**IMPROVING ORAL HEALTH OF ELDERLY RESIDING IN NURSING HOMES BY INCREASING SCREENING AND EDUCATION: A PILOT STUDY**

by

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**ABSTRACT**

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The United States Census Bureau estimates that the current structure of population is going to dramatically change in the next fifty years. It is expected that the population over the age of 65 is going to nearly double from 2015 to 2050, anticipating approximately 84 million individuals in this age range. This drastic increase in this population demands more attention to the needs of this age group and addressing problems that commonly afflict them. Ailments related to oral health such as periodontal disease and caries affect more individuals in American than any other health problem. Oral health, especially in the elderly population, is considered to be of public health significance because the significant increase in the aging population and that these health problems can cause pain, discomfort, infection, and can even result in systemic conditions such as pneumonia. In agreement, Healthy People 2020 reported oral health as a Leading Health Indicator because of its impact on not only the mouth and teeth, but also on the entire body.

David Finegold, MD

**IMPROVING ORAL HEALTH OF ELDERLY RESIDING IN NURSING HOMES BY INCREASING DENTAL SCREENINGS AND EDUCATION: A PILOT STUDY**

Radhika Patel, MPH

University of Pittsburgh, 2015

In general people are keeping their natural teeth for longer than before so there is an increase in care necessary to prolong longevity of these teeth. The care provided for these individuals must be tailored to their specific needs, considering possible dental prosthesis, limited manual dexterity, and personal beliefs on the importance of oral hygiene.

The purpose of this study is to demonstrate the effectiveness of a training program for certified nurse assistants in improving the overall oral health and quality of life for elderly nursing home residents. Progress and success of this program will be determined by subjective quality of life surveys completed by the nursing home residents, along with documentation of staff engagement.

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# Introduction: The Significant increase in the aging population

According to the U.S. Census Bureau, the United States will be experiencing a shift in the distribution of age of the population. It is expected that between 2012 and 2050, there will be an increase in the population over the age of 65 from 43.1 million in 2012 to 83.7 million in 2050 (Vincent and Verkoff 2010). This shift will result in a higher proportion of the residents being over the age of 65, specifically, those over the age of 65 will consist of 20 percent of the population by 2030, and only comprise of 13 percent currently. This aging population will continue to become racially and ethnically diverse, with the possibility that the aggregate minority population, with the exception of the non-Hispanic white population, will actually become the majority by 2052 (Ortman et al 2014). This significant increase in the elderly population has many implications for public health, specifically that related to oral health.

The aging population will come with public health concerns that must be tailored and addressed to this specific population. For example, the current elderly population grew up in a time with little or no water fluoridation. They often times did not have the focus on the importance of oral hygiene that exists today (Vargas, Kramarow, Yellowitz 2001). Addressing these differences and existing beliefs may help better monitor oral health in this population.

Improved oral health has been shown to be associated with an improvement in general health and well-being. Specifically, individuals who experience loss of teeth or long-lasting untreated disease could have a loss of self-esteem and motivation. Considering that late-life depression exists at very high rates in the elderly population, and can increase with disorders resulting in morbidity (Taylor 2014), this is an important fact to consider. Also, a report from the U.S. Surgeon General showed that oral, dental, and craniofacial disease and disorders are the most common health problem affecting the general population (National Center for Chronic Disease Prevention). Of those affected by oral disease, many are elderly and approximately 30 percent of these elderly have limited mobility, live in a nursing home or assisted care facility, or are functionally dependent on others in their daily life. This proposal will address the oral health disparities present in the elderly by providing education on oral hygiene to their nursing home care givers, and ultimately improving oral health and general well-being of the elderly population.

## Background and significance

People in general are keeping their natural teeth for longer than before. Although the current elderly population has many missing teeth, the demographic of the aging population is changing and more people understand the importance of their natural dentition. Furthermore, ailments related to oral health such as periodontal disease, caries, and craniofacial defects affect more individuals in American than any other health problem.

### Current oral health state of the elderly

The elderly are considered to be most vulnerable to oral health disease, including xerostomia (dry mouth), dental caries (cavities), loss of teeth, periodontal disease (gum disease), and even oral cancer (Susan et al 2012). Often times they are unable to access care, have difficulty providing care, or are financially unable to afford care. These barriers to care can lead to poor oral hygiene, lower quality of life, or even chronic discomfort or pain due to neglect of oral health. Maintaining oral health in the elderly is necessary to ensure well-being and overall health (MacEntee 1987).

Oral health disease is related to a plethora of related systemic problems such as diabetes, heart disease, and pneumonia. For example, oral health problems such as periodontal disease have shown to be related to diabetes, heart disease, and pneumonia (Sjögren et al 2008). In the elderly, these diseases can be very debilitating and lead to extreme life changes. A systematic review (Sjögren et al 2008) found that weekly professional oral care and mechanical oral hygiene, or tooth brushing, decreased mortality from pneumonia and significantly decreased chances of pneumonia. Adachi et al, (2002) also found that professionally administered oral health care on elderly in nursing homes was associated with a decrease in prevalence of fever and deathly pneumonia.

Oral health problems impact the ability to eat, sleep, work and continue to be independent (Chen, Schilling, and Lyder 2001). Difficulty eating can lead to malnutrition. Malnutrition is a common problem in the elderly, and is defined as “faulty or inadequate nutritional status; undernourishment characterized by insufficient dietary intake, poor appetite, muscle wasting and weight loss (Chen, Schilling, and Lyder 2001).” Malnutrition is linked to many antecedents, including loss of body composition, loss of optimal oral health, and loss of sensory function. Loss of optimal oral health can include a decrease in salivary flow, loss of taste buds, and atrophy of tissue. Healthy elderly typically do not have problems with oral function; however, those who are unhealthier and take more medications have more significant problems. Oral health and general nutritional status are heavily linked and elderly who experience pain, chewing and swallowing difficulties, poor fitting dentures, xerostomia (dry mouth), and caries show an increase in poor nutritional state (Chen, Schilling, and Lyder 2001). Edentulous individuals are more likely to have a diet high in fat and cholesterol. A study also found that there is an increase risk in malnutrition with an increase in lost teeth (DeGroot 1991). Due to limited dexterity, the elderly often rely on assistants to complete simple oral hygiene tasks. Losing autonomy can also lead to depression (A State of Decay 2003).

The elderly population is also prescribed a very high number of medications every year. Often times these medications help alleviate underlying medical problems such as heart disease or high cholesterol, but also have many side effects including xerostomia, or dry mouth. Approximately 20 percent of the elderly suffer from xerostomia (Petersen 2010). Medications such as anti-cholinergics and diuretics can dry the oral mucosa. Xerostomia or dry mouth can significantly increase the risk of decay and can also lead to decrease of denture retention. Many treatments for xerostomia exist and include artificial saliva substitutes, increase in hydration, sialagogues (Petersen 2010). Although oral health problems are not always severe enough to cause life change, it is important to consider that adding a stress to an already vulnerable population can be dangerous.

### Elderly in Long Term Care Facilities

Long-term care facilities help meet the needs of the elderly. They offer assistance in activities of daily living (ADLs) such as, dressing, bathing, toileting, and transferring. They also offer assistance in health maintenance, such as assisting in physician visits, medication refills, etc. By definition, the need for a long term care service, including a nursing home, is determined by functional limitations and assistance or supervision of ADLs regardless of the cause or age. Studies show that over 67 percent of individuals over the age of 65 will require long term care services during their life time (Harris-Kojetin 2013). The CDC reports that the use of nursing facilities and home care services is expected to increase from 15 million in 2000 to 27 million in 2050, mainly due to an increase in the aging population (Harris-Kojetin 2013).

According to the CDC, in 2004 there were approximately 15,700 nursing homes in the United States and 1.5 million residents residing at these homes (Harris-Kojetin 2013). Of the individuals utilizing long-term care facilities, the majority of them reside in nursing homes. AARP reports that 88 percent of individuals residing at nursing homes are over the age of 65, and 45 percent are over 85. Residents of nursing homes are considered to be the frailest of all Americans. Over half have dementia or are confined to a wheelchair or bed (Harrington, Carrillo, LaCaya 2006). All nursing homes provide residents with skilled nursing care and assistance with ADLs. Most provide mental and possibly dental health services, on or off site.

A survey of 1063 elderly individuals residing in nursing homes found that the greatest need among the elderly with teeth was routine oral hygiene (MacEntee 1987). However, many times the care necessary is not provided because an emphasis is not put on the importance of oral hygiene.

With so many elderly residing in nursing homes and other long-term care facilities, it is important to tailor a program that will address their significant needs. Studies show that residents of these facilities usually have a difficulty accessing care and that these facilities also have a limited capacity to provide the care. Often times these individuals are those at greatest risk for oral disease (Factors affecting oral health over lifespan 2014).

### Current Status of Oral Care in Nursing Homes

Currently, federal law requires that nursing homes provide residents with routine and emergency dental care. A nursing home reform law enacted by Omnibus Budget Reconciliation Act (OBRA) of 1987 requires dental care is provided to residents. They require facilities to assist residents in making appointments, promptly refer residents to a dentist if a dental prosthesis breaks, and assist in ADLs if necessary. Although this is required by law, facilities are having difficulty providing quality dental care to their residents. Certified nurse assistants (CNAs) are responsible for the routine duties of brushing and flossing at the nursing home. However, studies (NIDCR 2014; Sjögren et al 2008; Nicol et al 2005; Wardh, Andersson, Sorensen 1997; Forsell et al 2011; Logan et al 1991) have shown that this often times is neglected and the residents go days without a proper tooth brushing. For example, one study (Coleman and Watson 2006) found that adherence to oral care standards, developed by a panel of dental and medical professionals, and was extremely low in nursing homes. Adherence ranged from zero percent to 16 percent. Standards were never met with respect to brushing for two minutes, flossing, rinsing with mouthwash, or wearing clean gloves during delivery of care. Most residents were resistant to oral care provided by the CNAs. Actual care that was provided included brushing teeth and rinsing with water 16% of the time. Although this represents only one nursing home, research shows that CNAs responsible for oral hygiene in the elderly residents do not always perform the tasks required and when they do, they are not to par with the required standards (Coleman and Watson 2006).

Nicol et al (2005), found that nurses and other health care providers have the potential to play an important role in oral care for dependent elderly individuals. They often times present with educational barriers, as their coursework does not incorporate oral health in the curriculum. An interest in providing the care, as well as education must be addressed in order to improve success of an oral health program. This paper specifically focused on an educational program geared towards nurses and nursing aids that provided care to institutionalized Scottish elderly (Nicol et al 2005). The results were measured by examining changes in the oral health of elderly residents and showed that elderly rarely complain of oral problems and only voiced their opinion if they were in severe pain. After providing educational programs to the nurses and auxiliary staff, there was a statistically significant increase in the number of oral hygiene procedures completed by staff to residents. This shows that by training the appropriate staff, there is a potential to increase oral health in nursing homes (Nicol et al 2005). Kayser-Jones et al (1996) developed a Brief Oral Health Status Examination (BOHSE) that can be used by non-dental professionals to assess the oral health status of nursing home residents. This measure has shown to be very effective, with significant accuracy if trained to use this tool. By using this tool, non-dental professionals more easily understand when to consult with a dentist or hygienist, and it will also aid in monitoring oral abnormalities (Kayser-Jones, Bird, and Redford 1996).

Often times, there is not necessarily a lack of knowledge on the importance of oral health, but a negative attitude towards oral health care. Wardh et al, (1997) found that there were differences in attitudes towards health care activities. Tooth brushing was often times considered to be the “most irksome nursing activity (Wardh, Andersson, Sorensen 1997), and that the lack of time per resident lead to a decrease in the emphasis of oral hygiene. Many residents were resistant and it may not be worth the time to provide the necessary care. Furthermore, if residents are able to provide their own oral care, nurses and auxiliary staff do not monitor the quality of the care. Forsell et al, (2011) also found that a major barrier among the nursing staff was that they felt that they would damage the existing teeth or hurt the residents in the process of providing oral care. Care nurses had negative attitudes towards oral hygiene and lack of knowledge on the topic. Nurses were unlikely to assist dentists and other dental professionals when dental care was being provided. These are all considerations to keep in mind when improving the oral health of the elderly residing in nursing homes (Wardh, Andersson, Sorensen 1997). Nursing staff is often times the most important and educated staff on the elderly residing at the facility and incorporating them into an intervention is essential.

Regrettably, there has even been an increase in nursing home acquired pneumonia cases, and many of these are related to existing oral bacteria. It has been estimated that more than $800 million annually could be saved by improving oral hygiene in this population (13). This is important because pneumonia is the number one cause of death in nursing homes. Research shows that those who have daily oral care provided by a nurse are three times less likely to die of pneumonia compared to those who do not receive this care.

### Dental Provider Shortage

The deteriorating oral health of the elderly is not only impacted by their life choices and access to care, but also strongly related to a shortage in skilled geriatric dental professionals. The geriatric population has a different set of needs and understanding this is necessary in providing appropriate care. Providers are often faced with barriers when providing oral health care to the elderly. One study found that the most common barrier to delivering oral care to this population was a lack of space to provide care and a lack of equipment. Other barriers included lack of sufficient reimbursement, and finally, a lack of proper training and experience to treat this population (Bots-VantSpijker et al 2014). Originally, dentists were required to be on site for a dental hygienist to provide prophylactic, preventative, and educational dental care; however, in certain states, including Pennsylvania, a public health dental hygiene practitioner (PHDHP) is able to provide this care without the supervision of a dentist. In order to improve the shortage of dental professionals, this level of dental hygienist can continue to provide care and refer patients with more significant needs to a dentist. In order to improve the cohesive and interdisciplinary nature of the nursing home, a dental hygienist and the CNAs could work together to improve oral hygiene (Coleman, Hein, and Gurenlian 2007). Since employing an on-staff dental hygienist is not always financially possible, educating the existing staff, including the certified nurse assistant is essential in promoting oral health in the elderly population residing in nursing homes.

# Project Proposal

## Purpose

The purpose of this project to improve oral hygiene and the related Quality of Life issues of residents in the Parkview Tower community. This will be done by first establishing baseline subjective data on residents’ daily activities regarding their oral hygiene and diet, along with their related quality of life scores. Next, certified nursing staff members will be trained to provide improved education, oral hygiene assistance, and appropriate monitoring of completion of oral hygiene regimens in the elderly population at Parkview Towers. Oral hygiene has an extremely strong link to systemic disease, overall well-being, and quality of life. It is important to emphasize this relationship and provide the materials and information to continue to improve oral health. By educating certified nurse assistants, they will provide residents with important information concerning oral hygiene, and assist in actually improving oral hygiene of these nursing home residents. This will be completed by not only providing necessary education, but also by improving the attitudes and perception towards oral hygiene in the elderly population.

## Specific Aims

Oral health is a leading health indicator that can be indicative of general health or well-being. Healthy People 2020 not only included oral health as a main Leading Health indicator, but also expanded on it from 2010 to 2020. Based on these reports and a need to increase screenings and accessible dental care to the elderly, the specific aims of this project include:

Increase awareness of the importance of oral hygiene and oral health in the elderly population residing in a nursing home or care facility, as well as establish their subjective opinion on their quality of life related to their oral health.

Educate certified nurse assistants to monitor and improve oral hygiene of the nursing home residents, by providing necessary information and improving attitudes and perceptions towards the importance of oral health.

## Research Approach

### Population description

Since studies have shown that elderly residing in senior housing often times have poor oral hygiene, a HUD-subsidized senior housing facility was chosen as the primary site of this project. HUD housing is available through the US Department of Housing and Urban Development (US Department of Housing and Urban Development). Parkview Towers Senior High-Rise was chosen and is a HUD-affiliated facility. The facility is for low-income elderly or mobility impaired individuals with an annual income of $35,000. This nursing home does not currently have an on-site dental professional to provide and monitor oral hygiene. The administrative staff will be approached about incorporation of this pilot study and the potential benefits of the program will be explained. Furthermore, the purpose of the study and the proposed methods will be explained and any questions regarding the program will be addressed.

The primary beneficiaries of this program will be elderly at Parkview Towers; however, the majority of the program will focus on the certified nurse assistants currently working at ParkviewTowers Senior High-Rise. These staff members will be essential in improving the oral care provided at this facility. Furthermore, the ultimate goal will be to help improve the attitudes of the staff, particularly certified nurse assistants so that they can help prioritize oral hygiene in the residents. All CNAs will be required to participate, as their duties require, and their participation will be key to the success of the program. The cooperation of the existing nursing staff will be essential because they are the link to achieving the trust of the residents. This staff works every day with the elderly, so this should increase trust of the elderly.

### Pre-program Evaluations

After receiving approval from the administration at Parkview Towers, the next phase of the study will be to establish the residents’ self-reported quality of life related to their oral health. During this phase, the CNAs will also be asked to take a baseline survey to determine the current interest and participation in resident oral care. Prior to program intervention, separate surveys will be given to the participating residents and the CNAs. The surveys administered to the CNAs prior to start of the program will include the Pre-Program Survey for CNAs and the Educational Pre-Test for CNAs. The Pre-Program Survey for CNAs will include questions to assess their baseline opinions on oral hygiene and their current involvement in oral health care with the elderly (Appendix A). The results from this survey will be documented and later compared to a Post-Program Survey for CNAs. An Educational Pre-Test for CNAs (Appendix B) will be administered at the start of the program and will assess current knowledge on the importance of oral hygiene, as well as the capability to recognize common oral pathologies in the elderly. This test will be re-administered at the end of the educational portion and progress will be monitored.

Pre-program evaluations for the elderly residents will include the Pre-Program Survey for Residents (Appendix C). It will contain questions pertaining to their subjective report of their current quality of life, as well as staffs current interest in their oral health. These questions will be adapted from the General Oral Health Assessment Index and modified accordingly (Atchison and Dolan 1990). These results will be documented and after completion of the program, will be compared to a Post-Program Survey for Residents given two weeks after the intervention and then after six months.

### Intervention

After administering the Educational Pre-Test, the certified nurse assistants will be educated on oral health theory and practice. They will also be trained clinically to help provide their residents with proper oral health care. The students of University of Pittsburgh, School of Dental Hygiene will conduct a short educational program to help teach the CNAs about pertinent information to improve oral hygiene. The dental hygiene students will be second year students who are experienced in their education and have an understanding of properly administering care and techniques to approach resistant individuals. The projects completed by the hygiene students will focus specifically on care delivered to the elderly and the obstacles that may arise with this population. The hygiene students will be accompanied by a mentor or instructor, and will be able to demonstrate the proper way to complete oral hygiene tasks. Four segments will be completed and will be completed every other week, until all four sessions are completed. By showing and then having the CNAs replicate this, a hands-on experience will help improve the care provided. CNAs will be able to ask questions and practice their techniques. CNAs will also be educated on the Brief Oral Health Status Examination (BOHSE) that can be used by non-dental professionals to assess the oral health status of nursing home residents (Appendix D). After educating the CNAs on oral hygiene and its systemic link, the importance of oral hygiene, proper way to remove and clean dental prosthesis, and when to seek professional dental care, handouts and other helpful material will be distributed.

 The ultimate goal of this project is to improve the oral health and quality of life in the elderly residing at Parkview Towers, by educating and involving CNAs in this care. CNAs will use the knowledge that they obtain during the educational segments to help better the care that they provide and their perceptions on the importance of oral health in this population.

### Post- program Evaluations

Evaluation of this program will be done in three different ways. Firstly, at the end of the series of four presentations, the hygiene students or their instructors will answer any questions. After completion of all four presentations, an Educational Post-Test for CNAs will be administered. This test will have the same questions as the Educational Pre-Test for CNAs and will be used to increase awareness of oral health care in the elderly, and show an improvement in the level of knowledge with respect to oral hygiene..

 Secondly, CNAs will complete the Post-Program Survey for CNAs at six month intervals to monitor and report their involvement in residents’ oral hygiene regimens. This will help monitor changes in their attitudes towards oral hygiene in the elderly population and will also help see any changes that have resulted due to implementation of this study. A Post-Program Survey for CNAs will be completed six months after implementation, and then also at twelve months after implementation.

Thirdly, residents will be given the Post-Program Survey for Residents at six-month intervals to demonstrate any changes in quality of care. Both the pre-program and the post-program surveys will have the same questions and will be helpful in tracking progress and implementation of the program. Furthermore, their original self-reported increase or decrease in the care that is provided and their overall quality of life will help monitor any changes on behalf of the CNAs. A total of two Post-Program Surveys will be completed by residents, resulting in a survey period of one year, i.e. a one-time Pre-Program Survey for Residents given prior to start of intervention, a Post-Program Survey for Residents given six months from start, and one last a Post-Program Survey for Residents given twelve months prior to start of program.

Additionally, the BOHSE will be completed during routine check-up appointments and will be kept in order to monitor any noted oral pathologies present in the residents. This form will be updated as needed and can be used as a resource to monitor any changes in previous pathologies.

### Data Analysis

Data will be analyzed by comparing pre- and post- intervention results from the following: 1)for Pre/Post-Program Survey for Residents, 2) for Educational Pre/Post-Test for CNAs, and 3) for Pre/Post-Program Survey for CNAs. The Educational Pre-Test will be administered in order to establish a baseline understanding of oral health, common pathologies, and actions that need to be taken if an emergency is noted. Each CNA will have to score at least an 80%, i.e. an 8/10 to pass the course. In the event that a CNA does not score an 80 percent, the course must be repeated and the Educational Post-Test for CNAs will be re-administered. This will be used to determine whether or not the CNA has the information necessary to promote good oral hygiene and assist if a resident requires assistance.

Next, data will be analyzed for the Pre/Post-Program Survey for CNAs. This survey uses interval data by asking CNAs to rate their current views and involvement in oral health care and therefore parametric tests should be conducted to test the hypothesis. Responses to each of the questions for each individual resident will be averaged according to value of each answer based on the Likert Scale (i.e. 1,2,3,4 or 5) and a total overall average per question will be determined. This calculation will be completed prior to start of the study, as well as at each six month period, up to twelve months. An increase in this average will show an increase in the care provided and this will help determine the areas of most concern. For example, if questions pertaining to assistance provided by staff results in a lower average than any pain or discomfort currently present, then this shows that maybe this area should be addressed more.

 Finally, data will be analyzed for the Pre/Post Program Survey for Residents. The overall goal of this pilot program is to improve the oral health and overall quality of life for Parkview Tower Residents. Therefore, this evaluation will be the primary determinant of success of the program. The Pre/Post-Program Survey for Residents also uses interval data, in the form of the Likert Scale to quantify quality of life and oral health assistance provided by CNAs. The Pre-Program Survey for Residents will provide a baseline of how they rate their oral hygiene and the care that is provided by the staff currently. By understanding the current quality of life with respect to oral health, it is possible to see if implementation of this program, with the cooperation of the CNAs can help improve this quality of life in the elderly residing at Parkview Towers. The responses will be averaged for each question for both the Pre and the Post-Program Survey, similar to the Pre/Post Program Survey for Residents and a total overall average per question will be noted. This average will help determine changes in interest and assistance provided by the CNAs themselves. An increase in the total average will correspond to an increase in assistance and an increase in involvement of CNAs, leading to an assumption that the program has been successful. Similar to the Pre/Post Survey for Residents, an average response for each question will be determined, not only to show areas of concern but also to show areas of most change.

As a part of their new educational training, CNAs will document basic oral changes using the Brief Oral Health Status Examination (BOHSE). This information will help to monitor changes in the oral tissues. Specifically, oral pathologies that are related to poor oral hygiene can be monitored and eventually improved based on the implementation of this program. This information will be kept in the resident’s chart and noted every six months. This data will be analyzed to see if any changes occur and will be done by noting before and after results.

### Proposed Funding

Funding required for this pilot study will be very minimal initially. A PowerPoint presentation given by dental hygiene students will explain the best technique to brush and floss, and the importance of removing and cleaning dental prosthesis. A large model of the mouth and an equivalently sized toothbrush will be brought from the School of Dental Hygiene to demonstrate the techniques mentioned in the PowerPoint. These will be presented on a television or projector screen provided by the Parkview Tower facility. Certified nurse assistants will be educated on oral hygiene and the importance of it in the elderly population, therefore they should be able tell when to notify a dental professional. A dental professional, a public health dental hygiene practitioner or a dentist will not be on staff, however if funding increases as the program expands, it may be of a benefit to have a PHDHP on staff to complete oral hygiene tasks and screenings. Due to the preliminary nature of this project, at this time a large amount of funding will not be necessary to the start of implementation. However, as it progresses, a PHDHP could be hired, and funding of this could be provided from grants received under Section 330 of the Public Health Service Act. This is where funding for federally qualified health centers are obtained from and a similar grant could be obtained for this intervention due to the fact that the population can be considered underserved.

### Conclusion

This pilot program will hopefully aid in improving the oral health of an elderly population residing in a nursing home and eventually improve overall quality of life. Parkview Towers was chosen due the age of the population as well as the reported low socio-economic status of their residents. A multidisciplinary approach will help build a strong foundational collaboration that has the potential to improve quality of life in the elderly population. Due to the need for additional assistance in this population, the certified nurse assistant will be a key factor in providing this care. The opinions of the staff regarding their role(s) in helping to provide oral health care will need to be improved and directed to help improve the care that is given.

Furthermore, the ultimate goal is to improve the oral hygiene and quality of life of the elderly population at Parkview Tower. An improvement in quality of life will be determined by a self-reported value from the residents, as well as an increase in the number of oral health activities that are monitored and completed by CNAs. This will be accomplished by using the knowledge and willingness to help of the certified nurse assistants. They are integral to help monitor residents’ oral health, improve the quality of life, and help manage other common systemic concerns at nursing home facilities, such as pneumonia.

### Future research

It is important to note that this is a pilot program and that it may be necessary to improve certain areas of the program in the future. This program relies on the cooperation of the certified nurse assistants and their interest in promoting overall health in their residents. In the future, it would be beneficial to consider hiring a PHDHP to primarily focus on the oral health of the residents.

Due to the nature of the severe lack of care in nursing homes, expansion of this program should be considered on a larger scale to include multiple facilities in the future. Often times, regardless of where the facility is located, staff is uninterested in providing oral hygiene, therefore focusing on improving attitudes of the staff, can lead to a significant increase in care provided. Expanding this program to multiple locations in the Pittsburgh area, or even statewide could show an overall improvement in elderly oral hygiene. Such a large proportion of our current population will be aging in the next twenty years and considering the impact that poor oral health can have on any individual, especially those who are already vulnerable, is essential in a high quality of life.

* + - * 1. **: PRE/POST-PROGRAM SURVEY FOR CERTIFIED NURSE ASSISTANTS**

*Please mark the appropriate response on each scale.*

How would you rate your interest in resident oral health?

 **Very Poor Neutral Good Very**

 **Poor Good**

**1 2 3 4 5**

How often do you check to see the quality of oral care the elderly residents are providing for themselves?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you ask residents about their oral hygiene?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you observe a resident’s mouth for food buildup, oral hygiene quality, etc in one week?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you notice residents limiting contact with other individuals due to the status of their oral health, or missing teeth?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

**1 2 3 4 5**

How often do you ask if a resident needs help completing oral hygiene tasks like brushing, flossing or cleaning dentures?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you check for any white lesions in the mouth or on the lips?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you help residents brush and floss their teeth?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

If a resident wears a partial or full denture, do you make sure they remove it before they sleep?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

Do you ever ask residents if they are having difficulty chewing or eating because of pain in their mouth?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

* + - * 1. **: EDUCATIONAL PRE/POST-TEST FOR CERTIFIED NURSE ASSISTANTS**

*Please circle the most correct response.*

1. Is there a link between oral health and pneumonia?
	1. Yes
	2. No
2. Is there a link between oral health and diabetes and heart disease?
	1. Yes
	2. No
3. What should you do if a resident reports pain or you notice swelling?
	1. Call the on call dentist immediately
	2. Let the swelling lessen with a hot or cold pack and then act
	3. Do nothing
4. What are the most common areas to check for white or red pathologies/lesions?
	1. Roof of the mouth
	2. Under the Tongue
	3. Side of the Tongue
	4. Inner cheek
	5. All of the above
5. Can medications the elderly take affect their oral health and possible cause dry mouth?
	1. Yes
	2. No
6. Elderly individuals may be resistant to oral health instruction or help to provide oral health care.
	1. True
	2. False
7. What causes the redness present around the gum line?



* 1. Gingivitis- swelling and irritation of gums due to plaque accumulation
	2. red staining from food
	3. brushing too hard
	4. dry mouth
1. What is the can cause of the following pathology (thrush)?



a. poor oral hygiene, leaving dentures in overnight

b. a food allergy

c. cheek biting

1. What should you do if this type of lesion is noted in the mouth?



* 1. nothing, it will go away on its own
	2. Call the on call dentist immediately, this could be a cancerous lesion and should be addressed immediately
	3. Call the 9-1-1
		+ - 1. **: PRE/POST SURVEY GIVEN TO PARKVIEW RESIDENTS**Source: Atchison & Dolan 1990

*Please mark the appropriate response on each scale.*

How would you rate your overall quality of life?

 **Very Poor Poor Neutral Good Very Good**

 **Poor Good**

**1 2 3 4 5**

How often do you limit the kind or amount of food you eat because of problems with your teeth or dentures?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

How often does staff at Parkview Towers ask you about your oral hygiene?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often are your teeth sensitive to hot, cold or sweets?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

How often do you limit contact with other people because of the condition of your teeth or dentures?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

How often does the staff at Parkview Towers ask you if you need help completing oral hygiene tasks like brushing, flossing or cleaning dentures?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you remember to remove your dentures before bed?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you remember to brush your teeth or clean your dentures after you eat or at least twice a day?

 **Never Sometimes Neutral Often Very Often**

**1 2 3 4 5**

How often do you feel like you neglect your teeth?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

 **Never Sometimes Neutral Often Very Often**

Do you ever have difficulty chewing or speaking?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

 **Never Sometimes Neutral Often Very Often**

Do you ever have difficulty sleeping due to pain from your mouth or teeth?

**Very Often Often Neutral Sometimes Never**

**1 2 3 4 5**

**1 2 3 4 5**

Do you think that the Parkview staff could help improve your oral hygiene?

 **Definitely No Possibly No Maybe Possibly Yes Definitely Yes**

**1 2 3 4 5**

* + - * 1. **: BRIEF ORAL HEALTH STATUS EXAMINATION (BOHSE)**Source: Kayser-Jones, Bird, & Redford 1996



bibliography

A State of Decay: The Oral Health of Older Americans. Oral Health America. 1-12. 2003

Adachi M, Ishihara K, Abe S, Okuda K, Ishikawa T. Effect of professional oral health care on the elderly living in nursing homes. (2002) Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology, 94(2):191-195.

Atchison, K. A., & Dolan, T. A. (1990). Development of the geriatric oral health assessment index. *Journal of Dental Education*, *54*(11), 680-687.

Bots-VantSpijker PC, Vanobbergen JNO, Schols JMGA, Schaub RMH, Bots CP, de Baat C. Barriers of delivering oral health care to older people experienced by dentists: a systematic literature review (2014). Community Dent Oral Epidemiol; 42:113–121. 2013 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd

Chen, C. C.-H. , Schilling, L. S. and Lyder, C. H. (2001), A concept analysis of malnutrition in the elderly. Journal of Advanced Nursing, 36: 131–142. doi: 10.1046/j.1365-2648.2001.01950.x

Coleman, P., Hein, C., & Gurenlian, J.R.(2007) The promise of transdisciplinary nurse dental hygienist collaboration in achieving health-related quality of life for elderly nursing home residents. Grand Rounds Oral-Systemic Medicine, 3:40-49.

Coleman. P and Watson, NM. Oral care provided by certified nursing assistants in nursing homes. J of American geriatrics society. 54: 138-143. 2006.

De Groot L., Sette S., Zajkas G., Carbajal A., Amorim J.A. (1991) Nutritional status: anthropometry. Euronut SENECA investigator. European Journal of Clinical Nutrition 45 (Suppl. 3): *31*–*42*.

Factors affecting oral health over lifespan. National Institute of Dental and Craniofacial Research. 2014. Available from: http://www.nidcr.nih.gov/DataStatistics/SurgeonGeneral/sgr/chap10.htm

Forsell M, Sjogren P, Kullberg E, Johansson O, Wedel P, Herbst B, Hoogstraate J.(2011). Attitudes and perception towards oral hygiene tasks among geriatric nursing home staff. Int J Dent Hyg. 9:199-203.

Harrington, C., Carrillo, H., LaCava, C.. Nursing Facilities, Staffing, Residents and Facility Deficiencies, 1999 Through 2005. UCSF 2006

Harris-Kojetin L, Sengupta M, Park-Lee E, Valverde R. (2013) Long-term care services in the United States: 2013 overview. National health care statistics reports; no 1. Hyattsville, MD: National Center for Health Statistics.

Kayser-Jones J, W Bird, M. Redford. Strategies for conducting dental examinations among cognitively impaired nursing home residents (1996). Special Care Dentistry. 16: 46–52

Logan, H. L., Ettinger, R., McLeran, H. and Casko, R. (1991), Common misconceptions about oral health in the older adult: nursing practices. Special Care in Dentistry, 11: 243–247. doi: 10.1111/j.1754-4505.1991.tb01488.x

MacEntee M, R Weiss, N Waxler-Morrison, B. Morrison. Factors influencing oral health in long-term care facilities (1987). Comm Dent Oral Epidemiol, 15:314–316

National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers: At a Glance 2011. Atlanta, GA: 2011.

Nicol, R., Petrina Sweeney, M., McHugh, S. and Bagg, J. (2005), Effectiveness of health care worker training on the oral health of elderly residents of nursing homes. Community Dentistry and Oral Epidemiology, 33: 115–124. doi: 10.1111/j.1600-0528.2004.00212.x

Ortman, Jennifer M., Victoria A. Velkoff, and Howard Hogan (2014). An Aging Nation: The Older Population in the United States, Current Population Reports, pp25-1140. U.S. Census Bureau, Washington, DC.

Petersen, PE. Kandelman D, Arpin S, Ogawa H (2010). Global oral health for older people- Call of public health action. Community dental health. 27 (supplement 2):257-268.

Sjögren, P., Nilsson, E., Forsell, M., Johansson, O. and Hoogstraate, J. (2008), A Systematic Review of the Preventive Effect of Oral Hygiene on Pneumonia and Respiratory Tract Infection in Elderly People in Hospitals and Nursing Homes: Effect Estimates and Methodological Quality of Randomized Controlled Trials. Journal of the American Geriatrics Society, 56: 2124–2130. doi: 10.1111/j.1532-5415.2008.01926.x

Susan O. Griffin, Judith A. Jones, Diane Brunson, Paul M. Griffin, and William D. Bailey.  Burden of Oral Disease Among Older Adults and Implications for Public Health Priorities.(2012) American Journal of Public Health: 102(3): 411-418

Taylor WD (2014). Depression in the Elderly. N Engl J Med. 371:1228-1236.

Vincent, GK and Velkoff ,VA.(2010) The next four decades: The older population in the United States- 2010 to 2050. U.S. Department of Commerce. U.S. Census Bureau.

U.S. Department of Housing and Urban Development. [www.Hud.gov](http://www.Hud.gov)

Vargas CM, Kramarow EA, Yellowitz JA (2001). The Oral Health of Older Americans. Aging Trends; No.3. Hyattsville, Maryland: National Center for Health Statistics.

Wårdh, I., Andersson, L. and Sörensen, S. (1997), Staff attitudes to oral health care. A comparative study of registered nurses, nursing assistants and home care aides. Gerodontology, 14: 28–32. doi: 10.1111/j.1741-2358.1997.00028.x