ABSTRACT

Title: Oral Care and Dementia: The Nursing Aide Role

Therese A. Zens-Holtgrewe, Master of Science, 2011

Thesis Directed by: Jacquelyn Fried, RDH, MS
Associate Professor
University of Maryland Dental School, Division of Dental Hygiene

Despite the nursing profession's charge to deliver basic oral hygiene services to residents of long term care (LTC) facilities, it appears that nursing aides are not performing acceptable oral care for their patients. Investigations addressing the motivation of nursing home staff have found that the main reasons nursing aides are not providing adequate oral hygiene care include lack of time, insufficient knowledge, lack of staff, inconsistent regulations and protocols, and uncooperative patients. The current study investigates the knowledge of and attitudes toward oral care and managing resistive behaviors reported by nursing aides employed at a LTC facility devoted to the care of residents with dementia in rural Maryland. The study design included volunteer subjects, an educational intervention and pre- and post-test measures generated from a self-administered questionnaire. Analyses utilized t-tests and ANOVA. The results of data analysis showed a significant improvement ($p \leq .05$) in oral care knowledge, a statistically significant improvement ($p \leq .05$) in attitude toward oral care, and a statistically significant improvement ($p \leq .05$) in attitude toward managing resistance to oral care. These results indicate that an oral care intervention can improve the oral care knowledge, attitudes toward oral care and toward managing dementia patients who display resistance to oral hygiene services provided by nursing aides at a LTC facility in Maryland. Given the relationship between oral and systemic health, the nursing staff's role in providing comprehensive dental hygiene care to the residents of long term care facilities is critical.

Oral Care and Dementia: the Nursing Aide Role

By

Therese A. Holtgrewe, R.D.H, M.S.

Thesis submitted to the Faculty of the Graduate School

of the University of Maryland, Baltimore in partial fulfillment

of the requirements for the degree of

Master of Science

2011

Dedication

To my family, Jim, Paige, and Hannah -- thank you for your support, patience, and love throughout this process and for allowing me the time I need to accomplish my goals.

To Dr. Phillip and Barbara Nickell and Ms. Jane Kullhem, RDH whose encouragement started me on this journey.

To Corrine Hauck—my number one cheerleader and best friend.

To my parents Donovan and Caecilia Zens, who taught me that through hard work, dedication, and passion, anything is possible.

Acknowledgements

Without the skill and guidance of Jacquelyn Fried, RDH, MS, her unwavering belief in my abilities and her willingness to step in and give her all to the University of Maryland, the Dental Hygiene Program, and her students, the completion of this project would have been impossible. Words cannot express my gratitude.

I wish to acknowledge the considerable statistical contributions of Dr. Nezhat Olia, for this effort. Her exuberance for teaching, expertise in the thesis process, and perseverance at critical junctures helped to keep me focused and motivated.

To Katie Battani, RDH, MS for advice, encouragement and stepping into a difficult position and rising to the challenge. Thank you for helping to demystify the thesis process.

To Amanda Mosby and The Copper Ridge Institute through Johns Hopkins University for accommodating my needs and facilitating the collection of data.

Table of Contents

LIST OF TABLES Page

LIST OF FIGURES Page

CHAPTER I

INTRODUCTION

In 1960, at the International Council of Nursing in Geneva, Switzerland, nursing innovator Virginia Henderson (Henderson, 1997) surmised that the overall standard of nursing care could be judged by the state of the patient's mouth. Recent studies support Ms. Henderson's statement by showing a link between oral and systemic health (Yoshida et al, 2001; Watando et al, 2004; Azarpazhooh and Leake, 2006). Despite the formal and continuous education nursing personnel receive on the topic, basic oral care is not being performed at an acceptable level in most long-term-care facilities (Adams & Preston, 2006; Bitetti et al., 2004; Henricksen et al, 2004; King & Kapadia, 2003; MacEnteeet et al., 1999). Investigations into the motivation of nursing home staff found that the main reasons nursing aides are not performing adequate oral hygiene for their patients include lack of time, insufficient knowledge, lack of staff, inconsistent regulations and protocols, and uncooperative patients (Chalmers, 2000) and (Bitetti et al., 2004). The caregivers also feel they are not rewarded for performing oral health care tasks (Charteris & Kinsella, 2001). When a patient displays resistive behaviors, an aide is less-likely to perform tasks that are unappealing or given a lower priority (Wardh, et al., 1997, Wardh & Sorensen, 2005). A nursing aide's length of experience may affect the attitude a nursing aide has towards providing oral care (Kada et al., 2009, Tay et al., 2004).

According to the U.S. Department of Health and Human Services Centers for Disease Control and Prevention (HHS, 2008), 1 in 34 Americans will spend an average of 1.5 years in an Assisted Living Center (ALC) or Nursing Home. Of the approximately 1.5million residents receiving care in these long-term-care (LTC) facilities (National Nursing Home Survey, 1999), 50-80% suffer from some form of dementia (Magaziner et al., 2000; Rovner et al., 2000). The National Institute of Neurological Disorders and Stroke (2008) describes dementia as a collective term for symptoms that affect the brain and are caused by various disorders or injuries. The most common form of dementia is Alzheimer's disease -- occurring in 50 percent of all dementia cases. The deficit in oral health care often affects the most vulnerable patients—including those suffering from the various forms of dementia.

Reasons behind this deficit in care are expressed in the perceived frustrations geriatric aides experience in performing tasks on patients who appear to be unwilling to receive basic oral care. In addition, because of the impaired communication skills associated with dementia, most patients are unable to express dental pain in a manner caregivers can understand. A patient's disinterest in food, "pulling" at the face or mouth, and aggression towards caregivers can be misunderstood as behavioral issues when the root of the problem literally may be an infected tooth root and a reaction to dental pain (Lin et al, 1999, Chalmers et al, 1996, and Lapeer, 1998).

Purpose of the study

The purpose of this study is to assess the knowledge of and attitudes towards oral care for residents with dementia at a LTC facility as provided by nursing aide staff and to compare that assessment with knowledge and attitudes toward oral care following an oral

hygiene educational intervention.

Statement of the problem

The oral care residents receive in Assisted Living Centers and Nursing Homes often is nonexistent and when present, is insufficient (Adams, 1996, Bitetti et al., 2004, King et al., 2003, MacEntee et al., 1999, Wardh et al., 2002). Coleman (2006) observed that the quality and quantity of care given to nursing home residents is not comparable to the care that is reported by the caregivers. Evidence-based oral care practices are almost non-existent in LTC facilities. The continued use of substandard oral care devices such as the toothette swab despite studies showing its ineffectiveness (Pearson & Hutton, 2002) supports this contention. Patient resistance to care is identified as a main factor influencing the substandard delivery of oral health care services and dementia patients often exhibit resistance to care behaviors. In order to promote the use of standard and effective devices, the caregiver must first value that oral care is a necessity for patient well-being. Subsequently, this valuing will translate into demonstrable behaviors such as attempts to deliver optimal oral hygiene services to every patient—even those who resist the care. Introducing strategies that help caregivers value the delivery of oral health care services and that help them to identify and manage resistant behaviors may lead to a decrease in oral care neglect in the LTC setting.

Significance of the problem

Over nine-million Americans will need long term care in 2009 with that figure rising to over twelve-million by the year 2020. These numbers include a forty-percent chance that people over the age of 65 will enter a nursing home and that ten-percent will stay in that home for five years or longer (Medicare.gov, 2009). The most vulnerable of

this population, including those with dementia, present with problems and difficulties that their care-givers must overcome in order to have the ability to deliver quality standard care. When the dementia patient resists this basic care, the delivery of these services becomes even more challenging. The oral hygiene neglect that these patients will face after entering the long-term care facility may be minimized with the education of staff members in oral hygiene care delivery and in managing resistive behaviors.

Transdisciplinary collaboration between nursing aides and dental hygienists is a logical concept recently explored by Coleman and colleagues (2007). This collaboration examines how dental hygienists can help nurses' aides assist in delivering oral hygiene care to patients with dementia. Studies have identified dental hygienists as the optimal choice in educating both patients and staff on proper oral hygiene (Wardh, 1997; Chalmers, 2000; Gil-Montoya at al., 2006).

In 2003, Oral Health America released its national grading report emphasizing that the oral health of older Americans is in a "state of decay" (Oral Health America.org, 2009). Every state received failing or near failing grades in all categories of dental services for older adults, especially preventive and periodontal care. Less than 20 percent of Americans 75 and older have any form of private dental insurance. Medicare does not include dental services of any kind for adults in its list of covered procedures, leaving most elderly Americans without dental coverage (Medicare.gov, 2009).Compounding the problem, Maryland is one of six states that does not provide any adult Medicaid reimbursement. With most older Americans on fixed incomes, adding a dental expense can financially cripple a budget, preventing many from seeking dental care or postponing treatment until severe pain is involved.

The importance of improving oral care received by dementia patients from nursing aides is identified in a 2002 study by Yoneyama and colleagues. This study found that for institutionalized patients, 80% (44 of 55) died after contracting pneumonia within the facility. More importantly, in patients receiving oral care, the mortality due to pneumonia was about half that as compared to patients not receiving oral care. Adding to this significance is the authors' suggestion that oral care was more effective in decreasing mortality than were medical treatments for pneumonia (Yoneyama et al, 2002).

The study by Yoneyama also demonstrates the cost saving that could occur with increased attention to oral care for the institutionalized elderly. The average cost of pneumonia care in a hospital setting is around $1800 per day and the average length of stay is 5 days (Agency for Healthcare Research and Quality, 2006). If the projected annual number of 38,200 nursing home-acquired pneumonia infections (CDC, 2004) can be cut in half through improved oral care as suggested in the Yoneyama study, the result is a projected annual savings of over $140 million.

By increasing the oral care knowledge of nursing aides and improving their attitudes toward providing this care, we can enhance the oral care services the aides provide to patients with dementia. Studies by Reed et al. (2006), Mynors-Wallis and Davis (2004), and Isaksson et al. (2000) show that educational interventions strengthen the oral care knowledge of nursing aides. Paulsson et al. (2001) further found that the knowledge was retained at least three years. Nicol et al. (2005) found that increases in oral care knowledge also improved the quality of oral care services provided by the nursing aides. Through further research this increase in knowledge can be taken a step further and compared with attitudes toward managing resistive behaviors. Research is

lacking in this area and the current study aims to close this gap in the research.

Research question/Hypothesis/Objective:

RQ1: Will an oral care educational intervention have an impact on the oral care knowledge of nursing aides in a LTC facility?

HA1 An educational intervention will improve the immediate knowledge of oral care among nursing aides in a LTC facility.

H01 An educational intervention will not have any immediate impact on the knowledge of oral care among nursing aides in a LTC.

RQ2: Will an oral care educational intervention have an impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility?

HA2 An educational intervention will have a positive impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility.

H02 An educational intervention will have no impact on the attitudes toward providing oral care for residents with dementia among nursing aides in a LTC facility.

RQ 3: Will an oral care educational intervention have an impact on the attitudes of nursing aides towards managing resistant behaviors of residents with dementia in a LTC facility?

HA 3: An educational intervention will have a statistically significant impact on the attitudes of nursing aides toward managing resistant behaviors of residents with dementia in a LTC facility.

H0 3: An educational intervention will have no impact on the attitudes of nursing aides

toward managing resistant behaviors of residents with dementia in a LTC facility.

RQ 4: Is there a relationship between lengths of nursing aides' experience and their attitudes toward providing oral care for residents with dementia?

HA 4: There is a statistically significant relationship between the length of experience and the attitude of a nursing aide toward providing oral care for residents with dementia in a LTC facility.

H0 4: There is statistically no significant relationship between the length of experience and the attitude of nursing aides toward providing oral care for residents with dementia in a LTC facility.

Limitations of the study

The majority of the nursing aides at Copper Ridge are female and therefore, male participation was limited. The sample size is also a limitation as participation was restricted to one sample at one facility. The study design is also a limitation. The pre-test/post-test design required an intact group and did not include a comparison group or control.

Definition of Terms

For the purpose of this study the following terms are defined as:

Alzheimer's Disease—most common form of dementia occurring in 50-60% of all diagnosed dementia cases (mayoclinic.com, 2009) characterized by delusions, memory impairment and one or more symptoms of aphasia (language disturbance), apraxia (impaired motor function), angosia (difficulty recognizing objects), or disturbances in executive function (planning, organizing) (APA, 1994).

Attitude – a positive or negative state of being involving feelings, beliefs and values of oral care as defined by the score obtained on a twelve-question test developed as part of a questionnaire for the current study. A low score (12-35) indicated low or negative attitude toward oral care, a medium score (36-39) indicated a moderate attitude toward oral care, and a high score (40-48) indicated high or positive attitude toward oral care.

Certified Nursing Assistant/Aide (CNA) -- Despite the title, a nursing assistant or aide's main role is not to assist nurses, but to assist residents. Although their work is often perceived as "unskilled," CNAs perform complex and important functions. They help residents with daily activities, measure their vital signs, watch for and report changes in their conditions, and provide companionship and emotional support (MBON, 2010).

Certified Nursing Assistant Training--The 1987 Nursing Home Reform Act mandates that CNA's receive a minimum of 75 hours of training. Federal regulations require that a training program must include 16 hours of clinical or "hands-on" training and the completion of 12 hours of in-service or continuing education each year (Klauber & Wright, 2001).

Dementia-- a progressive neurodegenerative disease with symptoms ranging from forgetfulness, personality changes, and depression, to severe cognitive impairment, social dysfunction, and behavioral issues (alz.org, 2007). The most common type of dementia is Alzheimer's Disease.

Geriatric Nursing Assistant/Aide (GNA)—A GNA performs the same tasks as a CNA, but in a geriatric setting. In the state of Maryland, a CNA must complete an

approved GNA course and pass the Geriatric Nursing Assistant Examination. Federal law mandates that the applicant must complete eight hours of the training in a comprehensive care setting (mbon.org, 2009).

Educational Intervention – A PowerPoint presentation developed for the current study containing information on oral health and including a video presentation centered on the oral care of residents with dementia for nursing aides in a long-term-care facility. The video also demonstrates methods to manage resistive behaviors.

Knowledge – an awareness or understanding of oral care gained through experience and education, -the level of which is defined by the score obtained on a twelve-question test developed as part of a questionnaire for the current study. A low score (0-6) indicated low oral care knowledge, a medium score (7-9) indicated a moderate oral care knowledge, and a high score (10-12) indicated high oral care knowledge.

Long Term Care (LTC)—Services provided to residents of a facility whose physical and/or mental restrictions limit their ability to perform basic activities of daily living for extended periods of time. Generally, the term of care extends beyond that which is economically feasible in a hospital environment and can range from a few months to several years.

Nursing Home— A place of residence for people who require constant nursing care and have significant deficiencies with activities of daily living. Residents include the elderly and younger adults with physical and/or cognitive disabilities. Residents may receive physical, occupational, and other rehabilitative therapies and regular monitoring of their physical, emotional, and cognitive status.

Resistance to oral care— The act of refusing or avoiding the care offered by a staff member including but not limited to actions such as a patient's disinterest in food, "pulling" at the face or mouth, and aggression towards care givers.

This chapter discusses the importance of improving the oral hygiene of dementia patients residing in long-term-care facilities. Several terms are operationally defined and research questions and hypotheses are included as part of Chapter I. The next chapter (Chapter II) reviews the literature related to this study. Chapter III describes the methods and materials used in the study, and Chapter IV discusses the results. A summary of the study follows in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

As the average life expectancy in the United States continues to rise, an increasing number of our aging population will enter nursing homes. The medical needs of the elderly will continue to grow and caring for the senior population will become more of a challenge. A study of oral health services comparing nursing home residents with independent residents found significant unmet treatment needs among users of long-term-care services, compared with independent older adults living in the same communities (Berg, 2000).

Although it is difficult to evaluate dementia patients following strict research protocol because of the cognitive impairment associated with the disease, several studies have noted high caries rates, poor oral hygiene, and a high percentage of these individuals with unmet dental needs (Adams 2006, Chalmers 2005, Gordon 1988, Jones et al. 1993). Patients with dementia depend heavily on caregivers to address daily oral care needs and providing this care can be most challenging when patients resist or refuse it. In a 2002 study of this fragile population, Wardh and colleagues found that nursing home residents suffer the worst oral health of any US population (Wardh, 2005).

Further compounding the problem, recent studies show a link between systemic

problems and the oral condition of the patient. Poor oral health is associated with compromised nutrition, pain, weight loss, diminished quality of life, and serious illnesses in old age such as lung diseases, cardio vascular disease, diabetes, and infections (Wardh, 2005)(De Visschere, 2009). Studies from 2001 by Yoshida and colleagues, and in 2003 and 2004 by El-Sohl and colleagues found colonies of dental plaque in the lungs of elderly pneumonia patients residing in nursing homes. In addition, Watando and colleagues (2004), Azarpazhooh and colleagues (2006), and Sarin and colleagues (2008) found that when the oral condition of the patient was improved by simple plaque removal (i.e. brushing) not only did the incidence and duration of pneumonia decrease, but the over-all health of the patients improved. Given the literature documenting the limited oral health care delivered to dementia patients in residential settings and their poor oral health, this population may be more at risk for systemic disease that derives from oral bacteria.

Morbidity associated with oral disease can be minimized with daily oral hygiene and regular dental care. Cost-savings attributed to decreased nursing home-acquired pneumonia alone through improved oral hygiene is estimated to be more than $800 million annually (Terpenning, 2002). In a survey of nursing home aides, Coleman (2006) found that the top three barriers to providing oral hygiene care to dementia patients were lack of time, lack of training on the importance of oral care, and resistance to care by the patient. While the time and training issues have been addressed in numerous studies (Thai 1997, Reed 2006, Chalmers 1996, Chung 2000), little dental hygiene research has been conducted that explores the various factors that influence a nursing aide's management of resistive behavior or refusal of oral care in institutionalized dementia patients.

Nursing Homes

According to the American Association of Retired Persons (AARP.com, 2008), 4.3 percent of the U.S. population age 65 and older (1.5 million residents) live in nursing homes. About 75 percent of this population requires help with performing daily living activities such as bathing, dressing, oral hygiene, eating, and using the toilet (Pandya, 2001). This means that most nursing home residents rely on nursing home staff for help in daily activities. Nursing aides are typically given the duties of the daily care of residents but they are limited in the oral care they can provide due to the lack of support given by supervisors, directors of nursing, and the nursing homes themselves.

Pyle (2005) surveyed the nursing educational directors (EDs) at 1018 nursing home facilities in Ohio. Seventy-three percent of EDs reported that residents of their facilities do not go outside the facility for dental care; in addition, it was found that 90% of the facilities do not have dental equipment on site. Pyle's findings imply that most of the facilities require dentists to bring in their own equipment, and/or that a high number of patients do not receive dental care beyond simple dental examinations; it therefore appears that many residents go without dental care. This oversight is antithetical to the values and knowledge of practice in nursing home facilities (American Health Care Association, 2009). Further, although the low 33.2% response rate of E.D's to this survey poses limitations to the data, it may also indicate that oral health is not valued in the institutions.

Dementia

Dementia is a progressive neurodegenerative disease with symptoms ranging from forgetfulness, personality changes, and depression to severe cognitive impairment,

social dysfunction, and behavioral issues. Memory loss by itself does not mean a person has dementia. People with dementia have serious problems with two or more brain functions, such as memory and language (ALZinfo.org, 2008).

Some forms of dementia are treatable or even reversible and are related to such varied conditions as drug or alcohol abuse, depression, pernicious anemia, hyper and hypothyroidism, nutritional deficiencies, brain tumors or trauma, and venereal diseases. Irreversible dementias are progressive and typically proceed in seven stages ranging from no impairment to very severe cognitive decline ultimately resulting in the loss of daily living capabilities such as oral communication, motion control, and responding to stimulus (ALZ.org, 2009).

Alzheimer's disease is the most common form of dementia occurring in 50-60% of all diagnosed dementia cases. Vascular disease and stroke follow Alzheimer's disease in dementia forms and occur in 20% of cases. Less common irreversible dementias include late stages of Parkinson's and Huntington's diseases, late stage AIDS, and brain tumors (MayoClinic.com, 2009).

Oral-Systemic Link

The impact of the oral disease process extends beyond the oral cavity and is believed to initiate or exacerbate systemic disease. Oral disease is now linked with preterm birth, diabetes, rheumatoid arthritis, cardio-vascular disease, and most recently a possible relationship with Alzheimer's disease has been noted. Riviere and colleagues (2002) found that oral bacteria may reach the brain via the trigeminal nerve as evidenced by the presence of oral Treponema in the brains of 88% of subjects with Alzheimer's compared with 22% of control subjects. Stein and colleagues (2007) investigated the

relationship between tooth loss, dementia, and neuropathology in a population of Catholic nuns. This "Nun Study" found an association between the presence of a low number of teeth and the prevalence and incidence of dementia.

Pneumonia is the second most common nosocomial (hospital acquired) infection in the United States (after those of the urinary tract) and is associated with substantial morbidity and mortality (cdc.gov, 2008). Current research suggests that oral bacteria can make their way into the lungs of pneumonia patients and that improving the oral hygiene of a patient helps to benefit the overall health of the patient. Azarpazhooh and Leake (2006) found evidence of an association between pneumonia and oral health. Strong evidence supports that improved oral hygiene and frequent professional oral health care reduce the progression and occurrence of respiratory diseases among high-risk (such as those with dementia) elderly adults living in nursing homes.

In a 2001 study by Yoshida et al., dental personnel trained nursing aides to perform oral hygiene techniques on pneumonia patients and the researchers found that the pneumonia decreased significantly in patients receiving oral care. This study suggests that oral care and the training of personnel may be useful in preventing pneumonia in institutionalized elderly. Landrum and Murray (2008) also included improved oral hygiene in their methods to decrease pneumonia rates in combat hospitals and found a significant decrease in the rate of nosocomial pneumonia when oral hygiene interventions were employed. Numerous studies show that oral hygiene and systemic health are closely linked. Therefore, as with other institutionalized elderly populations, there is the potential that dementia patients can improve their overall health with proper oral hygiene.

Dementia and Oral Care

The physical and cognitive impairments associated with dementia also have the potential of affecting the oral health of the patient. Later staged dementia patients experience a deficit in communication skills which may prevent a patient from conveying incidences of dental pain. A patient's disinterest in food, "pulling" at the face or mouth, and aggression towards care givers can be misunderstood as behavioral issues. This misunderstanding can result in the misdiagnosis of a severe dental problem.

A 2002 study by Cohen and Lipson identified a deficit in the ability of geriatricians to identify dental pain. The study included examinations by nine dentists and two geriatricians with additional information on dental statuses taken from the minimum data set (MDS) of the patients. Dental pain was under detected by the geriatricians in more than 50% of the cases. Furthermore, examinations by the nine dentists found the oral hygiene of several of the patients "deplorable"; examiners reiterated the help these fragile patients need in the daily living tasks of oral care. Misconceptions about oral conditions and the pain associated with those conditions further compound the problem. It has been reported that staff members mistakenly believe that gingivitis is always painful and that patients would report this pain if they had it (Mynors-Wallis, J, 2004); consequently, many conditions may go unnoticed until they are severe.

The deplorable oral hygiene of the severe dementia patient also was identified in a study in Australia (Chalmers et al, 1999). In this study, researchers found an inverse relationship between the severity of dementia and good oral care. All of the residents in this study who were classified as having severe dementia required assistance from staff with their oral hygiene care. A more recent study (Coleman, 2006) found that patients

who are capable of performing daily living tasks do a much better job of taking care of their own oral hygiene. Declining motor skills presenting in later stages of dementia limit the patient's ability to perform daily oral hygiene tasks and the more a patient relies on staff to perform oral hygiene, the worse the oral condition of the patient. These studies indicate a relationship between staff-administered oral care and insufficient oral hygiene of the dementia patient. A lack of staff accuracy in assessing the dental needs of the patient, the severity of the dementia, lack of proper training, and patient resistance to care all play a role in the deficient oral care received by dementia patients in institutional settings.

"Standardized" Oral Care in Nursing Homes

Federal regulations require that all long term care facilities that accept Medicare and Medicaid patients complete a comprehensive health assessment for each patient. This regulation includes an oral screening by a nurse (this is known as a Minimal Data Set or MDS). Nurses rarely identify oral problems via this screening (Thai, 1997). American (Stout et al, 2009; McConnell et al, 2007), and Danish (Beck et al, 2009) studies found that few nursing curricula include oral health care teaching by dental professionals and oral care for geriatric patients is given mere minutes of attention in those schools that offer geriatric courses. Evidence-based oral care practices are limited in long-term care facilities as evidenced by the continual use of substandard oral care devices. The toothette swab is commonly used despite studies showing its ineffectiveness (Pearson 2002).

A national standard of dental care for all LTC facilities does not exist in the United States. Standards of care are set by regulatory and licensing organizations. Currently, nursing homes are primarily regulated by three entities: the Joint Commission

for the Accreditation of Health Care Organizations (JCAHO), state departments for professional licensing, and certification as a provider by Medicare and Medicaid services. Because of limited resources and the costly maintenance of this accreditation, JCAHO accreditation is often not an option for nursing homes.

Maryland is currently home to 230 nursing homes, all of which participate with Medicare and/or Medicaid programs (Medicare.gov, 2009). Medicare and Medicaid certification programs are of value to nursing homes because nearly 60% of their revenue is generated from participation in these programs (Dummit, 2000). Medicare regulations, however, contain a blanket exclusion of all dental services (HHS.gov, 2008).

The Maryland state regulations mandate that nursing home facilities enlist an advisory dentist, licensed to practice in the State, who recommends oral hygiene policies and practices for the care of the patients and arrangements for emergency treatment. The dentist also assists in the formulation of dental health policies and provides direction for in-service training to give the nursing staff an understanding of patients' dental problems. The COMAR (Code of Maryland Regulations) Nursing Home Regulations Index also contains wording stating that nursing personnel shall assist the patient in carrying out routine dental hygiene and if dental services are not provided on the premises, there shall be a cooperative agreement with a dental service including transportation to the dentist's office (COMAR, 2009).

A new bill recently passed in the Maryland House of Delegates (HB 1302, 2010) authorizes a dental hygienist to practice dental hygiene under the general supervision of a dentist in long–term care facilities. This new provision has the potential to enable Maryland dental hygienists to significantly improve the access to care of countless

citizens in need of oral care in underserved populations.

Barriers to Standard Care

Coleman and Watson enlisted dental personnel to establish a standard of care for subjects in their 2006 study which described the actual daily oral care provided by certified nursing assistants (CNA's). The study was conducted in five New York nursing homes and included a direct observation of CNAs providing morning care to residents. The authors used a panel of 10 professionals to determine oral care standards. The panel of experts found the following standards appropriate: (1) wearing clean gloves during oral care; (2) assessing the residents for mouth problems; (3) brushing teeth with toothbrush/toothpaste (not swab); (4) brushing teeth at least two minutes; (5) brushing the tongue; (6) rinsing the mouth with water; (7) rinsing the mouth with mouth wash; and (8) flossing the teeth. The study used a resistiveness-to-care scale (Mahoney, 1999) to record resistive behaviors (e.g., grabbing, pushing, clenching mouth).

Observations of CNA morning care started when either the CNA greeted the patient, when supplies were obtained, or when curtains were opened. Oral care began when the CNA cued the patient that it was time to brush. Oral care ended when either brushing ended, the CNA prompted ("you're done") or the CNA put away supplies. Length of time spent tooth brushing was recorded and oral care was the only process timed.

Results revealed that the average time spent on morning care was 21:38 minutes and the average time spent on oral care was 1:12 minutes. Further, it was recorded that only 16% of residents received oral care. Eight residents had their teeth swabbed with a toothette (considered inappropriate by the panel). CNAs who brushed averaged 16

seconds. Residents who brushed averaged 39 seconds. When residents brushed their own teeth, CNAs always prompted the resident to stop brushing ("that's enough", "stop brushing now"). Clean gloves were never worn. No CNA used praise/encouragement to prompt the resident and no CNA smiled during the tasks. In contrast, CNAs report spending an average of four minutes brushing residents' teeth.

Gil-Montoya et al (2006) also developed an oral health protocol for institutionalized elderly patients. This protocol specified the staff, equipment, and products required to carry out daily oral care tasks. The required equipment for the nursing staff included a mechanical toothbrush, a chlorhexidine solution, fluoride toothpaste, a tongue depressor, an electric suction unit, petroleum jelly or lip balm, and protective wear (i.e. clean gloves). This study also found that the most frequently observed obstacle to proper oral care was that the caregivers did not consider oral health to be a priority among their daily responsibilities for their patients.

While dental personnel are found to be the ideal educators in oral hygiene instruction, most dental personnel are unfamiliar with the difficulties associated with caring for dementia patients and lack the skills needed to care for these residents (Chalmers, 2000). Even if the nursing home staff has the proper skills, tools, and desire to perform proper oral hygiene for their residents, a patient's resistance to the care can negate attempts to care for their oral needs.

When asked what factors hinder positive oral care, nursing home staff members report that the residents' uncooperativeness or resistance to oral hygiene services was the greatest barrier followed by a perceived lack of time and disinterested staff attitudes (Wardh et al, 1997, Thorne et al, 2001, Frenkel et al, 2002, Connell et al, 2002, Coleman,

2006). While the time and attitude matters are more easily addressed, the resistance to care issue is difficult for staff to manage without proper training.

Agitation and Resistance to Oral Hygiene Care

Lack of staff, time, regulations, protocols, knowledge, and uncooperative residents make oral care in nursing homes a low priority. While the staff, time, regulations, protocols, and knowledge deficits can be remedied by adjusting how nursing aides and the nursing homes are managed, addressing uncooperative patients is more difficult. Most residents (63%) were resistive to oral care approaches by the CNAs, as reported in the Coleman study. This percentage is consistent with other studies (Bourgeois et al., 1996, Bridges-Parlet, 1994). Currently there is a lack of research available on the resistance of oral hygiene care for the dementia patient.

Managing behavioral symptoms in dementia patients can be very complex. It can take many weeks or months of working with a patient before care-givers can really understand the mannerisms and are able to gain the ability to translate the patient's body language into the dementia patient's needs (Chalmers, 2000). When patients react to a situation in an agitated manner and do not possess the verbal skills to communicate why they are reacting this way, it is up to the care-giver to ascertain what could be causing the agitation and to find ways to manage the behavior.

Management of Resistance to Care

Agitation, aggression, and resistive actions are among the most distressing behavioral symptoms of dementia patients residing in nursing homes. Managing these behavioral symptoms is challenging to both family and professional caregivers. Both pharmacological and non-pharmacological approaches have been deemed effective in

managing resistance to care. While a pharmacological approach to the management of dementia-related agitation and resistance is common in many LTC facilities, this study will emphasize non-pharmacological methods of resistance management.

Caregiver Attitudes

Concerns about a lack of training and a lack of clear policy on oral health can affect a caregiver's role in a patient's oral health care. Frenkel et al (2002) found that an oral health care education program can significantly improve the oral health care knowledge, attitudes, and skills of nursing home caregivers. The caregivers, in turn, felt empowered to modify their routines and reduced their patients' dental plaque scores by 16%, reduced gingivitis levels by 20%, and obtained a 60% denture plaque score reduction. The results of this study are consistent with other studies (Isaksson et al, 2000; Matear, 1999; Nicol et al, 2005; Wardh, 1997) and show that knowledge and attitude changes are prerequisites to behavioral changes.

Staff attitudes towards their own personal oral hygiene can also affect the level of care the staff member provides to his/her patients. Preston et al (2000) found that improving the perception and attitudes of staff members' personal oral hygiene resulted in the improvement in the perception of the importance of oral care in the health of their patients. Arvidson-Bufano et al (1996) reported that an adequate training of nursing staff minimizes the morbidity associated with poor oral hygiene. Improved education and training in daily oral care can positively influence the attitudes of caregivers and increase the quality of oral care for dementia patients residing in LTC facilities.

This chapter reviews the literature related to this study. The next chapter (Chapter III) describes the methods and materials used in the study including a description of the

participants, the subject recruitment, the study design, development of the instrument, development of the intervention, an analysis of data collection methods, and the timeline used in the study.

Chapter III

METHODS AND MATERIALS

The purpose of this study is to assess the knowledge and attitudes of nursing aides towards providing oral care to residents with dementia at a nursing home facility and to compare that assessment with the knowledge and attitudes following an oral hygiene educational intervention that includes techniques in managing patient resistance. This chapter discusses the research design for this study, data collection methods, sample selection, and instrument development. Also included in this chapter is information regarding the reliability and validity of the instrument, and the procedures for protection of human subjects.

Statement of Hypotheses

RQ1: Will an oral care educational intervention have an immediate impact on the oral care knowledge of nursing aides in a LTC facility?

HA1: An educational intervention will improve the immediate knowledge of oral care immediately among nursing aides in a LTC facility.

H01: An educational intervention will not have any immediate impact on the knowledge of oral care among nursing aides in a LTC.

RQ2: Will an oral care educational intervention have an impact on the attitudes of

nursing aides toward providing oral care for residents with dementia in a LTC facility?

HA2: An educational intervention will have a positive impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility.

H02: An educational intervention will have no impact on the attitudes toward providing oral care for residents with dementia among nursing aides in a LTC facility.

RQ 3: Will an oral care educational intervention have an impact on the attitudes of nursing aides towards managing resistant behaviors of residents with dementia in a LTC facility?

HA 3: An educational intervention will have a statistically significant impact on the attitudes of nursing aides toward managing resistant behaviors of residents with dementia in a LTC facility.

H0 3: An educational intervention will have no impact on the attitudes of nursing aides toward managing resistant behaviors of residents with dementia in a LTC facility.

RQ 4: Is there a relationship between length of nursing aides' experience and their attitude toward providing oral care for residents with dementia?

HA 4: There is a statistically significant relationship between the length of experience and the attitude of nursing aides toward providing oral care for residents with dementia in a LTC facility.

H0 4: There is statistically no significant relationship between the length of experience and the attitude of nursing aides toward providing oral care for residents with dementia in a LTC facility.

Description of Facility and Study Participants

Copper Ridge Institute is a 120 bed long-term-care facility located in rural Maryland dedicated to the care of persons with Alzheimer's disease and other forms of dementia. This facility was selected for data collection because of its research-oriented nature and the types of patients that reside at there. The average age of the residents is 77 years and the average length of stay at the facility is 2.5 years. The residents are grouped by degree or stage of dementia—early, mid, and late. The residents see a dentist for a dental assessment once per year or as problems arise. A few residents are seen by private dentists outside of the facility.

The nursing staff at Copper Ridge consists of approximately 35 nursing aides, 4 LPNs, 4 RNs, a Director of Nursing, a Vice President of Clinical Services, an Educational Consultant, one Occupational Therapist, one Occupational Therapy Assistant, and one Physical Therapist. The nursing aides are scheduled in 12-hour shifts—day and night. Oral care is assigned to nursing aides who are required to perform the tasks during the morning of the day shift and before bed-time on the evening shift. The oral hygiene tools available for use by the nursing aides consist of a manual toothbrush and toothpaste.

Sample Selection and Recruitment

A convenience sample of subjects from a population of nursing aides employed at a rural nursing home dedicated to the care of resident with dementia volunteered to participate in the study and comprised the study sample. The administrative staff was contacted regarding the possibility of using the facility for the study data collection. Subsequently, the administrative staff aided in the recruitment of the subjects by

facilitating the distribution of recruitment letters. The study proposal was approved by the University of Maryland Institutional Review Board at the Human Rights and Protection Office (See Appendix 1) as well as the Research Board and the Ethics Committee at the Copper Ridge nursing facility (See Appendix 2).

The day prior to the data collection, a recruitment letter (See Appendix 3) was distributed and placed in all nursing aide mailboxes located in the facility. The recruitment letter described the study and explained the expected involvement of the participants. Participation in the study was voluntary. The participants were asked to read and sign the Consent Form (See Appendix 4) if they agreed to participate in the study and signing this form indicated agreement to participate in the study.

Both time and financial constraints limited the number of participants in this research to the population of nursing aides at Copper Ridge. Four separate sessions were offered to the population in order to recruit subjects from various shifts. Findings represented participants at one long-term-care facility in Maryland; therefore, generalization to other geographic areas was limited.

Description of Procedures

The participants entered the room on the day of the training and were first asked to read and sign the Informed Consent form (See Appendix 4). These forms were collected by the researcher and placed in an envelope. Each participant was then given a numbered packet containing two sets of numbered and identically worded questionnaires (See Appendix 5)—one blue (the pre-test) and one pink (the post-test), and a card that held the same number as the questionnaires and a request to keep the card to be used as a "pass" in case any subject was asked to return at a later date for follow-up questions. The

card asked that the participant not give the card away or swap with anyone so that the number could be used to compare with a follow-up retention questionnaire with the pre- and post- data.

The participants were asked to remove the blue questionnaire from the packet and complete all questions. They were requested not to share or help each other with answers. The time taken to complete this task varied from 10 minutes to 20 minutes among the individuals. Upon completion of the blue questionnaire, the participants handed the questionnaire to the researcher and were allowed to obtain lunch items provided by the researcher. The participants were then asked to watch a 25-minute PowerPoint video (intervention) on oral hygiene education and performing oral care for residents with dementia. Following the video, participants were asked to remove the pink questionnaire from the packet and complete the post-intervention questionnaire. The pink questionnaires were collected by the researcher and placed back into the numbered packets along with the blue questionnaires. The participants then returned to work.

An attempt was made to obtain delayed response data one month following the collection of the original data. Only ten respondents (10%) returned for this collection so this section of the study was eliminated.

Research Design

This quasi-experimental study employs a pretest-posttest design that quantitatively compares the oral hygiene knowledge and attitudes of certified nursing aides prior to and following an educational intervention. A questionnaire comprised of primarily closed-ended questions was administered to the sample. The data collected from the individual questionnaires were aggregated to describe characteristics of nursing

aides who perform oral care practices in a long-term-care facility in rural Maryland. A letter of recruitment introducing the researcher, identifying the voluntary nature of the research, describing the research procedure and what was expected of the participants, and identifying the protection of privacy was placed in the mailbox of all nursing aide personnel one day prior to the intended "training session".

Instrument Development

In order to test the hypotheses, a questionnaire was developed. The study questionnaire (See Appendix 5) consisted of fifty-one questions and was developed in a similar format to Wardh's (2005) Dental Coping Belief's Scale. Wardh's scale is determined to be a suitable tool for use in studies where the aim is to measure how different nursing staff groups give priority to and allocate responsibility for oral health care, even where study samples are small. Previous studies have not included tools that combine educational questions, attitude questions, and questions related to managing patient resistance. For the constraints of this study, the test-retest reliability of this tool is high in that the same questionnaire is used at both points of data collection and minimal time elapsed between these two measurements. In order to improve the content validity of the questionnaire, a panel of ten content experts evaluated the tool and gave modification suggestions. This panel included the Copper Ridge Director of Nursing (DON), the staff Dentist, various nursing and administrative staff members, members of the ethics and research boards of the facility, and two registered dental hygienists. Modifications of both the tool and intervention were made following panel discussions. The panel suggested eliminating several questions to decrease the length of the questionnaire and items that were confusing or irrelevant. Several questions were reworded for clarity based on

suggestions from the panel. The DON also suggested offering a lunch to the prospective participants to increase participation and this invitation was included in the recruitment letter.

A second group was then asked to evaluate the questionnaire and provide feedback suggestions to further improve the reliability and validity of the tool. This group was a class of ten nursing aide students from a local nursing aide program. Based on the feedback received from this group, five additional questions were eliminated to further shorten the questionnaire and several more items were reworded to improve the clarity of the questions.

Eight demographic questions are included at the beginning of the questionnaire in order to introduce the participants to the questionnaire, ease the respondent's entry into the study, and for the researcher to gain a better understanding of the population. The background information requested (items 1-8) responses on age, gender, highest level of education, the amount of time spent in the nursing aide field, number of hours of oral hygiene training, number of hours of patient resistance training, length of employment at the facility, and ethnicity. Nine questions (9-16) relate to the participants' oral care practices. Question number seventeen asks the participant to rank daily tasks in order of their difficulty and in question eighteen the respondents report the number of residents they assist with oral care each day. Question nineteen asks the participant to rank six common barriers to oral care according to their frequency. Questions 20-27 relate to the frequency of performing specific oral hygiene tasks with residents.

Key concepts of this research relate to oral care knowledge of nursing aides and the retention of that knowledge, attitudes of nursing aides toward providing oral care for

residents with dementia, attitudes towards resistance management, and the relationship between of years of experience in the nursing aide field and oral care knowledge.

To measure the concept "oral care knowledge of nursing aides", twelve multiple-choice questions (28-39) were developed. Possible answers were labeled A-D. Respondents were asked to circle the letter that corresponded to what they felt was the BEST response. Correct answers are given one point for a possible total of 12 points. For this section, a total index score (0 - 12) was calculated, with a higher score indicating a higher knowledge of oral care for residents with dementia. Scores of 10-12 (>83% correct) are considered high, scores of 7-9 (58-75% correct) are considered average, and scores of 0-6 (0-50% correct) are considered low. No participant scored below a 5 on any of the questionnaires. Scores from the pre- and post-questionnaires were evaluated using a paired *t*-test to determine differences.

Twelve items (40-51) employing a 4-point Likert scale (1-4) measured the respondent's "attitudes towards oral care delivery". The items were derived from factors that influence nurses aides' provision of oral care for nursing facility residents as identified in studies by Chalmers et al (1996) and Chalmers (2000). Responses to items 40 - 51 measured attitudes towards oral care delivery. The items were scored as follows: "Almost always agree" 4 points, "Often agree" 3 points, "Sometimes agree" 2 point, and "Seldom agree" 1 point. Responses to questions 44, 47, and 48 were worded in a way that required scoring in the reverse order. A total index score (12 - 48) was calculated, with a higher score indicating a more positive attitude. Scores ranged from 29 to 47. Three categories of positive attitude were established based upon a possible respondent's total point score from low (12-35), medium (36-39), and high (40-48). Scores from the pre-

and post-questionnaires were evaluated using a paired t-test to determine differences.

Responses to questions 42, 46, 49, 50, and 51 measured the construct "attitudes toward managing resistant residents". The items were scored as follows: "Almost always agree" 4 points, "Often agree" 3 points, "Sometimes agree" 2 point, and "Seldom agree" 1 point. Responses to questions 44, 47, and 48 were worded in a way that required scoring in the reverse order. A total index score (5 - 20) was calculated, with a higher score indicating a more positive attitude. Three categories of positive attitude were established based upon a possible respondent's total point score from low (5 - 9), medium (10 - 15), and high (16 - 20). Scores from the pre- and post-questionnaires were evaluated using a paired t-test to determine differences.

In order to measure the concept "oral care knowledge for residents with dementia between nursing aides whom have seven or more years experience and nursing aides whom have less than seven years experience" responses to question number one ("How long have you been a nursing aide") were analyzed for variance with the knowledge index score as stated above using a two-way ANOVA procedure.

Intervention

A PowerPoint slideshow educational presentation was developed for this study and included an instructional video developed by the Nursing Association of Ontario (RNAO, 2007). The twenty minute presentation consisted of slides describing the importance of oral care in LTC facilities, systemic conditions that relate to oral health, depicting health and non-health conditions of the oral cavity and what to look for during and oral examination. Items include signs of plaque, inflammation, tartar, decay, and tongue, lip, and abnormal oral conditions. Also included were instructions in denture care

and techniques that can be used to manage resistive behaviors.

The presentation ends with a video showing hands-on techniques for denture care demonstrating the performance of oral care strategies for dementia residents residing in LTC facilities. The video also includes demonstrations on managing resistive behaviors for three stages of dementia (early, mid, and late). The slideshow was critiqued by members of both the nursing and dental communities for content, accuracy, and comprehensiveness and modifications were made prior to the intervention.

Data Analysis

For this research, the unit of analysis was the individual nursing aide employed at a long-term-care facility devoted to treating individuals with dementia. Questionnaire responses were collected from the target population of individual nursing aides currently practicing in the state of Maryland and actively employed at a long-term-care facility devoted to individuals with dementia. The sampling frame used was a convenience sample of nursing aides employed at a rural nursing home in Maryland.

H 1: Nursing aides who are shown an oral care educational video (IV) will have improved knowledge of oral care (DV). When evaluating the knowledge scores, a total index score (0 - 12) was calculated with a higher score indicating a higher knowledge of oral care for residents with dementia. Scores of 10-12 (>83% correct) are considered high, scores of 7-9 (58-75% correct) are considered average, and scores of 5-6 (42-50% correct) are considered low. Scores from the pre- and post-questionnaires were evaluated using a paired t-test to determine differences.

H 2: Nursing aides who are shown an oral care educational video (IV) will have improved attitudes (DV) toward providing oral care to residents with dementia in a LTC

facility. Three categories of positive attitude were established based upon a possible respondent's total point score from low (29-35), medium (36-39), and high (40-47). Scores from the pre- and post-questionnaires were evaluated using a paired t-test to determine differences.

H 3: Nursing aides caring for dementia patients at a LTC facility who view a video demonstrating techniques to manage patient resistance techniques (IV) will present an improved attitude (DV) towards providing oral hygiene services to dementia patients at a LTC facility. Responses to questions 42, 46, 49, 50, and 51 measured attitudes toward managing resistant residents. The items were scored as follows: "Almost always agree" 4 points, "Often agree" 3 points, "Sometimes agree" 2 point, and "Seldom agree" 1 point. Responses to questions 44, 47, and 48 were worded in a way that required scoring in the reverse order. A total index score (5 - 20) was calculated, with a higher score indicating a more positive attitude. Three categories of positive attitude were established based upon a possible respondent's total point score from low (5 - 9), medium (10 - 15), and high 16 - 20). Scores from the pre- and post-questionnaires were evaluated using a paired t-test to determine differences.

H 4: Nursing aides with seven or more years of experience (DV) will have higher initial knowledge (IV) of oral care for residents with dementia than nursing aides with less than five years experience (DV). Responses to question number one ("How long have you been a nursing aide") were analyzed for variance with the knowledge index score as stated above using a two-way ANOVA procedure.

After receiving completed questionnaires, the data were coded, entered into a computer file, and checked for errors. Descriptive and inferential statistical analyses were

performed as described above. Frequency distributions were reported for all items in the survey. Each variable was checked to detect sufficient response variation in the data. If sufficient variability was found, *t*-tests were used to test significant differences. Significant relationships were tested using chi-square analysis or Pearson's *r*, depending on variability of responses. Correlation between variables was tested using two-way ANOVA. All data analyses were compiled with the assistance of a statistician. Excel, and SPSS programs were utilized for analysis. Results of this analysis will follow in Chapter IV.

Protection of Human Subjects

Approval for expedited review from the University of Maryland, Baltimore Institutional Review Board was completed prior to the start of the project. Participation in this research study was completely voluntary, and a completed returned survey was considered consent to participate in the study. There were no known risks or benefits to participation in this study. Cover letters attached to the survey instrument assured potential respondents that all responses would remain confidential and would be reported in group form only. Contact information to answer any questions that arose during this study, or to obtain any additional information about the research project was provided for respondents.

Summary

This chapter presented a discussion of the research design, sampling methods, the instrument development, the intervention, data collection methods, and statistical analyses used in this study. This research is a quasi-experimental study employing a pretest-posttest design that quantitatively compares the oral hygiene and resistance to

care management knowledge and attitudes of certified nursing aides to the knowledge following an educational intervention. A questionnaire was administered to nursing aides employed at a rural Maryland LTC facility devoted to the care of dementia patients, and the data were aggregated to describe characteristics of these nursing aides. Chapter IV will follow with a presentation of the results from this chapter. Chapter V will present a discussion of the results and suggestions for future research.

Chapter IV

Results and Statistical Analysis

The findings of this study are presented in this chapter. The following research questions and corresponding hypotheses were addressed. Statistical analyses for testing the null hypotheses were accomplished using Microsoft Excel and SPSS software and included the t-test and analysis of variance. Statistical significance was defined as $p \leq .05$ for each analysis.

Research Question 1

RQ1: Will an oral care educational intervention have an impact on the oral care knowledge of nursing aides in a LTC facility?

HA1 (Alternative Hypothesis 1): The educational intervention will improve the knowledge of oral care immediately among nursing aides in a LTC facility.

H01 (Null Hypothesis 1): An educational intervention will have no significant immediate influence on the knowledge of oral care among nursing aides in a LTC facility.

Research Question 2

RQ2: Will an oral care educational intervention have a positive impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility?

HA2 (Alternative Hypothesis 2): The educational intervention will have a positive impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility.

H02 (Null Hypothesis 2): The educational intervention will have no significant influence on the attitudes toward providing oral care for residents with dementia among nursing aides in a LTC facility.

Research Question 3

RQ 3: Will an oral care educational intervention have an impact on the attitudes of nursing aides towards managing resistant behaviors of residents with dementia in a LTC facility?

HA 3 (Alternative Hypothesis 3): The educational intervention will have a statistically significant impact on the attitudes of nursing aides toward managing resistant behaviors of residents with dementia in a LTC facility.

H0 3 (Null Hypothesis 3): The educational intervention will have no significant influence on the attitudes of nursing aides toward managing resistant behaviors of residents with dementia in a LTC facility.

Research Question 4

RQ 4: Is there a relationship between length of nursing aide experience and their attitude toward oral care for residents with dementia?

HA 4 (Alternative Hypothesis 4): There is a statistically significant relationship between the length of experience and the attitude of nursing aids toward oral care for residents with dementia in a LTC facility.

H04 (Null Hypothesis 4): There is no statistically significant relationship between the length of experience and the attitude of nursing aids toward oral care for residents with dementia in a LTC facility.

Demographic Characteristics of Sample

Copper Ridge employs 83 nursing aides. The response rate to the study was 39% (n = 32). Respondents answered all questionnaire items. Data are presented for each hypothesis in narrative form followed by a corresponding table. Due to the small number of responses in some categories, it was necessary to collapse the data for some survey questions into fewer categories before statistical analysis was attempted.

The subjects included 30 female and 2 male subjects. Ages ranged from 18-55 with four subjects aged 18-25, fifteen subjects aged 26-40, and thirteen subjects aged 41-55. The majority of the participants (23 or 72%) have been employed at Copper Ridge for three years or less. Thirteen subjects (41%) have been a nursing aide for less than seven years and nineteen (59%) have been a nursing aide for seven years or more.

Of the subject group, twenty-one (66%) identified themselves as black or African American. When asked about their educational background, eleven individuals (34%)

marked “High School Graduate/GED” as their highest level of education and twenty-one individuals (66%) marked “Some College/Associates Degree or Certificate”. Table 1 displays demographic characteristics of the population.

Variable	*n (total =32)*	*Percent*
Gender		
Male	2	6
Female	30	94
Age		
18 – 25	4	12
26 – 40	15	47
41 – 55	13	41
Time Spent in Profession		
0 –7 Years	13	41
7+ Years	19	59
Length of Employment at Facility		
0 – 3 Years	23	72
3+ Years	9	28
Highest Level of Education		
High School Graduate	11	34
Some College/Associates Degree/Certificate	21	66
Race/Ethnicity		
African American	21	66
Caucasian	7	22
Other	4	12

Table 1: Demographic Characteristics of Sample

The participants were asked to rank eight of their most common tasks in order of difficulty from 1 (least difficult) to 8 (most difficult). “Oral Care” ($\overline{X}$ = 5.8) was ranked as the most difficult task. Figure 1 displays the task difficulty scores.

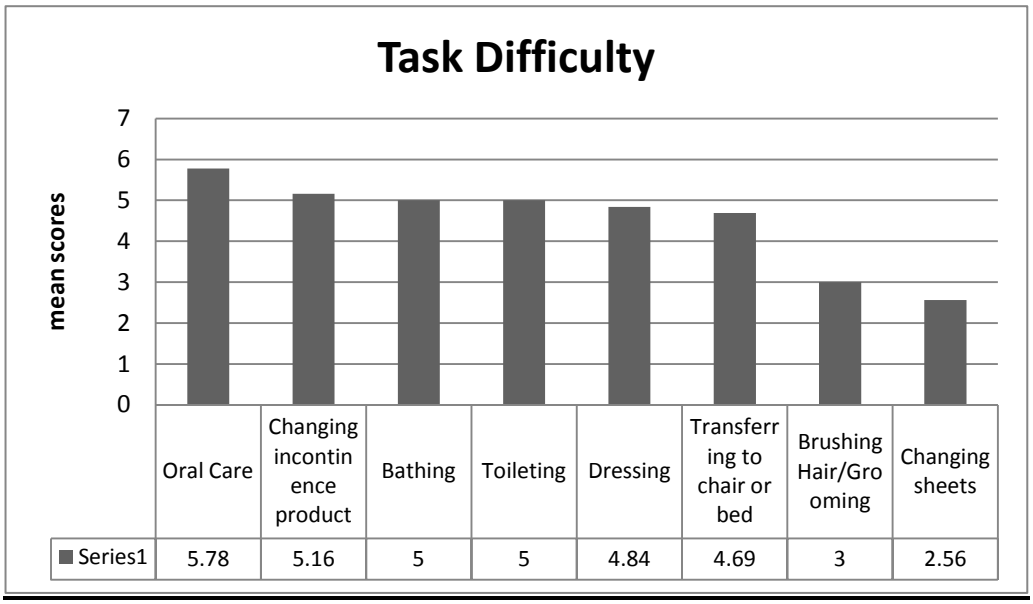

Figure 1: Rank Order Based on Task Difficulty

The participants were also asked to rank six common reasons why they did not perform oral care for a resident in order of their likelihood from 1 (most likely) to 6 (least likely). "Patient Resists Care" ($\bar{X}$ = 2.59) was ranked as the most likely reason why they do not perform oral care followed equally by "Not Enough Supplies" ($\bar{X}$ = 3.28) and "Fear of Being Bitten" ($\bar{X}$ = 3.28); then "Not Enough time" ($\bar{X}$ = 3.44), "Not Enough Training" ($\bar{X}$ = 3.63), and finally "Oral hygiene is not as important as other areas of care" ($\bar{X}$ = 4.44) as the least likely reason why they do not perform oral care. Figure 2 shows a graph of the results with rank order of the items from most likely to least likely reason why the participant did not perform oral care.

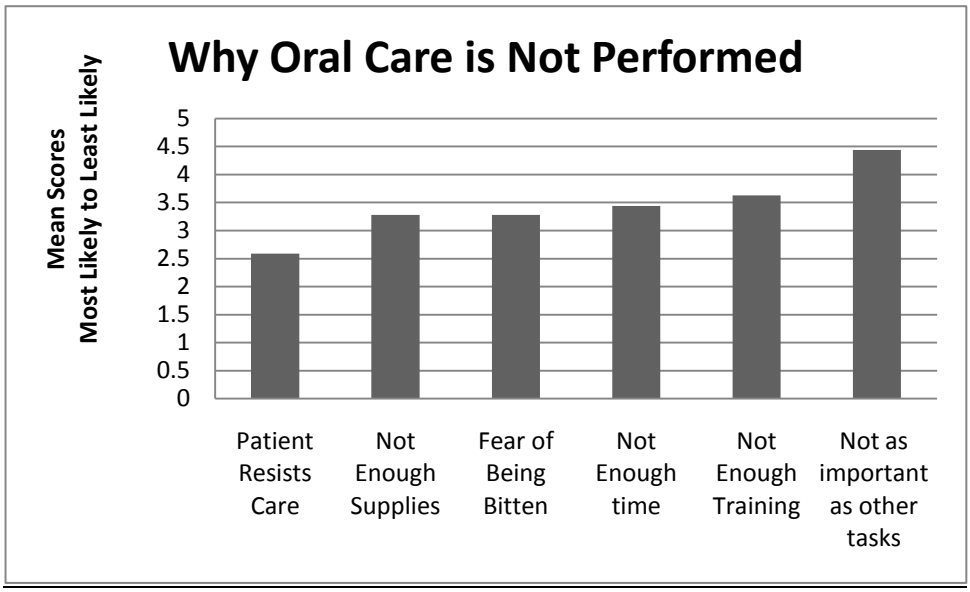

Figure 2. Reasons Why Oral Care is Not Performed

Research Question One

Research question one involves the impact of the educational intervention on the oral care knowledge of nursing aides in a LTC facility. To test the level of impact, a t-test was utilized, comparing the knowledge level of the nursing aides before and after the instructional treatment. The result (M = 2.31, SD = 1.62, n = 32) from the post-test mean knowledge score (M = 10.16) was significantly greater than the pre- intervention test (M = 7.84). The obtained t = 8.099 for one-tailed test with *t*-critical = 1.70 and α =.05 indicated a statistically significant improvement in the knowledge of the nursing aids at a 95% confidence level, strongly suggesting the rejection of the null hypothesis and acceptance of the alternative hypothesis. Table 2 presents the sample statistics. Table 3 presents the results of the *t*-test for knowledge scores. Figure 3 is a graph showing the results of the *t*-test.

Paired Samples Statistics						
		Mean	N	Std. Deviation	Std. Error Mean	T crit
Pair 1	Posttest	10.1563	32	1.34667	.23806	1.70
	Pretest	7.8438	32	1.56801	.27719	

Table 2: Pre-and Post-test Knowledge Statistics

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		*T obt*	Df	*P*
					Lower	Upper			
Pair 1	Posttest Pretest	2.31250	1.61520	.28553	1.73016	2.89484	8.099	31	.025

Table 3: Oral Care Knowledge Score Results

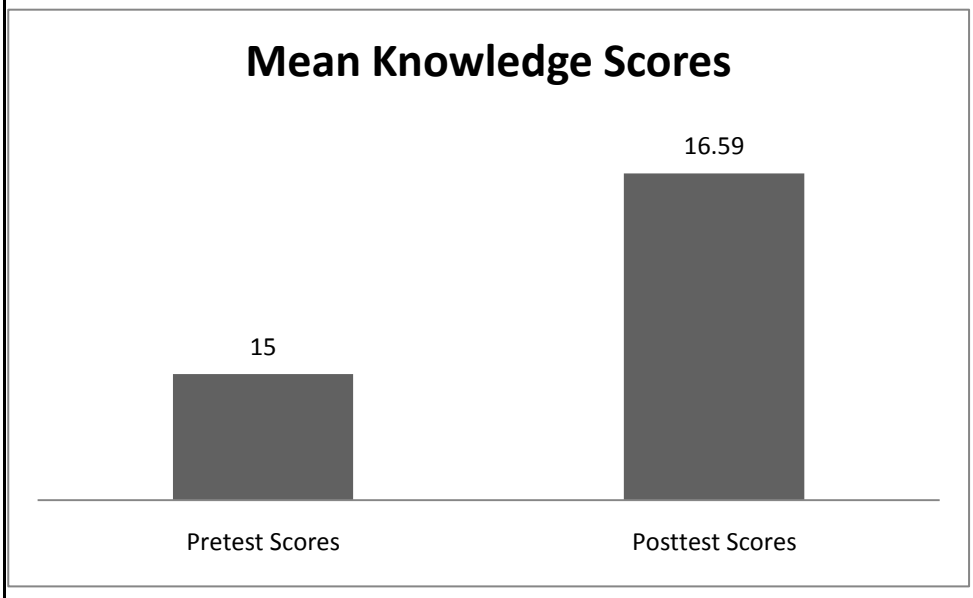

Figure 3. Mean Pretest and Posttest Knowledge Scores

Research Question Two

Research question two involves the impact that the educational intervention had on the attitudes toward oral care of nursing aides in a LTC facility. To test the level of impact, a t-test was utilized, comparing the attitude level of the nursing aides before and after the instructional treatment. The result (M=2.28, SD=0.67, N = 32) from the post-test mean attitude score (M = 39.97) was significantly greater than the pre- intervention test (M = 37.66). The obtained $t = 3.37$ was greater than the t-critical = 1.70 and $\alpha = 0.05$ and an effect size of .38 indicating a statistically significant improvement in the knowledge of the nursing aides at a 95% confidence level. This result suggests the rejection of the null hypothesis and acceptance of the alternative hypothesis. Table 4 presents the statistics for attitude scores. Table 5 presents the results of the t-test.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean	*T-crit.*
Pair 1	posttest	39.9375	32	4.28755	.75794	
	pretest	37.6563	32	4.49092	.79389	1.70

Table 4: Attitude Sample Statistics

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	*T-obt.*	Df	*P*
Pair 1	posttest - pretest	2.281	3.829	.67686	.90079	3.66171	3.370	31	.002

Table 5. Statistics for Attitude Scores

Figure 4 is a graph showing the results of the *t*-test.

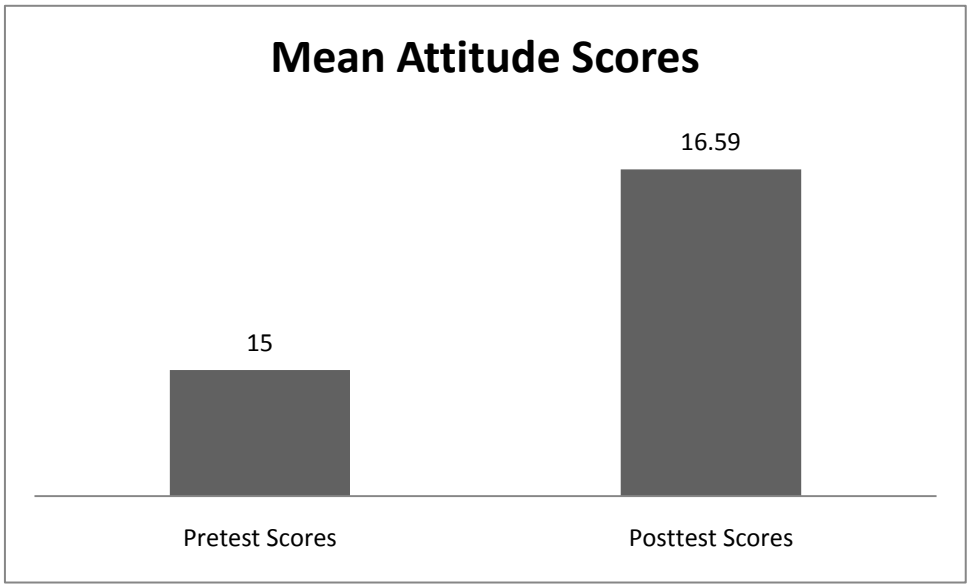

Figure 4. Mean pretest and Posttest Attitude Scores

RQ3 Research question three involves the impact that the educational intervention had on the attitudes of nursing aides towards managing resistant behaviors of residents with dementia in a LTC facility. To test the level of impact, a t-test was utilized, comparing the attitude towards managing resistant behaviors level of the nursing aides before and after the instructional treatment. The result (M=1.59, SD=2.70, N = 32) from the post-test mean attitude score (M = 16.59) was significantly greater than the pre- intervention test (M = 15.00). The obtained t = 3.34 was greater than t-critical = 1.70 at $\alpha = 0.05$ indicating a statistically significant improvement in attitudes toward managing resistive behaviors of the nursing aides at 95% confidence level, suggesting the rejection of the null hypothesis and acceptance of the alternative hypothesis. Table 6 presents the results of the *t*-test for attitude scores. Table 7 presents the results of the *t*-test for attitude towards managing resistive behaviors. Figure 5 is a graph of the results.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean	*T- crit.*
Pair 1	PostResist	16.5938	32	2.60098	.45979	
	PreResist	15.0000	32	2.70006	.47731	1.70

Table 6: Attitude Toward Managing Resistive Behaviors

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	*T-obt.*	Df	*P*
Pair 1	posttest - pretest	1.5937	2.6984	.47701	.62088	2.56662	3.341	31	.002

Table 7: Results of *t*-test For Managing Resistive Behaviors

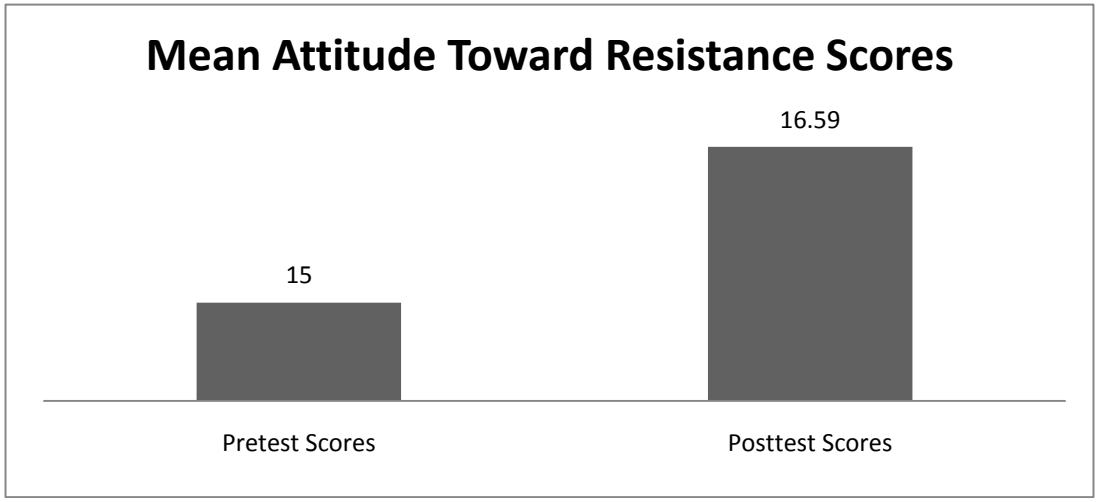

Figure 5. Mean Pretest and Posttest Attitude Towards Resistance

RQ4 Research question four explores the relationship between length of nursing aides' experience and their attitude toward oral care for residents with dementia. To test the

relationship, the data were entered in rows and columns with row one designated as average scores for length of experience greater than seven years and row two designated as length of experience less than seven years. Columns were divided into three categories: low scores (29-35), medium scores (36-39), and high scores (40-46). The analysis of variance (two-way) found $F = 0.712$ for rows (MS=4.35, SS=4.35, N=32) was not significantly greater than *F-Critical* (18.51) where $\alpha = 0.05$, providing evidence that there is no statistically significant interaction between the length of experience and the attitude of nursing aides toward oral care for residents with dementia in the LTC facility. Therefore, the null hypothesis should not be rejected. Table 8 presents the results of the *ANOVA* exploring the relationship between the two groups.

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
Row 1	3	112.36	37.45333	26.98653
Row 2	3	107.25	35.75	5.671875
Column 1	2	65.5	32.75	0.125
Column 2	2	74.125	37.0625	0.007813
Column 3	2	79.985	39.9925	16.44511

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	4.352017	1	4.352017	0.711933	0.487634	18.51282
Columns	53.09091	2	26.54545	4.342492	0.187179	19
Error	12.22591	2	6.112954			
Total	69.66883	5				

Table 8: ANOVA Results for Lengths of Experience

Summary

This chapter has presented the study results, including a description of the population and the statistical analysis of the hypotheses. Three of the four null hypotheses were rejected and the results revealed:

1. The intervention is effective in improving the oral care knowledge of the nursing aides.
2. The intervention is effective in improving the attitudes toward providing oral care for residents with dementia among nursing aides in the LTC facility.
3. The intervention is effective in improving the attitudes toward managing resistant behaviors of residents with dementia in the LTC facility.
4. There is no statistically significant relationship between the length of experience and the attitude of nursing aids toward oral care for residents with dementia in the LTC facility.

This chapter has presented the demographic data and findings for the study questions and hypotheses. The discussion of key findings, suggestions and recommendations for future research and conclusions related to these findings are addressed in Chapter V.

Chapter V

Discussion

This chapter reviews the purpose, the procedures utilized in the current research study and discusses the key findings, practical implications, recommendations, and suggestions for future r

Purpose of Study

The purpose of this study was to assess and compare nursing aides' knowledge of and attitudes toward oral care for residents with dementia at a LTC facility prior to and following an oral hygiene educational intervention. With the growth of the aging population in the U.S. and the relationship between oral health and systemic disease, this topic is timely and critical.

Research Procedures

This study employed a pre-test/post-test quasi-experimental design utilizing an oral hygiene educational intervention developed to improve the oral care knowledge and attitudes of nursing aides employed at a dementia-oriented long-term-care facility in rural Maryland. Subjects were recruited through the distribution of a recruitment letter. Signing an informed consent form indicated agreement to participate in the study. The

subjects were given a pre-intervention questionnaire regarding oral care practices, oral care knowledge, attitudes toward oral care, and attitudes toward managing resistive behaviors. The participants then received an intervention in the form of an oral care presentation that included a PowerPoint presentation on oral conditions and a video, demonstrating oral care procedures for dementia patients. The subjects were given a post-intervention questionnaire and the data from the two questionnaires were tested for differences and correlations.

Discussion of Results

This section presents each research question and discusses the related key findings from the data analysis. Following each discussion the possible implications and conclusions are addressed.

Research Question #1

Will an oral care educational intervention have an impact on the oral care knowledge of nursing aides in a LTC facility?

Key Findings – Oral Care Knowledge

The t-test rejected the null hypothesis and the alterative hypothesis was accepted. The intervention improved the knowledge of oral care immediately among nursing aides in a LTC facility.

Discussion

The literature suggests that nursing aides have limited oral care knowledge and that this can negatively impact the oral care that they provide to their patients (Chalmers,

2000). Improving this knowledge may be achieved through educational interventions. Studies by Reed et al. (2006), Mynors-Wallis and Davis (2004), and Isaksson et al. (2000), show that an educational intervention improves the oral care knowledge of nursing aides. Paulsson et al. (2001) further found that knowledge was retained for at least three years. Nicol et al. (2005) applied this improved knowledge to the care provided by nursing aides and found that the care was significantly influenced by the level of knowledge. The current study supports this literature and reaffirms that an educational intervention can improve the immediate knowledge of oral care among nursing aides in a LTC facility. Although this study did not have follow-up data regarding the retention of the material, it shows and the literature suggests that educational interventions have the potential to improve the oral care knowledge of this population.

Improving the oral care knowledge may translate to improving the oral care services delivered to the residents. This improvement may, in turn, lead to improved general health as was demonstrated in studies by Nicol et al. (2005) and Yoneyama et al. (2002) where improving the oral hygiene of a resident lead to deceased incidence and/or duration of pneumonia.

Research Question #2

Will an oral care educational intervention have a positive impact on the attitudes of nursing aides toward providing oral care for residents with dementia in a LTC facility?

Key Findings – Attitude of Nursing Aides toward Providing Oral Care

The t-test rejected the null hypothesis and the alterative hypothesis was accepted. The intervention improved the attitudes of nursing aides toward providing oral care in a LTC facility.

Discussion

The literature suggests that an educational intervention will have a significant impact on the attitudes of nursing aides toward providing oral care to dementia patients in a LTC facility. Concerns regarding lack of training and lack of clear policy on oral health can affect a caregiver's role in a patient's oral health care. Frenkel et al. (2002) found that an oral health care education program can significantly improve the oral health care knowledge, attitudes, and skills of nursing home caregivers. The results of the Frenkel study are consistent with other studies (Nicol et al., 2005; Isaksson et al., 2000; Matear, 1999; Wardh, 1997) showing that knowledge and attitude can be positively influenced through education. The current study supports this literature and concludes that the intervention improved the attitudes toward providing oral care of nursing aides in a LTC facility and may, in turn, help to improve the overall oral health of the LTC resident.

Research Question #3

Will an oral care educational intervention have an impact on the attitudes of nursing aides towards managing resistant behaviors of residents with dementia in a LTC facility?

Key Findings – Attitude of Nursing Aides toward Managing Resistant Behaviors

The t-test rejected the null hypothesis and the alterative hypothesis was accepted. The intervention improved the attitudes of nursing aides toward managing resistive behaviors.

Discussion

Although there is currently a shortage of literature regarding the management of resistant behavior as it relates to oral care, the available literature suggests that an educational intervention will have a significant impact on the attitudes of nursing aides toward managing resistive behaviors. Studies have shown that nursing home staff members report that the residents' uncooperativeness or resistance to oral hygiene services was the greatest barrier followed by a perceived lack of time and disinterested staff attitudes (Wardh et al., 1997, Thorne et al., 2001, Frenkel et al., 2002, Connell et al., 2002, Coleman, 2006). Chalmers et al. (2000) found that improving resistance management skills of nursing aides improves their attitudes toward providing care to dementia patients. The current study supports this literature and concludes that the intervention improved the nursing aides' attitudes toward managing resistive behaviors for residents with dementia in a LTC facility. The improved attitude may, in turn, increase the behavior management attempts made by the nursing aides and potentially lead to improved oral care services provided to residents.

Research Question #4

Is there a relationship between length of nursing aides' experience and their attitudes toward oral care for residents with dementia?

Key Findings – Experience and Attitude

The ANOVA failed to reject the null hypothesis. This study found that there is no statistically significant relationship between the length of experience and the attitude of nursing aids toward oral care for residents with dementia in a LTC facility.

Discussion

A review of the literature failed to find evidence to either support or negate the results of this study. The study's result indicates that there was not enough evidence to determine a relationship between the length of time a nursing aide spends in the nursing aide field and the attitude that the nursing aide has toward oral care. However, a study by Kada et al. (2009) did find that staff with ten and fewer years of work experience reported significantly lower attitudes toward care than those with more than ten years of experience. The Kada study drew a similar conclusion to a study by Tay et al. (2004) which found that nurses with greater than ten years experience had more positive attitudes towards their patients than those with less than ten years experience. These studies suggest that nurses who have more than ten years experience will have a more positive attitude toward providing care than nurses with less than ten years experience. The current study used a criterion of seven years experience in the correlation and the factor of three less years experience may have made a difference in the outcome of the test. The Kada and Tay studies looked at nurses, a profession that requires a higher level of education than nursing aides. The different levels of education could have influenced study results; therefore making comparative analyses between the two studies is limited.

Summary of Key Findings

1. The results of this study support previously published studies that have reported that an oral care educational intervention may have a positive impact on the oral care knowledge of nursing aides in a LTC facility.

2. The results of this study support previously published studies that found that an oral care educational intervention may have a positive impact on the attitude of nursing aides toward providing oral care to residents in a LTC facility.
3. The results of this study support previously published studies that found that an oral care educational intervention can positively impact the attitude of nursing aides toward managing resistive behaviors of residents with dementia in a LTC facility.
4. The results of this study failed to identify a relationship between the subjects' length of experience in the nursing aide field and their attitudes toward providing oral care services for residents with dementia in a LTC facility. Similar studies refute this finding but used different criteria in the data collection.

Study Limitations

Both time and financial constraints limited the number of participants in this research study to the population of nursing aides at Copper Ridge. Findings represented 32 participants at one long-term-care facility for dementia patients in Maryland; therefore, generalization to other geographic areas and LTC facilities was limited. The study is also limited by the percentage of respondents (n = 32 of 83 or 39%) from the facility.

The research may be limited by the extent to which respondents were willing to participate in the study, as participation was voluntary. Also, the time involved in participation may have reduced the response rate as there were a limited number of respondents who were allowed to leave the nursing floor at any given time. The design

may also be a limitation in that measurements were immediate; however, an attempt was made to include retention information but the response rate to this data collection effort was too low (n = 10 or 30%).

The retention of knowledge was to be tested in this study but only ten subjects (33%) presented for the follow-up measurement despite encouragement. Testing the delayed recall of knowledge was part of the design in Chapter 3 but could not be performed because 66% of subjects chose not to participate in the follow-up aspect of the study.

The tool used for this study was created for this research and has not been tested in other studies; however, a majority of it was adapted from previously existing valid and reliable commonly used measurement instruments. Although the validity of the tool was improved through repeated evaluation and modification based on suggestions made from outside expert sources, the reliability of the tool has not been tested.

The improvement in attitude scores may have been affected by the test itself in that the subjects may have answered more favorably knowing that they were participating in a study. The study design is a limitation. The pre-test/post-test design required an intact group and did not include a comparison group or control. No follow-up measure of attitudes and knowledge was obtained.

Suggestions for Future Research

As a result of this study, there are several questions that need further investigation. Specific suggestions for future research are as follows.

1. Replication of the current study with a larger sample size is recommended. Included in this sample should be subjects from various LTC facilities throughout Maryland and/or possibly other states, including facilities from several counties or varying geographic locations. This larger and diverse sample would improve the generalizability of the research. Inclusion of an experimental group or control would further enhance the research.

2. This study introduces the beginnings of resistance to oral care research. This topic has been identified as the number one reason why oral care is not performed at LTC facilities. With the growth of the aging population in the U.S. and the relationship between oral health and systemic disease, this topic is timely and critical and warrants future research (www.surgeongeneral.gov, 2003).
3. Observational studies are needed to explore the possibility that educational interventions can improve the oral care of residents in LTC facilities. Will improving the oral care knowledge of nursing aides improve the oral health of the resident? Observing the nursing aides "in action" can enhance results by gathering data that is observed rather than reported. A simple method can be employed to test the improvement of oral care by obtaining the plaque scores of the residents pre- and post-intervention.
4. This study's intervention was developed as a visual presentation in a classroom. Adding a hands-on training session and including instructions on the use of electric toothbrushes may further enhance the educational experience of the participants.

5. The involvement of a dental hygienist in the training of nursing aides presents an important educational model that can be implemented in other settings. Given the increase in oral health knowledge among nursing aides in this study and their initial negative attitudes regarding the delivery of oral care to resistant patients further emphasizes the key role the dental hygiene profession can play in enhancing the oral care of LTC residents.

Conclusion

With the passage of HB 1302 in Maryland allowing Registered Dental Hygienists to treat patients at LTC facilities under general dental supervision, and with the main objective of the bill being to increase access to care for this underserved population, research is needed to discover ways to administer this care effectively. With effectively delivered preventive oral health measures, the oral health of nursing home residents can improve. Nursing aides are the primary providers who perform the daily tasks associated with oral care; therefore, they must be included as a target population in research that addresses oral care in LTC facilities and resistance to care management. The role of the dental hygienist in LTC facilities must include educating nursing aides in all aspects of oral care.

The profession of dental hygiene is continuously expanding into new areas through the passage of legislation aimed at increasing the dental hygienists scope of practice; such legislation can help to improve access to care for underserved populations. From the new bill in Minnesota which expands the role of dental hygiene education to include advanced practice, to the new bill in Maryland granting access to dental hygiene

services to one of our most vulnerable and rapidly burgeoning populations, the dental hygiene profession is growing in exciting ways. This study and the current body of knowledge provide evidence that educational interventions can improve not only the oral care knowledge, but also the attitudes of the nursing staff. Virginia Henderson's 1960 statement that "the overall standard of nursing care could be judged by the state of the patient's mouth" may one day improve the delivery of oral care services to residents of LTC facilities. Through collaborative efforts of dental hygienists and nursing staff at LTC facilities, the improved state of a patient's mouth may aptly reflect a higher standard of nursing care as well as increased valuing of oral health.

APPENDIX 1

University of Maryland, Baltimore
Institutional Review Board (IRB)
Phone: (410) 706-5037
Fax: (410) 706-4189
Email: hrpo@som.umaryland.edu

Exempt Confirmed Notification

Date: November 15, 2010

To: Jacquelyn Fried
From: IRB Chair/Vice Chair: Lisa Dixon
RE: HP-00042562
Risk designation: Minimal Risk
Exempt Confirmed Date: November 15, 2010

This is to certify that University of Maryland, Baltimore (UMB) Institutional Review Board (IRB) has received and reviewed correspondence regarding the above referenced protocol entitled, "Oral Care and Dementia: the Nursing Aides' Role."

Your protocol has been determined to be exempt under 45 CFR 46.101(b), from IRB review based on the following category(ies):

45 CFR 46.101(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Investigators are reminded that the IRB must be notified of any changes in the study. In addition, the PI is responsible for ensuring prompt reporting to the IRB of proposed changes in a research activity, and for ensuring that such changes in approved research, during the period for which IRB approval has already been given, may not be initiated without IRB review and approval except when necessary to eliminate apparent immediate hazards to the subject (45 CFR 46.103(4)(iii)).

Research activity involving veterans or the Baltimore VA Maryland Healthcare System (BVAMHCS) as a site, must also be approved by the BVAMHCS Research and Development Committee prior to initiation. Contact the VA Research Office at 410-605-7131 for assistance.

The UMB IRB is organized and operated according to guidelines of the International Council on Harmonization, the United States Office for Human Research Protections and the United States Code of Federal Regulations and operates under Federal Wide Assurance No. FWA00007145.

APPENDIX 2

THE COPPER RIDGE INSTITUTE
AFFILIATED WITH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

710 OBRECHT ROAD
SYKESVILLE, MD 21784-7650

PHONE: (410) 552-3218
FAX: (410) 552-0344
E-MAIL: tcri@emaseniorcare.org
WEBSITE: www.crinsititute.org

OBLIGATIONS OF PRINCIPAL INVESTIGATOR

Title of Study: Oral Hygiene for the Dementia Patient

Principal Investigator: Therese Holtgrewe

The Copper Ridge Institute (CRI) Research Committee approved this study on 10/20/10.

The Episcopal Ministries to the Aging (EMA) Ethics Committee approved this study on 10/26/10.

The Principal Investigator agrees to the following:

1) To maintain strict confidentiality and protect the anonymity of study participants.
2) To promptly report to the CRI Research Committee any adverse events that are reported to the study's IRB.
3) To promptly report to the CRI Research Committee any changes in the research protocol that are reported to the IRB or that affect the participation of EMA residents or staff.
4) To attend meetings of the CRI Research Committee at least twice a year to provide updates on the study.
5) To acknowledge CRI, and the residents and staff of any involved communities, in all publications.
6) To provide the Institute with hard copies and/or electronic files of all publications emerging from CRI-approved research.
7) To submit a final report to CRI Research Committee at the termination of the study. Such a report should include a summary of EMA resources utilized (including staff and residents), preliminary findings, and plans for publications.

Therese Holtgrewe
Principal Investigator — 11/30/10 Date

Amanda Mosley
The Copper Ridge Institute Research Committee Chair — 11/30/10 Date

APPENDIX 3 LETTER OF RECRUITMENT

Dear Nursing Aide,

My name is Therese Holtgrewe and I am a researcher at the University of Maryland. I am asking you to participate in a research study.

The purpose of my research is to identify barriers in providing oral care to residents in nursing homes. You qualify for this research because you work in a nursing home and participate in the day-to-day care of residents. Your participation in this research is an important and critical aspect of forwarding research and improving the oral condition of long-term-care residents.

Your participation in this study will include you completing a survey. It should take you approximately 15 minutes to complete the survey. You will be asked to watch a 25-minute video on patient care, followed by a questionnaire. A catered lunch will be provided . You are also expected to answer a few follow-up questions one week following today's session and a gift-bag will given in appreciation of the time you have given this research.

There are no risks anticipated by participating in this study. Your participation in this study will be confidential and all responses to the survey will be reported as a whole and not individually. Your decision to participate or not participate in this research study will not affect any current or future care you receive at UMB. You will not benefit from your participation other than to receive valuable information regarding patient care. You will not be compensated for your participation but the knowledge you gain may benefit you and the care you provide others.

If you agree to participate, please read the Informed Consent form and sign the back page.

Your participation is entirely voluntary and you may withdraw from the study at any time. If you have any questions, please feel free to contact me at (410)706-7773.

Sincerely,

Therese Holtgrewe, RDH, BS

APPENDIX 4

Date: 1 October 2010

Principal Investigator: Jackie Fried

Site(s) of Research: Application number: HP-00042562

Copper Ridge Institute, Sykesville, Maryland

University of Maryland Dental School- Dental Hygiene

RESEARCH PARTICIPANT INFORMED CONSENT AND PRIVACY AUTHORIZATION FORM

Protocol Title: Staff Attitudes and Knowledge of Oral Hygiene Care for the Dementia Patient
Application No.: HP-00042562

Principal Investigator: Jacquelyn Fried, RDH, MS

POC: Therese Holtgrewe, RDH

Date: 1 October 2010

---

1. What you should know about this study:

- You are being asked to join a research study.
- This consent form explains the research study and your part in the study.
- Please read it carefully and take as much time as you need.
- Please ask questions at any time about anything you do not understand.
- You are a volunteer. If you join the study, you can change your mind later. You can decide not to take part or you can quit at any time. There will be no penalty or loss of benefits if you decide to quit the study.
- We may learn things during the study that might make you want to stop being in the study. If this happens, we will tell you about it. You can then decide if you want to stay in the study.

2. Why is this study being done?

This research is being conducted to develop more thorough methods of oral hygiene care in elderly subjects at risk for memory problems and Alzheimer's disease (AD).

3. What will happen if you join this study?

If you agree to be in this study, we will ask you to do the following things:

- Answer questions about your oral health. Answer questions about the care you provide to residents. Answer questions about patient resistance. Answer questions about yourself.
- View a video about patient care.
- Answer follow-up questions about your oral health. Answer follow-up questions about the care you provide to residents.

The total time participating in the study will take approximately 50 minutes.

Future Contact:

We would like your permission for a follow-up questionnaire in the event that follow-up research is required in this study.

4. What are the risks or discomforts of the study?

You will be asked questions about yourself. You will be asked questions about your general and oral health. There is a risk that information about you may become known to others but is not expected. To protect your confidentiality your name will not be provided. Your identity will remain confidential. All documents will be stored by numeric code and no identifying information will be included on them. At the University of Maryland, data will be stored in a locked file. Only the University of Maryland investigators and their research assistants will have access to the original research data.

There may or may not be any direct benefit to you from taking part in this study. The video will give you information regarding the care you provide to residents. It is hopeful that the information collected will be useful for improving oral hygiene care in the facility.

5. What are your options if you do not want to be in the study?

You do not have to join this study. If you do not join, your employment will not be affected.

6. Will it cost you anything to be in this study?

No. All equipment, training, and evaluations will be provided to you at no cost.

7. Will you be paid if you join this study?

You will not be paid to participate in this study.

8. Can you leave the study early?

- You can agree to be in the study now and change your mind later.
- If you wish to stop, please tell us right away.

9. Why might we take you out of the study early?

You may be taken out of the study if:

- Staying in the study would be harmful.
- You need treatment not allowed in the study.
- You fail to follow instructions.
- The study is cancelled.
- There may be other reasons to take you out of the study that we do not know at this time.

10. How will your privacy be protected?

The University of Maryland has rules to protect information about you. Federal and state laws also protect your privacy. This part of the consent form tells you what information about you may be collected in this study and who might see or use it.

Generally, only people on the research team will know that you are in the research study and will see your information. However, there are a few exceptions that are listed later in this section of the consent form.

The people working on the study will collect information about you. This includes things learned from the procedures described in this consent form. They may collect other information including your age, gender, marital status, and other personal information. Your name will not be used on the questionnaires and this consent form will contain only your signature. Consent forms and all collected data will be kept in a locked file cabinet at the University of Maryland.

The research team will need to see your information. Sometimes other people at the University of Maryland may see or give out your information. These include people who review the research studies, their staff, lawyers, or other U of M staff.

We cannot do this study without your permission to use and give out information.

We will use and disclose your information only as described in this form and in our Notice of Privacy Practices; however, people outside of the University of Maryland who receive your information may not be covered by this promise. We try to make sure that everyone who needs to see your information keeps it confidential, but we cannot guarantee this.

Sharing of final research data: Data from this research will be shared with other researchers. Data sharing is important for further translation of research results into knowledge, products,

and procedures to improve human health. All links with your identity will be removed from the data before they are shared.

The use of your information has no time limit. Your cancellation would not affect information already collected in this study. You can cancel your permission to use and disclose your information at any time by calling The University of Maryland IRB at 410-706-5037 or by sending a letter to:

University of Maryland School of Medicine
Human Research Protections Office --BioPark I
800 W. Baltimore Street, Suite 100
Baltimore, MD 21201

11. What will the study sponsor pay if you are injured in this study?

The National Institutes of Dental and Craniofacial Research do not provide compensation for research-related injury. However, medical care at the University of Maryland is open to you as it is to all sick or injured people.

12. What other things should you know about this research study?

a. What is the Institutional Review Board (IRB) and how does it protect you?

The University of Maryland IRB is made up of:

- Doctors
- Nurses
- Ethicists
- Non-scientists
- And people from the local community

The IRB reviews human research studies. It protects the rights and welfare of the people taking part in those studies. You may contact the IRB if you have any questions about your rights as a participant or if you think you have not been treated fairly. The IRB office number is 420-706-5037. You may also call this number for other concerns or questions about the research.

b. What do you do if you have questions about the research?

Call the principal investigator, Ms. Jacquelyn Fried at 410-706-7773. If you cannot reach the principle investigator, contact Therese Holtgrewe at the same number.

c. What should you do if you are injured or ill as a result of being in this study?

Call Ms. Jacquelyn Fried at 410-706-7773 if you think you are injured or ill because of this study.

d. What happens to data that is collected in this study?

If you join this study:

- The University of Maryland and/or its outside partners in this research will own the data.
- Scientists may study, test, and use this material in future research only with our consent or the consent of a special review board.
- If this material is used to create a product or idea, the scientists and the U of M will own that product or idea.
- You will not receive any financial benefit from the creation, use or sale of that product or idea.

13. What does your signature on this consent form mean?

Your signature on this form means that:

- You understand the information given to you in this form
- You accept the provisions in the form
- You agree to join the study

You will NOT give up any legal rights by signing this consent form.

WE WILL GIVE YOU A COPY OF THIS SIGNED AND DATED CONSENT FORM

This consent form is approved from 09/01/2010 to 04/01/2012

X_____Signature of Participant

date

_____Signature of Person Obtaining Consent

date

NOTE: A COPY OF THE SIGNED, DATED CONSENT FORM MUST BE KEPT BY THE PRINCIPAL INVESTIGATOR; A COPY MUST BE GIVEN TO THE PARTICIPANT; AND, IF APPROPRIATE A COPY OF THE CONSENT FORM MUST BE GIVEN TO THE PARENT/GUARDIAN

APPENDIX 5

Nursing Aide Questionnaire

Please answer all questions honestly. Your name will NOT be on this questionnaire.

1. How long have you been a nursing aide?

_____ 0-2 years _____ 2-5 years _____ 5-7 years _____ 7 years or more

2. What is your highest level of education:

_____ Elementary or middle school _____ Some college, Associates degree/ certificate
_____ High School but not a graduate _____ Bachelor's degree
_____ High School graduate _____ Other:
_____

3. How many hours of **oral care** training sessions have you had? Check one

_____None (zero) _____1-5 _____6-10 _____11-15 _____16 or more

4. How many training sessions have you attended on how to deal with **resistant residents**? Check one.

_____None (zero) _____ 1-5 _____6-10 _____11-15 _____16 or more

5. How long have you worked at this facility?

_____ 0- 3 years _____ 3-6 years _____ 6- 9 years _____ over 9 years

6. What is your age? _____ 18-25 _____ 26-40 _____41-55 _____ 56 and over

7. What is your gender? Female_____ Male_____

8. What is your ethnic background? Check all that apply.

_____American Indian or Alaskan Native _____Asian or Pacific Islander

_____Black (African American) _____Hispanic _____White (Caucasian)

The following questions relate to your own personal health.

How often do you perform the following tasks for **yourself**?

	Often (daily)	Sometimes (weekly)	Seldom (monthly)	Almost never
9. Brushing teeth				
10. Teeth brushing at least two minutes				
11. Rinse teeth with water				
12. Rinse mouth with mouthwash				
13. Floss				
14. Brush tongue and/or roof of mouth				
15. Check mouth for sores				
16. How often do you go to the dentist ?				

17. The following questions relate to the **care you provide to the residents**.
Using numbers 1-8, put in order the following tasks from easiest (#1) to most difficult (#8).

_____ Bathing
_____ Brushing hair/ Grooming
_____ Changing sheets
_____ Changing incontinence products (like adult diapers)
_____ Dressing
_____ Oral Care such as helping residents brush and rinse
_____ Toileting
_____ Transferring to chair or bed

18. How many residents do you aide with oral care each day? (check one)

_____0 _____1 _____2 _____3 _____4 _____5 _____6+

19. Using numbers 1-6, please put in order the following items for reasons why you do NOT do oral care with a resident from most likely (#1) to least likely (#6).

_____ Oral hygiene is not as important as other areas of care
_____ Not enough time
_____ Patients resist oral care (is combative or refuses the care)
_____ Not enough training
_____ Not enough supplies
_____ Fear of being bitten

The next section will ask questions about the oral care you provide to the residents. Your name is not on this questionnaire and I appreciate your honest answers.

While aiding **each resident** with oral care, how often do you perform the following tasks?

	Often (Daily)	Sometimes (weekly)	Seldom (monthly)	Almost never
20. Brushing teeth with toothpaste				
21. Teeth brushing at least two minutes				
22. Rinsing teeth with water				
23. Rinsing mouth with mouthwash				
24. Wearing clean gloves				
25. Checking mouth for problems (sores/ pain)				
26. Brushing tongue and roof of mouth				
27. Use a foam swab				

For the following questions, using your beliefs, education, and/or training, circle the letter that is your BEST response.

28. Where is the best place to perform oral care?
    A. In the resident's bed
    B. In a chair in the room
    C. In the dining hall
    D. In the bathroom

29. If the patient bites down while you are brushing their teeth, it is best to:
    A. Pull their teeth open with your fingers
    B. Pull the teeth open with the brush
    C. Never brush their teeth
    D. Press your thumb onto their cheek

30. When performing oral care with a resident, the best way to approach the resident is
    A. From the front
    B. From the side
    C. From behind
    D. From above

31. For residents who do their own oral care, the best way to make sure that they have done it is
    A. Asking the resident
    B. Feeling their toothbrush for wetness
    C. Watch them brush their teeth
    D. Check the chart notes

32. Which of the following is NOT recommended for use in bacteria/plaque removal?
    A. Foam swabs
    B. Mouth Rinse
    C. Floss
    D. Extra-soft toothbrushes

33. What diseases can be affected by oral care?
    A. Diabetes
    B. Heart disease
    C. Both A and B
    D. None of the above

34. When is the best time to perform oral care for residents with dementia?
    A. When the resident asks
    B. After a meal
    C. Just after waking the patient from a nap
    D. First thing in the morning

35. What is the main cause of gingivitis?
    A. Acidic foods
    B. Forgetting to brush the teeth
    C. Bacterial plaque
    D. Aggressive brushing

36. What is the best way of removing tartar?
    A. Brushing and flossing daily
    B. Mouthwash
    C. Toothpick
    D. Tartar can only be removed by dental professionals

37. What does tooth decay look like?
    A. A black or brown spot on the tooth
    B. A silver spot on the tooth
    C. A hole on the tooth
    D. Both A and C

38. What is a sign that a resident has dental pain?
    A. The resident can't or won't chew food
    B. The resident "pulls" at his or her face
    C. Irritability
    D. All of the above

39. How often should the resident see a dentist?
    A. Yearly for check-ups
    B. Only when the resident has dental pain
    C. When there are signs of decay or infection
    D. All of the above

For the following statements, put an X in the box that most closely explains your response. For example, if you feel you “almost always” wear clean gloves when performing oral care, check box number one for that question; if you feel you “often” wear clean gloves when performing oral care, check box number 2, and so on….

	Almost always agree (1)	Often agree (2)	Sometimes agree (3)	Seldom agree (4)
40. I make sure my gloves are clean when doing oral care with residents.				
41. I believe in my abilities in giving oral hygiene care to my residents.				
42. I stop giving oral care when the resident resists.				
43. I believe in my ability to check a resident’s mouth for problems.				
44. I am unsure of when I should send a resident to the dentist.				
45. I am comfortable in providing oral care to residents with dementia.				
46. I am confident in my ability to avoid being bitten.				
47. I have difficulty recognizing plaque on a resident’s teeth.				
48. Residents will tell me if they need help brushing their teeth.				
49. I find it easy to get help with resistant residents.				
50. I believe in my ability to manage resistant behaviors.				
51. I have had the proper training to manage resistant behaviors.				

Would you like to explain any of your responses? Please write comments below:

Thank you for your participation. Please place this questionnaire in the envelope.

*As defined by the World Health Organization (WHO, 1948)

References

Adam, H. & Preston, A. (2006, June). The oral health of individuals with dementia in nursing homes. *Gerodontology. 23(2),* 99-105.

Adams, R. (1996, September). Qualified nurses lack adequate knowledge related to oral health, resulting in inadequate oral care for patients on medical wards. *Journal of Advanced Nursing. 24(3),* 552-60.

AHRQ. (2006). Agency for Healthcare Research and Quality, United States Department of Health and Human Services Statistics for All U.S. Community Hospital Stays. Retrieved October 1, 2010 from http://hcupnet.ahrq.gov/HCUPnet.jsp?Id=C6B7FAF20BDCBC1E&Form=SelDXPR&JS=Y&Action=%3E%3ENext%3E%3E&_DXPR=PreRunALLDXPR

ALZinfo.org. (2008). About Alzheimer's. Fisher's Center for Alzheimer's Research Foundation. Retrieved April 11, 2010 from http://www.alzinfo.org/about-alzheimers

ALZ.ORG. (ed. 2007). Dementia. Retrieved February 11, 2010 from http://www.alz.org/alzheimers_disease_dementia.asp

American Health Care Association. (2009). Profile of the American health care association. Retrieved March 24, 2010 from http://www.ahcancal.org/about_ahca/who_we_are/Pages/default.aspx

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Arvidson-Bufano, U, Blank, L, Yellowitz, J. (1996). Nurses' oral health assessments of nursing home residents pre- and post-training: a pilot study. *Special Care Dentistry, 16,* 58-64.

Azarpazhooh, A. & Leake, J. (2006). Systematic review of the association between respiratory diseases and oral health. *Journal of Periodontology. 77(9)*, 1465-82.

Bingham, M., Ashley J., De Jong, M., Swift, C. (2010, January-February). Implementing a unit-level intervention to reduce the probability of ventilator-associated pneumonia. *Nursing Research*. 59(1 Suppl), S40-7.

Bitetti, E., Senna, A., Strohmenger, L. (2004, September). Oral health comparison between the institutionalized and non institutionalized elderly. *Minerva Stomatologica. 53(9),*507-16.

Beck, A. M., Damkjaer, K., Tetens, I. (2009, April). Lack of compliance of staff in an intervention study with focus on nutrition, exercise and oral care among old (65+ yrs) Danish nursing home residents. *Aging-Clinical & Experimental Research*. *21(2)*,143-9.

Berg, R., Berkey, D. B., Tang, J.M., Baine, C., Altman, D.S. (2000, November-December). Oral health status of older adults in Arizona: results from the Arizona Elder Study. *Special Care in Dentistry*. *20(6),* 226-33.

Bourgeois, M., Schulz, R., & Burgio, L. (1996). Interventions for caregivers of patients with Alzheimer's Disease: A review and analysis of content, process, and outcomes. *International Journal of Aging and Human Development, 43,* 35-92.

Bridges-Parlet, S., Knopman, D., and Thompson, T. (1994). A descriptive study of physically aggressive behavior in dementia by direct observation. *Journal of the American Geriatrics Society, 42,* 192-197.

CDC. (2004). National Center for Health Statistics, Table 34, Number of nursing home residents by primary diagnosis at admission by age, sex, and race: United States. Retrieved January 10, 2009 from http://www.cdc.gov/nchs/data/nnhsd/ Estimates_Diagnoses_Tables.pdf#Table34

CDC. (1997, January 03). Guidelines for Prevention of Nosocomial Pneumonia. Retrieved December 13, 2008 from http://www.cdc.gov/mmwr/preview/mmwrhtml/00045365.htm

Chalmers, J.M., Levy, S.M., Buckwalter, K.C., Ettinger, R.L., Kambhu, P.P. (1996, March-April). Factors influencing nurses' aides' provision of oral care for nursing facility residents. *Special Care in Dentistry. 16(2),* 71-9.

Chalmers, J., Pearson, A. (2005, September-October). A systematic review of oral health assessment by nurses and carers for residents with dementia in residential care facilities. *Special Care in Dentistry. 25(5),* 227-33.

Chalmers, J. (2000, July). Behavior management and communication strategies for dental professionals when caring for patients with dementia. *Special Care in Dentistry, 20(4),*147 – 154.

Charteris, P. & Kinsella,T. (2001, March-April). The oral care link nurse: a facilitator and educator for maintaining oral health for patients at the Royal Hospital for neuro-disability. *Special Care in Dentistry. 21(2),* 68-71.

Chung, J.P., Mojon, P., Budtz-Jorgensen, E. (2000, January-February). Dental care of elderly in nursing homes: perceptions of managers, nurses, and physicians. *Special Care in Dentistry. 20(1),* 12-7.

Cohen-Mansfield, J. & Lipson, S. (2002, July/August). The underdetection of pain of dental etiology in persons with dementia. *American Journal of Alzheimer's Disease and Other Dementias*, *17(4)*, 249-253.

Coleman, P., Gurenlian, J., Hein, C. (2007). The promise of transdisciplinary nurse-dental hygienist collaboration in achieving health-related quality of life for elderly nursing home residents. *Grand Rounds in Oral-Systemic Medicine, 2,*3.

Coleman, P. & Watson, N. (2006). Oral care provided by certified nursing assistants in nursing homes. *Journal of the American Geriatric Society*, *54*, 138-143.

COMAR (Code of Maryland Regulations) Nursing Home Regulations Index 10.07.02.00. Title 10: Department of Health and Mental Hygiene, Subtitle 07: Hospitals, Chapter 02: Comprehensive Care Facilities and Extended Care Facilities Authority. Health-General Article, §19-308, 19-308.1, 19-323, and 19-329, Annotated Code of Maryland Preface, Regulation 10.07.02.17. Dental Services. Retrieved February 27, 2009 from http://www.voicesforqualitycare.org/id91.htm

Connell, B., McConnell, E., & Francis, T. (2002).Tailoring the environment of oral health care to the needs and abilities of nursing home residents with dementia. *Alzheimer's Care Quarterly*, *3*, 19-25.

De Visschere, L., van der Putten, G., de Baat, C., Schols, J., Vanobbergen, J. (2009, February). Oral health care guidelines for elderly people in long-term care facilities: Effectiveness and implementation in The Netherlands and Flanders . *Dutch Journal of Dentistry*, *116(1)*,23-7.

Dummit, L. (2000, September 5). Nursing homes: Aggregate Medicare payments are adequate despite bankruptcies. United States General Accounting Office: Testimony before the special committee on aging, United States Senate. Retrieved March 12, 2010 from http://www.gao.gov/archive/2000/he00192t.pdf

El-Sohl, A.A., Pietrantoni, C., Bhat, A., Aquilina, A., Okada, M., Grover, V., Gifford, N. (2003, June 15). Microbiology of severe aspiration pneumonia in institutionalized elderly. *American Journal of Respiratory & Critical Care Medicine. 167(12),* 1650-4.

El-Sohl, A.A., Pietrantoni, C., Bhat, A., Okada, M., Zambon, J., Aquilina, A., Berbary, E. (2004, November). Colonization of dental plaques: a reservoir of respiratory pathogens for hospital-acquired pneumonia in institutionalized elders. *Chest. 126(5),* 1575-82.

Frenkel, H., Harvey, I., Needs, K. (2002, April). Oral health care education and its effect on caregiver's knowledge and attitudes: a randomized controlled study. *Community Dentistry and Oral Epidemiology, 30 (2), 91-100.*

Gil-Montoya, J.A., De Mello, A.L., Cardenas, C.B., Lopez, I.G. (2006, March-April). Oral health protocol for the dependent institutionalized elderly. *Geriatric Nursing. 27(2),* 95-101.

Henderson, V. (1997). *Basic Principles of Nursing Care*. Silver Spring, MD: American Nurses Publishing.

Henricksen, B.M., Ambjornsen, E., Laake, K., Axell, T.E. (2004, September-October). Oral hygiene and oral symptom s among the elderly in long-term care. *Special Care in Dentistry. 24(5),* 254-9.

HHS. (2008). U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Retrieved June 12, 2010, from www.hhs.gov

Hicks-Moore, S.L. (2005, December). Relaxing music at mealtime in nursing homes: effects on agitated patients with dementia. *Journal of GerontologicalNursing. 31(12),*26-32.

HB 1302. Maryland House Bill 1302: An act concerning Health Occupations – Dental Hygienists – Practice in Long–Term Care Facilities, 2010. Retrieved January 12, 2011 from http://mlis.state.md.us/google_docs$/2010rs/bills_noln/hb/thb1302.pdf

Isaksson, R., Paulsson, G., Fridlund, B., Nederfors,T. (2000, May-June). Evaluations of an oral health education program for nursing personnel in special housing facilities for the elderly. Part II: Clinical aspects. *Special Care in Dentistry. 20(3),* 109-13.

Jones, H., Newton, J., Bower, E. (2004, April). A survey of the oral care practices of intensive care nurses. *Intensive and Critical Care Nursing. 20(2),* 69-76.

Kada, S., Nygaard, H.A., Mukesh, B.N., Geitung, J.T. (2009, August). Staff attitudes towards institutionalised dementia residents. *Journal of Clinical Nursing. 18(16),*2383-92.

King, T., Kapadia,D. (2003, March). Oral health status and treatment needs of institutionalized elderly and disadvantaged population in Fiji. *Pacific Health Dialogue. 10(1),* 35-40.

Klauber, M., Wright, B. (2001, February). The 1987 Nursing Home Reform Act Fact Sheet. Retrieved April 4, 2010 from http://www.aarp.org/research/longtermcare/nursinghomes/aresearch-import-669-FS10R.html

Landrum, M., Murray, C. (2008, February).Ventilator associated pneumonia in a military deployed setting: the impact of an aggressive infection control program. *Journal of Trauma-Injury Infection & Critical Care. 64 (2 Suppl),*S123-7; discussion S127-8.

Lin, C.Y., Jones, D.B., Godwin, K, Godwin, R.K., Knebl, J.A., Niessen, L. (1999, March-April). Oral health assessment by nursing staff of Alzheimer's patients in a long-term-care facility. *Special Care in Dentistry. 19(2),* 64-71.

MacEntee, M., Thorne, S., Kazanjian, A. (1999, July-August). Conflicting priorities: oral health in long-term care. *Special Care in Dentistry. 19(4),*164-72.

Magaziner, J., German, P., Zimmerman, S.I., Hebel, J.R., Burton, L., Gruber-Baldini, A., May, C., Kittner, S. (2000). The Prevalence of Dementia in a Statewide Sample of New Nursing Home Admissions Aged 65 and Older. *The Gerontologist. 40(6),* 663-672.

Mahoney, E.K., Hurley, A.C., Volicer, L., Bell, M., Gianotis, P., Hartshorn, M., … Warden, V. (1999). Development and testing of the Resistiveness to Care Scale. *Research in Nursing and Health. 22(1)*, 27-38.

Matear, D. (1999, March-April). Demonstrating the need for oral health education in geriatric institutions. *Probe. 33(2),* 66-71.

Mayoclinic.com. (2009). Alzheimer's Disease. Retrieved February 18, 2010 from http://www.mayoclinic.com/health/alzheimers-disease/DS00161

MBON. (2010). Maryland Board of Nursing. Initial Geriatric Nursing Assistant (GNA) Certification. Retrieved March 12, 2009 from http://www.mbon.org/main.php?v=norm&p=0&c=cna/gna_initial_cert.html

McConnell, E.S., Lekan, D., Hebert, C., Leatherwood, L. (2007, March-April). Academic-practice partnerships to promote evidence-based practice in long-term care: oral hygiene care practices as an exemplar. *Nursing Outlook*. *55(2),* 95-105.

Medicare.gov. (ed. 2009). What is Long term care? Retrieved May 17, 2010 from http://www.medicare.gov/LongTermCare/Static/Home.asp

Mynors-Wallis, J., Davis, D. (2004, December). An assessment of the oral health knowledge and recall after a dental talk amongst nurses working with elderly patients: a pilot study. *Gerodontology. 21(4),* 201-4.

National Center for Health Statistics. (2004). Retrieved May 1, 2010 from http://www.cdc.gov/nchs/

National Nursing Home Survey. (1999). Retrieved March 17, 2010 from http://www.cdc.gov/nchs/nnhs.htm

Nicol, R., Petrina, A., Sweeney, M., McHugh, S., 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(2)*, 115-24.

NINDS. (2008). National Institute of Neurological Disorders and Stroke. Retrieved April 22, 2010 from http://www.ninds.nih.gov/disorders/dementias/dementia.htm

Oral Health America. (2009). *A state of decay: Oral health of older Americans*. Chicago, Illinois: Oral Health America.

Pandya, S. (2001, February). AARP Public Policy Institute. Retrieved February 13, 2008 from http://www.aarp.org

Paulsson, G., Soderfeldt, B., Fridlund, B., Nederfors, T. (2001, July). Recall of an oral health education programme by nursing personnel in special housing facilities for the elderly. *Gerodontology. 18 (1),* 7-14.

Pearson, L., & Hutton, J. (2002). A controlled trial to compare the ability of foam swabs and toothbrushes to remove dental plaque. *Journal of Advanced Nursing*. 39, 480–489.

Preston, A.J., Punekar, S., Gosney, M.A. (2000, February). Oral care of elderly patients: nurses' knowledge and views. *British Medical Journal. 76(892),* 89-91.

Pyle, M.A., Jasinevicius, T.R., Sawyer, D.R., Madsen, J. (2005, March-April). Nursing home executive directors' perception of oral care in long-term care facilities. *Special Care in Dentistry. 25(2),* 111-7.

Reed, R., Broder, H.L., Jenkins, G., Spivak, E., Janal, M. (2006, June). Oral health promotion among older persons and their care providers in a nursing home facility. *Gerodontology. 23(2),* 73-8.

Riviere, G., Riviere,H., Smith, K. (2002). Molecular and immunological evidence of oral Treponema in the human brain and their association with Alzheimer's disease. *Oral Microbiological Immunology, 17(2), 113-8.*

RNAO. (2007). Oral care for residents with dementia. Video. Royal Nurses Association of Ontario. Used with permission.

Rovner, B.W., Kafonek, S., Filipp, L., Lucas, M. J., Forstein, M. F. (1986). Prevalence of mental illness in a community nursing home. *American Journal of Psychiatry. 143*,1446-1449.

Sarin, J., Balasubramaniam, R., Corcoran, A., Laudenbach, J., Stoopler, E. (2008). Reducing the risk of aspiration pneumonia among elderly patients in long-term care facilities through oral health interventions. *Journal of the American Medical Directors Association. 9(2),*128-35.

Stein, P., Desrosiers, M., Donegan, S., Yepes, J., Kryscio, R. (2007). Tooth loss, dementia and neuropathology in the Nun Study. *Journal of the American Dental Association. 138 (10)*, 1314 – 1322.

Stout, M., Goulding, O., Powell, A. (2009, August). Developing and implementing an oral care policy and assessment tool. *Nursing Standard. 23(49),* 42-8.

Surgeon General. (2003, Spring). Rockville, MD: U.S. Department of Health and Human Services. *National Call to Action to Promote Oral Health.* NIH Publication No. 03-5303. Retrieved December 24, 2010 from http://www.surgeongeneral.gov/topics/oralhealth/nationalcalltoaction.html

Tay, S.E., Pariyasami, S., Ravindran, K., Ali, M.I., Rowsudeen, M.T. (2004, October). Nurses' attitudes toward people with mental illnesses in a psychiatric hospital in Singapore. *Journal of Psychosocial Nursing & Mental Health Services. 42(10),* 40-7.

Thai, P., Shuman, S., Davidson, G. (1997). Nurse's dental assessments and subsequent care in Minnesota nursing homes. *Special Care Dentistry, 17*, 13–18.

Thorne, S., Kazanjian,A. & MacEntee, M. (2001). Oral health in long-term care: the implications of organizational culture. *Journal of Aging Studies*, *15*, 271-283.

Terpenning, M., Shay, K. (2002). Oral health is cost-effective to maintain but costly to ignore. *Journal of the American Geriatric Society*, *50(3),* 584-585.

Wardh, I., Berggren, U., Andersson, L. Sorensen, S. (2002, December). Assessments of oral health care in dependent older persons in nursing facilities. *Acta Odonologica Scandinavica. 60 (6),* 330-6.

Wardh, I., Sorensen, S. (2005, June). Development of an index to measure oral health care priority among nursing staff. *Gerodontology. 22(2),* 84-90.

Wardh, I., Andersson, L., Sorensen, S. (1997, July). Staff attitudes to oral health care. A comparative study of registered nurses, nursing assistants and home care aids. *Gerodontology. 14(1),* 28-32.

Watando, A., Ebihara, S., Ebihara, T., Okazaki, T., Takahashi, H., Asada, M., Sasaki, H. (2004). Daily oral care and cough reflex sensitivity in elderly nursing home patients. *Chest. 126(4)*, 1066-70.

Yoneyama, T., Yoshida, M., Mukaiyama, H., Akagawa, Y. (2002). Oral care reduces pneumonia of elderly patients in nursing homes. *Journal of the American Geriatric Society. 50*, 430–433.

Yoshida M; Yoneyama T; Akagawa Y. (2001). Oral care reduces pneumonia of elderly patients in nursing homes, irrespective of dentate or edentate status. *Nippon Ronen Igakkai Zasshi. 38(4)*, 481-3.