environment, specifically access to healthy and affordable food. A multi-disciplinary advisory group called the Community-wide Clinical Care Coordination Team (C4T) developed the *Diabetes Care Pathway* utilizing best and promising team-based approaches to diabetes management. The C4T is comprised of endocrinologists, primary care providers, clinical pharmacists, behavioral health specialists, a nutritionist, a podiatrist, community health workers and licensed social workers. The Diabetes Care Pathway sets forth a coordinated team-based approach that includes self-management, oral health, eye and foot examinations, and addressing social needs.

The Team: Trenton Health Team's Care Management Team is responsible for connecting patients to social services and consists of community health workers, a nurse care manager, and a social worker who make home visits and address issues including social isolation and transportation. The community health workers are essential to the success of the initiative as they are from the Trenton community and find transient patients in places such as soup kitchens and barbershops, to enroll them into care management.

The Approach: The Care Management Team relies on an integrated health information system, the Trenton Health Information Exchange (HIE), to coordinate diabetes care across healthcare institutions. The HIE is comprised of Medicaid claims, hospital and health center clinical data which is used to create a diabetes performance dashboard. C4T created inclusion criteria as well as a stratification model that incorporates hemoglobin A1C levels, emergency room visits, blood pressure values, cholesterol levels,

[26] Trenton Community Health Needs and Assets Assessment (2019) Retrieved from: https://trentonhealthteam.org/resources/documents-and-reports/

[27] Rutgers Center for State Health Policy. Facts & Findings March 2014 Use of Emergency Departments for Non-traumatic Oral Care in New Jersey Retrieved from http://www.cshp.rutgers.edu/Downloads/10360.pdf

eye, and foot examinations to create specific interventions for patients in each stratification level. Within minutes, the HIE notifies the members of the Care Management Team when a patient in the diabetes collaborative shows up in the emergency room. The Care Management team partners with Rescue Mission of Trenton (a homeless shelter) when hard-to-reach homeless and unstably housed patients present at local emergency rooms to re-engage the patient with social services and clinical care.

The next phase of the CCDC program includes social determinants of health (SDOH) screening on NowPow, a communication and tracked referral technology platform. The clinical team created a SDOH screening tool specific to the needs of Trenton residents by adapting several validated screening questions from tools including Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences (PRAPARE), Health Leads and others. The screening tool assesses for housing, transportation, food insecurity and other social needs. This screening tool is included in the Diabetes Care Pathway and every patient that is screened for SDOH will be adequately referred to community resources based on their SDOH needs using the NowPow platform, integrated with the Trenton HIE.

Case Study

Colorado Coalition for the Homeless – Service Integration to Improve Health

The Colorado Coalition for the Homeless operates the Stout Street Health Center in Denver Colorado. The center is situated in a 5-story building. The first two floors have three integrated suites, two stand-alone dental clinics, a pharmacy, eye clinic, and entitlement/eligibility services. The top three floors include eighty housing units for vulnerable individuals, individuals and families who are experiencing homelessness, formerly homeless or unstably housed. The Center provides integrated care for its tenants and eligible patients that includes primary, oral and behavioral care, all in one site.

The Team: Each suite consists of twenty-five or more members, each led by a primary care provider (PCP). The primary care providers include Medical Doctors (MD), Ophthalmologists (DO), Physician Assistants (PA) and Nurse Practitioners (NP). The team also includes non-prescribing behavioral health providers, a psychiatrist, case managers, patient navigators, peer mentors and a dental assistant. The center has a dental hygienist as a full time member of the suite team for all three of their integrated suites. When a patient in the integrated suite is being examined by the primary care provider, the hygienist also has an opportunity to perform an oral evaluation. Should the patient need multiple and complex oral care, the patient is referred to the stand-alone dental clinics where comprehensive dental

services are provided. In 2018 alone, the center provided oral care to 5,700 unique dental patients in 17,700 dental encounters. A recent survey shows that 5% of their population is over 65 years old. Diabetes care is also provided using an integrated approach coordinated by the primary care provider with the assistance of case managers and patient navigators. Case managers are attached to each integrated suite and assist patients with enrollment into benefit, entitlements, housing services, and other social services. The Center also trains peer mentors – individuals who have experienced homelessness and have been successful in diabetes self-management. Peer mentors offer support and work alongside patient navigators to help get patients appointments.

The Approach: At Stout Street, oral care is integrated into the care that patients receive. The integrated suites ensure a whole-person, patient-centered approach to treatment and prevents patients from falling through the cracks of often siloed and fragmented systems of care. The Center takes a bi-directional approach to referrals for care: dental-to-medical and medical-to-dental. At the medical clinic, patients with (pre) diabetes are asked about their oral care, provided with education on oral health and diabetes links, referred to a dental clinic, and given an oral health assessment. Similarly, patients seeking treatment at the dental clinic are provided information on the linkages of oral health and diabetes are given a point-of-care A1c screening. Patients are kept engaged by daily homeless outreach and home visits by case managers. Electronic health records (EHR) are fully integrated with each clinical member having full access to treatment plans and clinical notes. This integrated approach has shown measurable outcomes in the number of patient visits and has increased patient satisfaction and knowledge about their health condition and social services available to them.

Case Study

Downtown Emergency Service Center: Building Partnerships to Address Oral Health

Seattle's Downtown Emergency Service Center (DESC) is a private, nonprofit agency serving thousands of homeless and formerly homeless community members through its various housing and health care programs.

The Team: To address their tenants' oral health care needs, DESC has partnered with the King County Public Health Department through an initiative called VIP Dental to provide clinical and community-based services to improve the oral health of King County residents and reduce the level of dental disease. The initiative streamlines intake referrals for supportive housing tenants and those experiencing homelessness and provides routine and less extensive care such as cavity fillings, gum treatment and cleanings. A DESC coordinator serves as a liaison to the Public Health Department and manages the paperwork needed to get individuals' appointments set-up and avoid administrative barriers to access. DESC also coordinates with the University of Washington School of Dentistry who is able to provide a broader scope of oral care at low-cost via a sliding fee scale. Dental school students have been amenable to DESC case managers' supportive presence at appointments with tenants experiencing behavioral health challenges or severe anxiety over receiving dental care. Previously, DESC collaborated with a local oral surgeon who offered pro bono cosmetic surgery to tenants. For tenant's diabetes care, DESC coordinates care by partnering with Harborview Medical Center, nursing staff, and in-home care agencies. The Medical Center contributes to the on-site medical clinics at DESC, which allows tenants to more quickly access medical staff. Rotating nursing staff in DESC's permanent supportive housing program is made possible through NeighborCare and Harborview Medical Center, agencies providing medical care for persons who are low-income. Lastly, DESC stresses the importance of cultivating relationships with in-home care agencies, especially among those serving tenants with diabetes. In-home care agencies' increased understanding of the permanent supportive housing model led their employees to offer more appropriate levels of care to tenants.

The Approach: Educating employees and tenants on diabetes management is also part of DESC's strategy to increase tenants' successful health outcomes. While many case managers may not have clinical backgrounds, DESC believes they have a responsibility to support tenants with their health care needs. Employees are taught to recognize signs and symptoms of health issues among tenants as well as how to broach this often sensitive topic. Utilizing evidence-based approaches such as Motivational Interviewing, DESC staff engage tenants in conversations about their health by starting with: "How can you feel happier and healthier?" This helps to facilitate health care discussions among persons reluctant to accept diabetes care by focusing on the necessary actions for symptom relief. Employees share information about diabetes management with tenants through methods such as conversations about healthy eating and joint interpretation of glucometers.

Key Recommendations

Health centers can employ a variety of strategies to improve access to diabetic and oral health care for vulnerable older adults with diabetes experiencing homelessness. CSH and the National Center for Equitable Care for Elders recommend health centers should:

1. Seek ways to integrate dental care in primary care settings. Clinics can create bi-directional workflows to assess and screen for oral health and chronic disease conditions and make the appropriate referrals.
2. Adhere to HRSA's identified five oral health core clinical competencies to monitor their health and to reduce the risk for health complications and comorbid diseases:
    a. risk assessment;
    b. clinical evaluation;
    c. preventive interventions;
    d. communication and education; and
    e. inter-professional collaboration.[28]
3. Engage in interdisciplinary, community-based partnerships to provide whole-person and person-centered care.
4. Leverage Health Information Technology (HIT), such as electronic health records (EHR) to collect and track patients in need of bi-annual dental assessments.
5. Utilize existing (pre)diabetes educational curricula for ongoing staff training to help improve health outcomes.

Conclusion

This publication highlights the diabetes disease burden among older adults experiencing or who have experienced homelessness. The management of chronic diseases including diabetes is complex for anyone; however, people experiencing homelessness face significant challenges. For those who are insulin dependent, not having a proper temperature regulated place to store insulin creates restrictions on treatment regimen. While a plethora of barriers exists for older adults experiencing homelessness, health centers can help mitigate these barriers through diabetic and oral health screenings, risk assessments and hemoglobin A1c testing in addition to implementing some of the promising integrated and interdisciplinary practices outlined in this publication. With the right support and access to overall health and dental care, people experiencing homelessness can achieve proper diabetes management and improved oral health.

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[28] National Health Care for the Homeless Council (NHCHC) & National Network for Oral Health Access (NNOHA). (2019). Oral Health and Diabetes in Patients Experiencing Homelessness. Retrieved from http://www.nnoha.org/nnoha-content/uploads/2019/04/NHCHC-NNOHA-FAQ_final_2019.pdf