

NURSES' ORAL HYGIENE CARE PRACTICES WITH OLDER PATIENTS

NURSES' ORAL HYGIENE CARE PRACTICES
WITH HOSPITALIZED OLDER ADULTS IN POST-ACUTE SETTINGS

By

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Lay Abstract

When in hospital, older people often rely on nurses for help with oral care. Little is known about how nurses provide this type of care, but poor oral care can lead to pneumonia, gum disease, and other diseases of the body. In this study, nurses were accompanied as they provided bedtime oral care to patients. Findings showed that: (a) nurses let patients decide about doing oral care and do not encourage it, (b) nurses let patients do oral care themselves, even if they cannot do a good job, (c) the oral care given depends on the nurse, and (d) bedtime oral care, the most important time of day, is not part of the bedtime routine. Nurses should (a) ask patients about their oral health and inspect their mouths, (b) have the right supplies available so they can more easily provide effective oral care, and (c) teach their patients about the importance of oral hygiene.

Abstract

Background and Purpose

Evidence now links poor oral hygiene to systemic and infectious diseases such as pneumonia. Hospitalized patients, who now retain their teeth into older adulthood, often rely on nurses to provide oral hygiene care. Nurses have the potential to impact oral health outcomes and quality of life by controlling plaque. However, oral hygiene care practices of nurses in post-acute hospital settings are relatively unknown. The purpose of this study was to explore how nurses provide bedtime oral hygiene care, how they decide on interventions provided, and how certain factors influence their ability to provide oral care.

Methods

A qualitative, exploratory multiple-case study was conducted with 25 nurses working on five inpatient units at different hospitals. Nurses were accompanied on their evening rounds to observe oral care practices, the physical environment, and workflow. Thematic analysis was used to analyse the case study data base including transcripts of guided conversations, field notes, and documents. Within-case analysis was followed by cross-case analysis.

Findings

Findings indicate that: (a) nurses often convey oral hygiene care to their patients as being optional; (b) nurses are inclined to preserve patient autonomy in oral hygiene care; (c) oral hygiene care is often spontaneous and variable, and may not be informed by evidence; and (d) oral hygiene care is not embedded into bedtime care routines.

Implications

Oral health history and assessment data are essential to the creation of individualized, feasible oral hygiene care plans that consider patient dignity. Knowledge of the health benefits of oral care, and skills related to assessment and approaches to oral care are required by nurses. Availability of effective products and supplies facilitates provision of oral care. The evidence for oral hygiene care practices, outcomes of nurse-administered oral care, and the role of nurses in influencing the oral health literacy of patients requires further study.

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Table of Contents

	Page
Lay Abstract.....	iii
Abstract.....	iv
Acknowledgements.....	v
Table of Contents.....	vi
List of Figures.....	x
List of Tables.....	xi
List of Abbreviations.....	xii
Declaration of Academic Achievement.....	xiii
Chapter One – Introduction to the Study.....	1
Background and Context.....	1
Need for the Study.....	4
Statement of the Problem.....	6
Purpose of the Study.....	7
Scope of the Study.....	7
Personal Statement: My Journey to Here.....	8
Significance of the Study.....	11
Structure of the Thesis.....	12
Chapter Two – Background and Review of the Literature.....	13
The Oral Microbiome and Dental Plaque Biofilm: A Primer.....	14
Literature Map.....	16
Risk Factors for Poor Oral Hygiene in Hospitalized Older Adults.....	17
Disturbances of equilibrium in oral microbial communities.....	17
Decreased oral immunity.....	18
Decreased oral commensal bacteria.....	18
Maturation of oral biofilm.....	19
Reliance on others to provide oral hygiene care.....	20
Nosocomial Infections as Consequences of Poor Oral Health.....	21
Oral candidosis.....	21
Dental caries.....	22
Periodontal diseases.....	22
Endodontic infections.....	23
Pneumonia.....	23
Hospital acquired pneumonia.....	24
Aspiration pneumonia.....	26
Modification of Risk for Infections through Oral Hygiene Care.....	27
Modification of the risk for pneumonia.....	27
Modification of the risk for periodontal disease.....	32

Day-to-Day Oral Hygiene Care	33
The contribution of daily oral hygiene care	33
Provision of oral hygiene care	34
Variations in Oral Hygiene Care Decisions	35
Oral hygiene care as a component of missed nursing care	36
Nurses' observed oral hygiene care practices	38
Chapter Summary	39
Chapter Three – Methods	41
Introduction and Overview of Chapter	41
Rationale for Qualitative Research Design	41
Study Design: Case Study as the Strategy of Inquiry	42
Bounding the case	43
Timing	43
Participants	44
Type of inpatient unit	44
Units of analysis	45
Cases and Participants within Cases	45
Recruitment of participants	47
Collecting Case Study Evidence	50
Methods of data collection	51
Observations	52
Go-Along conversations	55
Physical documents	59
Physical artifacts	59
Analyzing Case Study Evidence	60
Data management, organization, and analysis	60
Decision regarding data analysis software	60
Analytic strategy	61
Ethical considerations	64
Research ethics board approval	64
Anticipated ethical issues	65
Safeguarding data	65
Issues of Trustworthiness	66
Construct validity	66
Reliability	67
Internal validity	68
External validity	69
Chapter Summary	71

Chapter Four– Findings	72
Description of Cases	72
Description of Case 1	73
Description of Case 2.....	73
Description of Case 3.....	74
Description of Case 4.....	75
Description of Case 5.....	76
Description of Physical Artifacts: Oral Hygiene Tools and Products	77
Question 1: What Oral Hygiene Care Interventions are Provided by Nurses?.....	78
Question 2: How Do Nurses Enact their Oral Hygiene Care Practice?	80
Nurse engaged patients in performing oral hygiene care.....	81
Nurses intervened with patients who had a variety of oral care needs	87
Nurses usually bypass assessing the effectiveness of their oral hygiene care	92
Nurses communicate the oral hygiene care they provide	93
Question 3: How do Nurses Know What oral Hygiene Interventions to Provide for their Patients?.....	95
Verbal cues from patients	95
Knowing the patient.....	96
Observations of the patient and environment	96
Other members of the health care team	97
Nurses do not rely on care plans for information.....	99
Nurses do not rely on hospital policies, procedures, or protocols	99
Question 4: How do Factors Related to the Nurse, Patient and Family, and the Clinical Unit Influence Oral Hygiene Care Provided by Nurses?	100
Nurses’ skills, knowledge, attitudes, and beliefs	100
The extent to which the patient is able or willing to cooperate	103
Routines and workflow	105
Access to supplies	108
Family involvement	111
Chapter Summary	112
 Chapter Five– Discussion and Implications	 114
Oral Hygiene Care Conveyed as Being “Optional”	114
Preserving Autonomy in Oral Hygiene Care	117
Oral Hygiene Care is Often Spontaneous and Variable.....	121
Oral Hygiene Care is not Embedded into Evening Routines.....	130
Strengths and Limitations of the Study.....	134
Implications.....	136
Implications for nursing practice	136
Implications for education	137
Implications for administrators	138
Implications for research.....	140
Implications for policy	143
Conclusions.....	144

Researcher Reflections.....	146
References	150
Appendices	
Appendix A: Recruitment Poster	177
Appendix B: Demographic Questions	178
Appendix C: Interview Guide (Guided Conversations).....	179
Appendix D: Oral Hygiene Products Available on the Units	180
Appendix E: Process for Organizing, Preparing, and Analyzing Data.....	181
Appendix F: Research ethics Board Approval.....	184
Appendix G: Letters of Information/Consent for Nurse Participants	187
Appendix H: Letters of Information/Consent for Additional Participants	195
Appendix I: Strategies to Ensure Rigour in Studies Using Observational Methods	203

List of Figures

	Page
Figure 1 Literature map showing topics in the review of the literature	17
Figure 2 Levels of questions (based on Yin 2014)	51

List of Tables

	Page
Table 1 Characteristics of Nurse Participants	77
Table 2 Oral Hygiene Care Interventions and Activities Observed.....	79
Table 3 Documentation of Oral Hygiene Care on Patient Care Flow Sheets	94

List of Abbreviations

ADL	Activity of Daily Living
ALC	Alternate Level of Care
AP	Aspiration Pneumonia
CAP	Community Acquired Pneumonia
CNO	College of Nurses of Ontario
HAP	Hospital Acquired Pneumonia
IPH	Interventional Patient Hygiene
LHIN	Local Health Integration Network
npo	nihil per os (nothing by mouth)
NHAP	Nursing Home Acquired Pneumonia
NV-HAP	Non-Ventilator Hospital Acquired Pneumonia
OT	Occupational Therapist
RDH	Registered Dental Hygienist
RN	Registered Nurse
RNAO	Registered Nurses' Association of Ontario
RPN	Registered Practical Nurse
SLP	Speech-Language Pathologist
VAP	Ventilator Associated Pneumonia

Declaration of Academic Achievement

This thesis is a report of original research that I have conducted under the supervision of Dr. Jenny Ploeg (since January 2010), Dr. Sharon Kaasalainen (since September 2010), Dr. Anita Fisher (from August 2011-August 2014), and Dr. Nancy Carter (since September 2014). Committee members have had input into: (a) the research proposal including the topic, design, research questions, location of data collection sites, and data collection tools; (b) the research ethics board submission; (c) data analysis activities; (d) drafts of chapters of the thesis; and (e) drafts of the complete thesis.

I collected data at five study sites, and was the sole observer and interviewer. Audiorecordings were transcribed by Sue Purdy, a professional transcriptionist.

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Chapter One

Introduction to the Study

Hospitalized older patients often have a substantial bacterial load present in their oral biofilm (plaque) which places them at risk for respiratory infections as well as periodontal disease, a chronic infection and inflammation of the gums (Scannapieco & Shay, 2014). Control of dental plaque biofilm through oral hygiene care is vital to reducing this risk. Hospitalized older patients often need to rely on nurses to provide this care, but how nurses do this is not well understood. This study seeks to shed light on the oral hygiene care provided by nurses because these interventions have the potential to impact the health and quality of life of hospitalized older patients.

This introductory chapter begins with background and context to provide rationale for the study. The need for the study, problem statement, purpose, and scope of the study follow. The chapter concludes with my personal statement as the researcher, and the significance of the study.

Background and Context

In the last decade, the link between oral health and the general health and mortality of patients has attracted attention and prompted the development of a number of practice guidelines (Heath et al., 2011; Johnson & Chalmers, 2011; O'Connor, 2012; Registered Nurses' Association of Ontario, 2008). Hospitalized older adults with complex health conditions are at greater risk for oral diseases that can: (a) impact chewing and swallowing and therefore their nutritional status; (b) increase susceptibility to respiratory and systemic diseases; (c) cause pain and discomfort; and (d) affect quality of life, self

image, communication, and social interaction (Canadian Dental Association, 2009). As older persons become more frail and have medical comorbidities, take many prescribed medications, and have physical and cognitive impairments, the risk for poor oral health and its negative impact on general health and well-being increases (Canadian Dental Association, 2009).

Age-related changes and the side effects of medications impact the oral health of older patients. Reduced saliva secretion often causes soreness, dryness of the mucosa and lips, caries (cavities), candidiasis (thrush), and intolerance to dentures. An increase in the severity of xerostomia (dry mouth) can lead to a greater risk of dysphagia, choking, and nutritional problems (Madinier, Starita-Geribaldi, Berthier, Pesci-Bardon, & Brocker, 2009). When it accumulates, undisturbed dental plaque mineralizes into calculus at the gum line resulting in gingivitis, an early reversible periodontal disease. This can progress to periodontitis, which affects the bone and results in tooth loss (Pace & McCullough, 2010). This chronic infection and inflammation of the gums is associated with respiratory diseases, coronary artery disease, diabetes and possibly stroke, osteoporosis and osteoarthritis, and may be associated with chronic obstructive pulmonary disease, rheumatoid arthritis, and Alzheimer Disease (Azarpazhooh & Tenenbaum, 2012; Linden, Lyons, & Scannapieco, 2013).

There is an important link between poor oral health and aspiration pneumonia as well as the two types of Hospital-Acquired Pneumonia (HAP) i.e., Ventilator-Associated Pneumonia (VAP) and Non-Ventilator Hospital Acquired Pneumonia (NV-HAP), all of which result from aspiration of oropharyngeal bacteria from dental plaque biofilm

(Barnes, 2014; DiBardino & Wunderink, 2015; Scannapieco & Shay, 2014). More recently, increased attention has been given to VAP (Labeau, Van de Vyver, Brusselaers, Vogelaers, & Blot, 2011; Sulis, Walkey, Abadi, Reardon, & Joyce-Brady, 2014).

In Ontario, VAP rates must now be reported to the Ministry of Health and Long Term Care and are publicly reported (Health Quality Ontario, 2015). On the other hand, NV-HAP has not received the same attention despite speculation that it is as prevalent as VAP, though under-reported, and should be elevated to the same importance (Quinn et al., 2014).

Disruption of dental plaque biofilm, both morning and night, is paramount to maintaining oral health. More adults are retaining their own teeth until late in life, and when hospitalized for a period of time may not be able to independently brush their teeth or dentures, and care for their gums, tongue, and oral tissues. Provision of oral hygiene care to dependent older adults in long term care, complex continuing care, rehabilitation, acute care, and critical care settings is considered fundamental nursing care (Bulechek, Butcher, Dochterman, & Wagner, 2013; Kitson, Muntlin Athlin, & Conroy, 2014; Yoon & Steele, 2012). It “involves individualized approaches to assessing the oral cavity, disrupting plaque, reducing salivary microorganisms, and cleansing and moisturizing tissues in an effort to prevent plaque-associated diseases and improve well-being” (Coker, Ploeg, Kaasalainen, & Fisher, 2013, p. 2367). It is thought that mechanical oral hygiene (using a toothbrush) may prevent approximately one in 10 cases of death from pneumonia in dependent older patients (Sjögren, Nilsson, Forsell, Johansson, & Hoogstraate, 2008).

Nurses, in their day-to-day care of their patients, are in a position to address oral microbial flora, salivary factors, and dental plaque, thus making the oral hygiene of their patients responsive to nursing interventions. In a model proposed by Vollman (2013), Interventional Patient Hygiene (IPH) is described as “a nursing action plan directly focused on fortifying patients’ host defenses through the use of evidence-based care” (McGuckin, Shubin, & Hujcs, 2008, p.59), and oral cleansing is one of the components of that model. Vollman (2013) described the goal of basic nursing care as proactively intervening with evidence-based strategies to reduce health care acquired infections.

Need for the Study

Despite the potentially important role of nurses in influencing outcomes such as aspiration pneumonia and the sequelae of periodontitis through the provision of oral hygiene care, the actual oral hygiene care practices of nurses, except in settings where patients are at risk for VAP, are largely unknown. The three studies in which actual oral hygiene care was observed in older patients have focused almost exclusively on personal care assistants who provide the bulk of care in long term care settings (Chami et al., 2012; Coleman & Watson, 2006; Gammack & Pulisetty, 2009). Qualitatively exploring the “active ingredients” of interventions, such as those that comprise oral hygiene care practices, is an important step in ensuring nurses can provide care interventions that will have an adequate impact on outcomes (Straus et al., 2010).

It is customary for nurses to indicate in the patient’s health record that mouth care or oral care was given, but specific details about the interventions are rarely provided. Mouth care protocols and individualized regimens are lacking in many care settings,

leaving decisions about oral care interventions up to the individual caregiver at the time of care provision (MacEntee, Thorne, & Kazanjian, 1999; Samson, Berven, & Strand, 2009; Scannepieco, 2006). It has been suggested that oral hygiene care is given indiscriminately, and that oral care regimens are often based on tradition, anecdote, and subjective evaluation (Gibson, Horsford, & Nelson, 1997; Johnson, 2013).

Studies of self-reported practices related to oral care for older patients who depend on staff for their care revealed that oral hygiene practices occurred to different extents, but all fell short of what the researchers considered adequate. This was true in long term care (Chalmers, Levy, Buckwalter, Ettinger, & Kambhu, 1996; Dharamsi, Jivani, Dean, & Wyatt, 2009; Jablonski, Munro, Grap, Schubert, & Spiegelmyer, 2009) and in hospitals (Adams, 1996; Horne, McCracken, Walls, Tyrrell, & Smith, 2015). A series of articles focusing on the concept of “missed nursing care” in hospital settings has indicated that oral care is one of the most missed or rationed of all care activities studied (Kalish, 2006; Kalish, Tschannen, Lee, & Friese, 2011; Papastavrou, Andreou, Tsangari, Schubert, & De Geest, 2013).

Not only are nurses’ actual practices unknown, but the sources of knowledge contributing to those practices are also unknown; that is, on what information or knowledge do nurses base their oral hygiene care approaches? Factors influencing nurses’ ability to provide or direct oral hygiene care have not been studied. Therefore, it is not known whether barriers and facilitators of oral hygiene care experienced by nurses are similar to those reported by personal care assistants.

In summary, knowledge gaps include: (a) the oral hygiene interventions provided by nurses to hospitalized older patients outside critical care and cancer care settings, (b) the sources of knowledge or information nurses use in determining their oral hygiene practices, and (c) factors influencing nurses' ability to provide oral hygiene care to hospitalized older adults. An understanding of these issues could provide a foundation to ensuring best practice related to oral hygiene care, and ultimately improved health and quality of life for older patients.

Statement of the Problem

The proportion of hospital inpatients who are older adults is increasing, and many of these patients have natural teeth. The oral hygiene of older hospitalized patients, especially those in post-acute settings where the hospital stay is extended, could be influenced by nursing interventions that include disruption of dental and denture plaque biofilm, managing the impact of hyposalivation, and addressing oral microbial flora. Bedtime oral care practices are of greater interest because the single most important time for oral hygiene care is an hour after the last meal of the day or just before bedtime (Minnesota Department of Health, 2009). However, the actual oral hygiene care practices of nurses are relatively unknown and they may vary among nurses and settings.

Purpose of the Study

The purpose of the study was to explore how nurses provide bedtime oral hygiene care for hospitalized older adults in post-acute settings. The specific research questions are:

1. What oral hygiene care interventions are provided by nurses to hospitalized older patients in post-acute settings?
2. How do nurses enact their oral hygiene care practice?
3. How do nurses know what oral hygiene interventions to provide for their patients at bedtime?
4. How do factors related to the nurse, patient and family, and the clinical unit influence oral hygiene care provision by nurses?

Scope of the Study

The central phenomenon of oral hygiene care was defined broadly as the provision of routine mouth care, oral care, or oral hygiene, as an aim of this study was to learn more about the interventions that comprise oral hygiene care. Nurses include a mix of Registered Practical Nurses (RPNs) and Registered Nurses (RNs). RPNs in Ontario have earned a diploma in practical nursing by enrolling in a two-year college program, or may have earned a certificate which some time ago allowed them to write the national registration examination. RNs in Ontario have completed a four-year university nursing program leading to a Bachelor of Science in Nursing, or may have earned a diploma which some time ago allowed them to write the national registration examination (College of Nurses of Ontario, 2014a). The more comprehensive educational preparation

for RNs provides a deeper knowledge base for clinical practice, critical thinking, and research utilization. In long term care settings, where most studies on oral hygiene care outside of critical care have taken place, there are a variety of terms used for the care providers to whom nurses delegate aspects of patient care. The length of their education programs varies and many roles are not regulated. In the literature they are referred to by titles such as Certified Nursing Assistants (Han, et al., 2013), Personal Support Workers (Lilly, 2008), and Health Care Aides (Mallidou, Cummings, Schalm, & Estabrooks, 2013). When referring to these care providers, I will call them personal care assistants.

Older patients having an extended hospital stay (i.e., longer than a few days) are cared for on complex continuing care or rehabilitation units, or on units known as alternate level of care (ALC) units, often converted medical units, where patients are awaiting an alternate level of care such as long term care or complex continuing care. Oral care interventions on units where patients receive mechanical ventilation and chemotherapy were not studied.

Personal Statement: My Journey to Here

My personal history as a nurse includes working with nurses caring for older adults, mostly in complex continuing care settings (now known as complex care), as a clinical educator and clinical nurse specialist. My career began in acute care and although I have never worked in long term care, I volunteered on the board of trustees of one home and was impressed with how they managed with few resources and tight regulations. My mother's long career as a dental assistant may have contributed to my attention to "honest" flossing (finally) in early adulthood and to my fear of developing gum disease.

I confess as a nurse to having been naïve until fairly recently about the significance of the oral-systemic connection. My eyes were finally opened when a clinical nurse specialist colleague invited me to a webinar presentation on oral hygiene in patients with dementia. I thought it was a mundane topic, but I went along because I have always admired her passion for dementia care. It became clear to me that day that things really had changed since I provided oral care at the bedside. Most patients have at least some of their own teeth, and many resist care. I learned that many nurses do not know how to provide such care to patients who resist, and so they give up.

I was shocked to hear from Speech-Language Pathologist colleagues that they often have to spend quite some time cleaning the mouths of patients before they can proceed to perform a swallowing assessment. Even patients who do not resist care have their oral hygiene overlooked and this puts them at risk for aspiration pneumonia. I felt as if my head had been buried in the sand for too long and I immediately joined the oral hygiene committee that was struck after the webinar. This committee has now done some work in the area of needs assessment, delivering education, and ensuring that appropriate products and tools are available for oral care. Around this time, the long awaited Registered Nurses' Association of Ontario (RNAO) Clinical Practice Guideline, "*Oral Health: Nursing Assessment and Interventions*" was published.

I joined the Seniors Health Research Transfer Network (SHRTN) Oral Health Community of Practice. It allowed me to participate in telephone discussions with experts in the field. The group was facilitated by a very inspiring and passionate nurse, and many members were dental health professionals. The focus was on long term care and the work

of personal care assistants, though my own interest is in the work of nurses in post-acute settings. Despite this, there was much to learn. In the experience of the dental health professionals and oral health promoters, oral hygiene care for those living in long term care homes is not well done, to the point of neglect. They were the small but persistent voices for reform. They believe that patients in long term care settings should have better access to dental care. I wondered if the issues were the same in post-acute settings such as my own, and with this, my area of study was launched.

I have now read extensively on the topic in our professional journals, and have noticed that the authors of most studies are dental health professionals. Few nurses are researching this area—at least outside of critical care where mandatory reporting of ventilator-associated pneumonia rates drives nurses to study the oral care practices in those settings.

In preparation for this study I conducted a concept analysis of oral hygiene care (Coker et al., 2013). We identified the defining attributes of oral hygiene care as: (a) using care approaches informed by knowing the patient; (b) inspecting the oral cavity; (c) removing plaque from teeth and dentures; (d) cleansing oral tissues; (e) decontaminating the oral cavity; (f) using fluoride products; and (g) maintaining oral tissue moisture. Consequences of oral hygiene care were identified as: (a) prevention of microbial infections, periodontal diseases, dental caries, oral discomfort, and oral candidiasis; and (b) enhanced cough reflex, psychosocial well-being, and functional well-being. We recommended that further research be carried out to link oral hygiene interventions with oral health outcomes. However, it is biologically plausible that appropriate oral hygiene

care could contribute to the control of plaque and to better oral health which in turn contributes to respiratory and systemic health. Oral hygiene care is ill-defined and little is known about what comprises it in actual practice.

I have had the good fortune to have spent time with a registered dental hygienist at the bedsides of patients on the units with which I am affiliated. I have grown in my ability to inspect mouths and recommend products and tools on the plan of care. Although some inroads have been made, they are difficult to sustain and any gains have not spread beyond these immediate units.

Significance of the Study

The knowledge gained through this study is significant for nursing practice. That is, oral health could potentially be considered a nursing sensitive outcome (an outcome sensitive to the input of nursing care). Knowing more about the structure and processes associated with this outcome should inform nursing practice, especially as it relates to the fundamentals of care.

Kitson, Muntlin Athlin, and Conroy (2014) responded to the growing concern about how basic or fundamental care is delivered to and experienced by patients by arguing that nursing “has not explored these fundamental aspects of patient care in a systematic, conceptually coherent, scientific way, and this has created a number of ongoing challenges” (p. 332). They go on to describe these challenges as: (a) a need for integrated thinking around the fundamentals of care from a conceptual, methodological, and practical perspective; (b) a need for a consistent understanding of the nurse-patient encounter to avoid a depersonalized and mechanistic approach to the fundamentals of

care; and (c) the “need for a systematic approach to the fundamentals or basics of care that combines the physical, psychosocial, and relational dimensions of the care encounter within the wider context of the care environment” (p. 332).

The findings of this study may be significant for the continuing education of nurses as they reveal the gaps between current and desirable knowledge, skills, attitudes, and behaviours that may be amenable to educational interventions (Kitson & Straus, 2010). Findings have the potential to impact policy regarding resources (both material and human) to enhance provision of optimal oral hygiene care. This practice-based research study involved learning more about current practices within the clinical setting and could provide the groundwork for future nursing implementation research.

Structure of the Thesis

This thesis is structured according to the linear-analytic approach described by Yin (2014) as being applicable to exploratory case studies. In Chapter 1, the issue being studied is described. In Chapter 2, a review of relevant prior literature is presented. The methods are covered in Chapter 3. In Chapter 4, data analysis and findings are described. Lastly, the implications and conclusions are presented in Chapter 5.

Chapter Two

Background and Review of the Literature

The development panel of the Registered Nurses' Association of Ontario practice guideline, "*Oral health: Nursing Assessment and Interventions*" (Registered Nurses' Association of Ontario, 2008) identified research gaps while reviewing evidence for the development of the guideline. One gap of interest was the assessment and provision of oral health care by nurses. The review of the literature for this study has also revealed gaps in understanding the actual oral hygiene care provided by or directed by nurses, despite the potentially significant role of nurses. Very little research on oral health has been conducted and published by nurses—most articles have been written by dental health professionals and speech-language pathologists, all of whom have an interest in the outcomes of the oral hygiene care provided by nurses.

In this chapter I present literature that provides background, establishes significance, and shapes the direction of the study. Literature was revisited throughout the study to support various design features (Chapter 3), to compare emerging findings with those of existing studies, and to provide evidence to support recommendations (Chapter 5).

My intent in this review of the literature is to "locate and assimilate what is already known and then enter the conversation from a critical and creative standpoint" (Bloomberg & Volpe, 2012, p.74). This requires my presenting current concepts, theories, debates, and controversies relevant to the research problem. To this end, a number of interrelated topics have been the focus of review and are depicted later in Figure 1. Prior

to a discussion of the topics reviewed, however, a short primer on the biology of dental plaque biofilms is in order as biologic plausibility is central to the relationship of oral hygiene care on plaque control.

The Oral Microbiome and Dental Plaque Biofilms: A Primer

Fundamental to the justification of need for this study is an appreciation of the significance of dental plaque and the need for its control. All human body sites including the mouth are colonized by microbiota—the human microbiome, and they co-exist in harmony with the host. The exception is the *oral* microbiota which causes oral diseases in most of us. These oral bacteria have been studied for years and are difficult if not nearly impossible to culture, but the dawn of molecular techniques involving genetic sequencing has recently made them easier to study (Scannapieco, 2013; Wade, 2013). Studies have been carried out extensively with material collected from oral diseases such as dental caries (cavities), endodontic infections, gingivitis, and periodontitis (de Lillo et al., 2006; Munson, Banerjee, Watson, & Wade, 2004; Munson, Pitt-Ford, Chong, Weightman, & Wade, 2002). Unique communities of organisms colonize different habitats in the mouth: the gingiva (gums) and hard palate; the tongue and throat; and supra- and subgingival dental plaque i.e., plaque above and below the gum line (Wade, 2013).

The mouth, much like a river, has a continual flow of liquid that washes out particles that do not attach and hold on to surfaces. Many micro-organisms that enter the mouth are trapped by saliva and swallowed. In fact, the simple rule for bacteria wanting to colonize the oral cavity is “stick or be swallowed” (Nobbs, Jenkinson, & Jakubovics,

2011, p.1271). Micro-organisms that successfully colonize the oral cavity are specially adapted to do so.

Of the 600 species of bacteria found naturally in the mouth, 100 or more may be present at any given time and only a small proportion are able to adhere to hard or soft surfaces forming a biofilm (Nobbs et al., 2011). Many of the micro-organisms in our mouths are harmless natural resident microflora, or commensal bacteria. They have evolved to carry out key functions that benefit us, including preventing colonization by outsider bacteria, often pathogenic ones, either by interfering with their adhesion, or producing toxins that inhibit their growth (Marsh, 2012; Scannapieco, 2013).

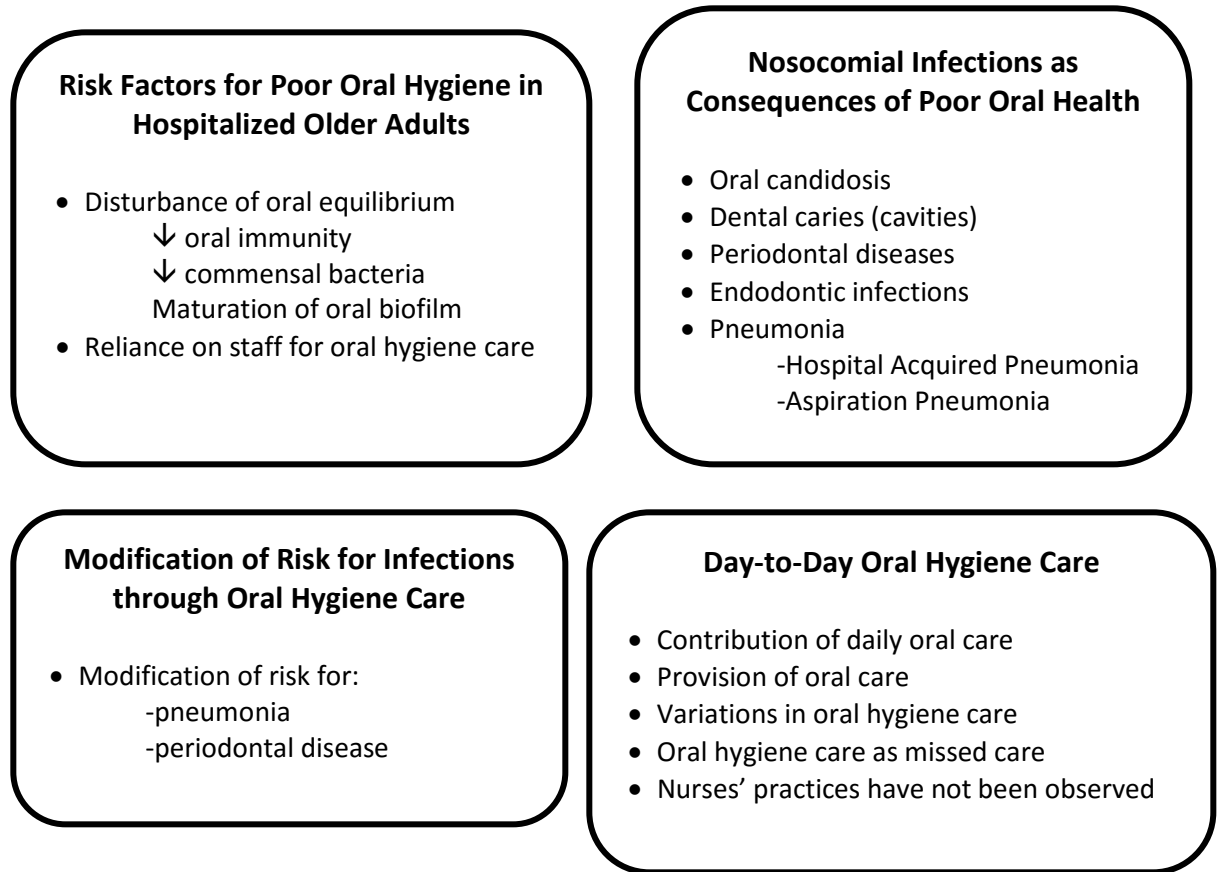
Within a few hours of cleaning our teeth, bacteria begin to adhere to the hard and soft surfaces in the oral cavity. The adult oral cavity has a surface area of approximately 215 cm² (about the size of the palm of a man's hand) providing an extensive surface to which micro-organisms can attach (Nobbs et al., 2011). These early (or pioneer) colonizers are commensal bacteria dominated by Gram-positive cocci and rods. The initial attachment of early colonizers allows for subsequent adhesion of other bacteria and as they bind together, co-aggregation occurs (Nobbs et al., 2011). If this scaffolding-like plaque growth is not controlled by being disrupted through effective oral hygiene measures such as tooth brushing, the plaque accumulates and grows more complex as it matures, becoming dominated by Gram-negative anaerobic bacteria. Those late (or secondary) colonizers tend to be pathogenic in nature (Marsh, 2012; Scannapieco, 2013). Simply put, the pathogenic bacteria can be prevented from colonizing (or sticking to the

scaffolding) if the scaffolding itself is torn down through the action of a toothbrush before it is too late.

Literature Map

The purpose of a review of the literature, according to Yin (2014), is to “develop sharper and more insightful questions about the topic” and not “to determine the answers about what is known on a topic” (p.14). Creswell (2014) suggests that organizing the literature enables an understanding of how the proposed study adds to or extends existing research. To this end, he created an approach he refers to as a literature map. It is a visual summary of existing research about a topic, and can be organized in different ways. The literature map I have developed for this study is shown in Figure 1.

Figure 1. Literature map showing topics in the review of the literature



Risk Factors for Poor Oral Hygiene in Hospitalized Older Adults

Disturbance of equilibrium in oral microbial communities. Oral microbial communities remain relatively stable in healthy individuals due largely to the complex interaction between those microbial communities and the individual's oral defence system. However, if the equilibrium among (a) commensal bacteria (i.e., bacteria that comprise the majority of a healthy individual's oral flora), (b) the bacteria that cause dental caries and periodontal disease, and (c) the individual's oral immune status is disturbed, oral colonization by opportunistic respiratory pathogens can ensue. The

ecosystem in the oral cavities of older compromised patients often represents a disturbance in that equilibrium (Tada & Hanada, 2010).

Tada and Hanada (2010) proposed three events in the disturbance of equilibrium in the oral cavity of older adults: (a) decreased oral immunity, (b) decreased oral commensal bacteria, and (c) maturation of oral biofilm (plaque). The three events, as they relate to older patients in hospital will be discussed in turn.

Decreased oral immunity. Salivary flow rate decreases in patients who are not chewing, such as in those receiving enteral nutrition (tube feeding). Many drugs cause dry mouth as well. Saliva helps to wash away debris, but it also contains immune factors, some of which prevent bacterial colonization, and others that are antimicrobial in nature. Those immune factors inhibit the proliferation of bacteria that cause dental caries and periodontal disease, and are considered to have an antimicrobial effect on opportunistic respiratory pathogens in the oral cavity (Tada & Hanada, 2010). The oral immune function of older patients is compromised because of decreased saliva secretion, and decreased concentration of immune components. Malnutrition, lower serum albumin concentrations, and lower levels of physical activity can also contribute to compromised immune factors in saliva (Cohn & Fulton, 2006; Tada & Hanada, 2010). Impaired swallowing, reliance on enteral nutrition (and the decreased salivary flow associated with reduced oral intake), and co-morbidities requiring medications that cause dry mouth, also put those patients at risk for poor oral health (Cohn & Fulton, 2006).

Decreased oral commensal bacteria. Commensal bacteria in the oral cavity are thought to play a role in suppressing the colonization and growth of pathogens. One

mechanism by which they kill opportunistic respiratory pathogens is by working together with immune factors in the saliva (Uehara et al., 2006). Older hospitalized patients may receive courses of antibiotic therapy which may not only lead to decreased numbers of oral commensal bacteria, but also to antibiotic resistant bacteria such as Methicillin-resistant *Staphylococcus aureus* (MRSA) which in fact have been isolated from dental plaque. Hyposalivation in the presence of poor oral hygiene contributes to the creation of an acidic environment that is unfriendly toward commensal bacteria (Tada & Hanada, 2010).

Maturation of oral biofilm. Dental plaque forms when early colonizers, mostly commensal bacteria, adhere to the surface of teeth, gums, and dentures forming a sticky coating. Late colonizers adhere to the early ones and not only decrease the protective activity of those commensal bacteria, but allow the growth of opportunistic respiratory pathogens, some of which can cope with the acid environment not as well tolerated by commensal bacteria.

The oral microbiota of patients receiving enteral nutrition is distinct from those fed orally, and there is a greater amount of colonization in patients receiving enteral nutrition (Jablonski, Munro, Grap, & Elswick, 2005). A study of the pathogenic oral flora revealed that the prevalence of *Pseudomonas* was high and found only in patients fed by nasogastric tube or gastrostomy tube. As well, highly pathogenic bacteria were cultured primarily in patients with feeding tubes (Liebovitz, Plotnikov, Habet, Rosenberg, & Segal, 2003; Takeshita et al., 2011). Oral food intake may play a role in maintaining healthy commensal bacteria that act to prevent infection (Takeshita et al., 2011).

Reliance on others to provide oral hygiene care. Older adults now retain their natural dentition longer than in the past, with only 21.7% of Canadians over the age of 65 being edentulous (without teeth) in 2009 compared with 43% in 1990 (Statistics Canada, 2010; Yao & MacEntee, 2014). In 1985 edentulism in long term care where the average age was 70, was the rule rather than the exception (MacEntee, 1985). Given that the average age of RNs in Ontario is 45 years and the average age of RPNs is 42 years (College of Nurses of Ontario, 2014b), the shift from expecting few older patients to have teeth, to expecting most to have teeth is a large shift within the span of a career.

Frail older patients in hospitals and long term care homes are at risk for poor oral health because of declining functional and cognitive abilities. A number of neurological conditions such as stroke, Alzheimer disease, Parkinson disease, and neuromuscular disorders put older patients at risk (Sarin, Balasubramaniam, Corcoran, Laudendach, & Stoopler, 2008). Many can no longer provide adequate self-care because they may have lost manual dexterity and cannot use a toothbrush, or may not remember how to brush their teeth or follow instructions for swishing with an antibacterial rinse. They therefore require assistance from nurses to complete their oral hygiene care. Patients with dementia who exhibit self-protective or “resistive” behaviours are at very high risk for poor oral health because nurses and personal care assistants are challenged when providing care and may not be able to fully carry it out (Jablonski et al., 2011; Philip, Rogers, Kruger, & Tennant, 2012).

In a study of 205 long term care residents, 41% of whom had dementia, 76% relied on manual toothbrushing; 75% of “disabled” residents received assistance with oral

care while 22.6% “partially disabled” residents received help; and 9.4% of “able” residents received help (Philip et al., 2012). In residents with dementia, 60% received assistance with oral care while 37% of residents without dementia received oral care. Residents with dementia had significantly higher plaque scores than residents without dementia ($p < 0.05$). Residents reported as receiving assistance with oral care had higher plaque scores (70.5%) than those who did not receive help (55.5%). Half of the residents reported to have been assisted with their oral hygiene had moderate gingival inflammation, while 38.6% of those not assisted had moderate inflammation. Oral health status was poor in patients with dementia despite assistance being given.

Nosocomial Infections as Consequences of Poor Oral Health

A number of nosocomial infections and systemic diseases that are associated with poor oral health are described next. They include oral candidosis, dental caries, periodontal diseases (gingivitis and periodontitis) and their associated systemic diseases, endodontic infections, and hospital acquired pneumonia (HAP) and aspiration pneumonia (AP).

Oral Candidosis. There are different forms of oral candidosis (Williams, Kuriyama, Silva, Malic, & Lewis, 2011). Pseudomembranous candidosis (oral thrush) presents as superficial white plaques that can be easily removed by friction. It occurs in 5-10% of older people. Acute erythematous candidosis (antibiotic sore mouth) is a reddened, painful lesion most often on the dorsum of the tongue. Reduced microbial competition for *Candida*, when the patient is taking antibiotics, permits its overgrowth. Use of steroid inhalers can also create a localized area of immune suppression which allows *Candida* to

flourish. Chronic erythematous candidosis (denture stomatitis) presents as a reddening of the palate beneath the denture. Up to 75% of denture wearers suffer from it. Inadequate oral hygiene and sleeping while wearing dentures are the principal causes. Angular cheilitis presents as reddened lesions at the corners of the mouth and usually occurs in patients with existing oral candidosis.

Dental caries. Dental caries is one of the most common infectious diseases of humans. Hospitalized patients are at high risk for dental caries (cavities) because sugary foods and those containing refined carbohydrates remain in contact with teeth for long periods between brushing (MacEntee, 2005). The use of applesauce or jam as a medium for administering medications at bedtime, and bedtime snacks consisting of cookies, a muffin or a sandwich, and juice are common examples observed in practice. Dietary fermentable carbohydrates in the presence of bacteria in dental plaque are converted to lactic acid, and this acid drives the tooth demineralization process leading to cavities (MacEntee, 2005; Scannapieco, 2013). Plaque biofilms need to be established for about two days before the pH falls below critical levels for enamel to demineralize. Therefore, thinner biofilms are less damaging than the thicker, mature biofilms (Marsh, 2012). In a study of residents in long term care homes in Nova Scotia, Matthews et al. (2012) found that 51% of dentate residents had untreated coronal caries (cavities on the visible surfaces of teeth), and 44% had untreated root caries (cavities on exposed roots).

Periodontal diseases. When bacteria colonize the tooth surface, they do so around the gingival margin (gum line) and interdental spaces (between the teeth). The developing biofilm releases biologically active molecules that diffuse into the gingival

epithelium to initiate a host response that results in gingivitis. Gingivitis is characterized by red, swollen, bleeding gums, and may not be painful so may be left untreated.

Gingivitis can lead to periodontitis which can destroy the surrounding ligament and supporting bone of the tooth and ultimately result in tooth loss (Scannapieco, 2013). As the disease progresses and the epithelium becomes ulcerated, bacteria can enter the bloodstream. Once the periodontal pathogens and their toxins access the bloodstream, inflammatory mediators are produced and they enter the bloodstream. This results in pathologic consequences in different organs (Igari, Kudu, Toyofuku, Inoue, & Iwai, 2014). Poor glycemic control in diabetes, atherosclerotic plaque development, cardiovascular disease, stroke, Alzheimer disease, rheumatoid arthritis, and some cancers have recently been linked with oral inflammation and infection. They are presumed to share common mechanisms that include the direct action of oral bacteria that enter the bloodstream, as well as local and systemic inflammatory pathways that have been brought on by bacteria (Igari et al., 2013; Scannapieco, 2013).

Endodontic infections. Penetration of bacteria from a dental cavity into the tooth root canal system is the usual cause of endodontic infections. Other routes into the pulp include trauma leading to a fractured tooth, periodontal disease, or tooth erosion exposing the pulp (Scannapieco, 2013).

Pneumonia. Although the association between pneumonia and oral colonization of opportunistic respiratory pathogens has been suspected for some time through epidemiological studies, it has been recent advances in molecular biological techniques that have made it possible, through genetic matching, to verify that respiratory pathogens

in lung fluid of patients with hospital-acquired pneumonia matched their dental plaque (El-Sohl et al., 2004). There is evidence that bacterial species having the potential to cause respiratory diseases in compromised hospitalized older adults can be isolated from their dental plaque, though not from the oral cavities of healthy adults (Limeback, 1998; Janssens, 2005).

Pneumonia, together with influenza, is the 8th most common cause of death in Canada and the United States (Scannapieco & Shay, 2014; Statistics Canada, 2014). The location of the patient at the time of infection provides the basis for classification (i.e., community-acquired pneumonias, and nosocomial or health care-associated pneumonias (which by definition occur more than 48 hours after admission to a hospital or long term care home). One type of health care associated pneumonia is nursing home-acquired pneumonia (NHAP), the leading cause of death in long term care settings. The other type is hospital-acquired pneumonia (HAP) which can be further classified as ventilator associated pneumonia (VAP) and non-ventilator hospital acquired pneumonia (NV-HAP) (Scannapieco & Shay, 2014).

Hospital-acquired pneumonia. HAP is the second most common nosocomial infection and has the highest mortality rate of all nosocomial infections (Rotstein et al., 2008). The main mechanism of HAP is microaspiration of upper respiratory tract secretions into the lower respiratory tract. Microorganisms causing pneumonia can colonize the oral cavity and upper respiratory tract and, when aspirated, cause pneumonia.

Aspiration of small amounts of secretions, without any obvious signs, is a common phenomenon that occurs during sleep, even in healthy younger people. This

phenomenon is known as silent aspiration (Ebihara & Ebihara, 2011). Microaspiration occurs spontaneously and is associated with depressed consciousness, swallowing disorders, impaired cough reflex, altered gastric motility, and reduction in salivary flow which allows enhanced microbial biofilm formation (Sabrià & Sopena, 2011; Scannapieco & Shay, 2014). In the community setting, these microorganisms tend to be Gram-positive, but oropharyngeal flora switches to Gram-negative bacilli in hospitalized patients a few days into admission especially in the presence of malnutrition, severe disease, and use of antibiotics (Sabrià & Sopena, 2011).

Diagnosing HAP is based on history, clinical examination, laboratory tests, and x-ray. However, the clinical diagnosis of pneumonia has poor specificity for a number of reasons including absent symptoms, symptoms obscured by underlying disease, and colonization of the upper respiratory tract in the absence of infection (Rotstein et al., 2008; Public Health Agency of Canada, 2010). It is therefore thought to be often undetected and underreported.

The incidence of HAP varies with the hospital environment. About 30% of HAP occurs in critical care, and most occurs in patients who are intubated (Rotstein et al., 2008). Because of the high risk of developing HAP in this population, much research has been dedicated to it. Ventilator acquired pneumonia rates are now reported publicly as a patient safety indicator in Ontario hospitals (Health Quality Ontario, 2015).

Standardized surveillance definitions of VAP have evolved and evidence-based VAP prevention bundles have been developed (Institute for Healthcare Improvement, 2012; Safer Healthcare Now, 2012). These bundles include oral care and oropharyngeal

decontamination with chlorhexidine gluconate. The combination of surveillance and adoption of these bundles has resulted in marked reductions in VAP rates in critical care (Davis & Finley, 2012; Health Quality Ontario, 2015).

Unlike VAP, NV-HAP is not currently publicly reported by Ontario hospitals, and there is a paucity of research related to its incidence, outcomes, and prevention. In Pennsylvania where all healthcare associated infections are reported, the mortality rates for patients with VAP and NV-HAP were comparable in the years 2009 through 2011, with the number of actual cases of NV-HAP being more than twice that of VAP (Davis & Finley, 2012).

In a recent study in the United States, Quinn et al. (2014) discovered a significant incidence of previously unreported NV-HAP through retrospective chart reviews in three hospitals. Episodes of NV-HAP contribute to increased costs of care, increased length of stay, discharge challenges, and higher mortality (Quinn et al., 2014), but this area has been insufficiently studied in health care (Davis & Finley, 2012; Sabrià & Sopena, 2011).

Aspiration Pneumonia. Aspiration pneumonia (AP), which represents 5%-15% of hospital pneumonias, has a distinct pathophysiology but shares many features with community acquired pneumonia (CAP) and HAP. The way it has been described over time has evolved and this has led to confusion when diagnosing, with much overlap between AP and HAP. It typically involves a macroaspiration event. When macroaspiration occurs, a large bacterial load of pathogens from the upper gastrointestinal tract or oral cavity is deposited into the lungs (Dibardino & Wunderink, 2015).

In summary, biofilms (dental plaque) form on teeth, dentures, and oral tissues. These biofilms can become colonized by respiratory pathogens. Pneumonia develops when the pathogen is aspirated from the oropharyngeal cavity into the lower airway. Inflammation of the periodontal tissue also occurs in response to oral biofilms. Inflammatory products from the gum tissues get into the bloodstream and infect organ systems. Along with the pathogenic bacteria from the oral biofilms, inflammatory products can also be shed into oropharyngeal secretions (saliva) and aspirated into the lower airway (Scannapieco, 2013).

Modification of Risk for Infections through Oral Hygiene Care

Modification of the risk for pneumonia. In systematic reviews of the preventive effect of oral hygiene interventions on pneumonia in older patients in hospitals and long term care homes, direct and indirect evidence that oral care reduces the occurrence of respiratory diseases in older residents of long term care homes was found (Sjögren et al., 2008; van der Maarel-Wierink, Vanobbergen, Bronkhorst, Schols, & deBaat, 2013). Lam, McGrath, Li, and Samaranayake (2012) evaluated articles that reported on the effectiveness of oral hygiene interventions that reduced the pneumonia-causing opportunistic Gram-negative bacilli in the oral cavity and oropharynx of medical patients. They found that the quality of evidence associated with mechanical oral hygiene methods and antiseptic agents remains poor. While there is evidence, and the following studies are frequently cited, the quality of the evidence is limited.

A number of baseline modifiable risk factors for pneumonia were studied in 613 long term care home residents in Connecticut (Quagliarello et al., 2005). Two risk factors,

inadequate oral care and swallowing difficulty (i.e., cough during swallowing), were shown to be independently associated with pneumonia. It was estimated that up to 21% of the cases of pneumonia could have been prevented in the sample had neither risk factor been present. However, lack of a documented dental examination was used as a surrogate for inadequate oral care, that is, the contribution of daily oral hygiene care was not measured. Frequency of gum or tooth brushing or a number of other specific measures were acknowledged by the authors to have possibly shown a stronger association with pneumonia (Quagliarello et al., 2005).

Cough during swallowing predicts aspiration, but silent aspiration of oropharyngeal contents was not taken into consideration, and the actual pneumonia risk may have been underestimated (Quagliarello et al., 2005). The swallowing and cough reflex are governed by nerves containing the hormone, substance P. Interventions that increase substance P, including gum stimulation with tooth brushing, may have a therapeutic effect. The authors concluded that it is biologically plausible that aggressive oral care, that is, gum and tooth brushing, could have a direct effect on oral hygiene by reducing bacterial pathogen colonization, and an indirect effect on the swallowing reflex by increasing the production of substance P. The authors then set out to test their hypothesis.

A subsequent pilot study was designed to determine whether targeted interventions might modify either of the two risk factors shown to be associated with pneumonia (Quagliarello et al., 2009). The feasibility and staff adherence to intervention protocols aimed at improving oral hygiene and swallowing in 52 Connecticut nursing

home residents was studied. Thirty residents received oral hygiene interventions at different frequencies, and 90% experienced a clinically significant reduction in plaque scores. Further, the plaque score reduction from the average baseline score of 2.2 reflected a dose response: two minutes of oral brushing every morning with a 15mL antibacterial rinse (0.12% chlorhexidine) in the evening resulted in a mean plaque score reduction of 1.31; oral brushing every morning with a rinse in the morning and evening resulted in a mean plaque score reduction of 1.44; and brushing and rinsing every morning and evening resulted in a mean plaque score reduction of 1.69. This promising pilot study reported an effective and feasible intervention to which personal care assistants were able to adhere. Unfortunately, a recent cluster-randomized clinical trial of the intervention conducted with 834 participants in 36 nursing homes did not demonstrate a significant reduction in the incidence of pneumonia (Juthani-Mehta et al., 2015).

Other studies have reported on oral hygiene protocols, but their feasibility in a hospital setting might be questioned. One study demonstrating the effect of oral care on pneumonia reported an intervention used in a study of 417 residents in 11 long term care homes in Japan (Yoneyama et al., 2002). In the intervention group, nurses and other caregivers brushed teeth for 5 minutes after every meal. Toothpaste was not used, and the palate, mandibular mucosa, and tongue were also brushed. In some cases, when using a toothbrush was inefficient, daily scrubbing of the pharynx with 1% povidone iodine solution took place. “Inefficient” as it related to tooth brushing was not defined in the study. In addition, dentists or dental hygienists were involved with plaque and calculus control weekly. Dentures of residents in both groups were cleaned with a denture brush

daily and denture cleanser weekly. Compared with the “no oral care” group who took care of their own oral hygiene, the group receiving care had significantly decreased incidence of pneumonia, febrile days, and death due to pneumonia (Yoneyama et al., 2002).

There may have been a risk for bias as the study did not include persons with dementia, or those receiving enteral nutrition (Yoneyama et al., 2002). Combining mechanical oral hygiene (tooth brushing) and professional oral hygiene makes it difficult to discern the contribution of each. Lastly, the contribution of chemical decontamination of the oropharynx through the use of povidone-iodine is not known as its frequency of use was not reported. Nonetheless, this randomized controlled trial has been included in at least two systematic reviews of prevention of health care associated pneumonia with oral care (Kaneoka et al., 2015; Sjögren, Nilsson, Forsell, Johansson, & Hoogstraate, 2008), and has been widely cited as evidence that oral care may be useful in preventing pneumonia. However, the intensity of the oral care described in the study may not be feasible in many care settings.

Watando et al. (2004) studied 59 long term care residents in Japan and conducted their trial much the same as Yoneyama et al. (2002) but without using povidone-iodine. They found a significant improvement in cough reflex sensitivity, that is, at 30 days the cough reflex threshold was significantly lower than in the control group, suggesting that intensive oral care may prevent aspiration pneumonia.

Both studies (Watando et al., 2004; Yoneyama et al., 2002) reported interventions that might be considered time-consuming, but also involved weekly professional

cleaning. Older adults generally do not have access to dentists and dental hygienists when hospitalized. In some settings where they do, they must cover the cost themselves as the provincial health insurance plans do not. Nurses' perspectives about performing the interventions were not reported in this study.

Another study, again in nursing homes in Japan, involved dental hygienists weekly using an electric toothbrush with an automatic water supply, hand scalers, interdental brushes, sponge brushes and other treatments to clean the teeth, buccal (cheek) mucosa, tongue, and dentures (Adachi, Ishihara, Abe, Okuda, & Ishikawa, 2002). In the control group, and in the intervention group between dental hygienist visits, basic oral hygiene was provided by staff or the patient and involved swabbing with a sponge brush and denture cleaning. The prevalence of fever, fatal aspiration pneumonia, halitosis (as measured by exhaled methyl mercaptan—a gas with the unpleasant smell of rotten cabbage), and number of *Candida albicans* in the oral cavity was significantly lower in the group receiving professional oral care (Adachi et al., 2002). Given the absence of chemical decontamination in this study, professional oral hygiene care appears to have a large impact. However, the interventions provided by nurses or patients themselves in the control group, and between dental hygienist visits in the intervention group, that is, swabbing with a sponge brush and cleaning dentures may not represent ideal nursing interventions against which to compare.

In a recent quasi-experimental study, Quinn et al. (2014) reported a 37% reduction in cases of non-ventilator associated pneumonia after the introduction of an enhanced oral care protocol delivered by registered nurses and assistants. The program

consisted of: (a) training; (b) supplying products such as soft-bristled toothbrushes, toothpaste containing sodium bicarbonate, alcohol-free antiseptic mouth rinse, lip moisturizer, and suction toothbrushes for those patients at risk for aspiration; and (c) providing oral care after meals and at bedtime. Oral care frequency at least once per shift increased dramatically from 27% to 80%. Specific interventions were not reported, though nurses were expected to follow the new protocols. This lack of reported intervention integrity is a limitation in many similar studies of oral hygiene interventions (Coker, Ploeg, & Kaasalainen, 2014).

Modification of risk for periodontal disease. In a recent systematic review of programs to improve oral hygiene outcomes, a number of studies showed improvements in outcomes after staff received an oral health education program, though others did not (Coker et al., 2014). No studies took place outside of long term care, and only a few staff in some settings were nurses. Studies were of weak or moderate quality except for one strong study (Frenkel, Harvey, & Newcombe, 2001) in which improvements in denture plaque scores, denture induced stomatitis, dental plaque, and gingivitis were seen. In the moderately rated studies, there were improvements in: (a) denture stomatitis, glossitis, mucosal yeast scores, and denture yeast scores (Budtz-Jorgensen, Mojon, Rentsch, & Deslauriers, 2000); (b) dental plaque scores, but not tongue plaque and dental plaque (De Visschere, Schols, van der Putten, de Baat, & Vanobbergen, 2012) and (c) mucosal disease, angular cheilitis, denture hygiene, and denture stomatitis (Nicol, Sweeney, McHugh, & Baag, 2005). It was not clear in these studies whether the oral hygiene care interventions were offered consistently.

Day-to-Day Oral Hygiene Care

The contribution of daily oral hygiene care. Effective oral health programs for older institutionalized patients include three pillars: oral health assessment, dental treatment, and daily oral hygiene (MacEntee et al., 1999). Although dental services and comprehensive dental health assessments must be provided by dental health professionals, patients rely on nurses and personal care assistants to conduct assessments of the oral cavity not only for the purpose of referral to dental health services, but to design individualized oral hygiene plans. Provision of oral hygiene care based on such plans includes mouth care, tooth brushing, and denture cleaning (Thorne, Kazanjian, & MacEntee, 2001).

Oral hygiene of patients in long term care settings is said to be poor (Hopcraft, Morgan, Satur, Wright, & Darby, 2012; Matthews et al., 2012; Philip et al., 2012). Stewart (2013) analyzed data collected by staff in long term care homes in Ontario using a mandated resident assessment instrument, the RAI-MDS 2.0 (Community Care Information Management, 2015). The same tool is used in complex care settings in Ontario. Oral health status is one of the measures, and is assessed and reported by staff, though not publicly reported. Approximately 26.7% of the sample of 17,848 older persons was reported to have experienced chewing problems; only 6% were reported to have debris present in their mouths before going to bed; 5.1% had broken or loose teeth or teeth with cavities; 1.3% had inflammation of the gums and oral lesions; and 1% had mouth pain. About 2% were said to have received no daily oral hygiene care. It was reported that residents with greater care needs were significantly more likely to receive

daily oral care, while those who were frail but still independent for care were less likely to receive oral hygiene care.

In another study in Ontario, a registered dental hygienist (RDH) performed bedside assessments and compared findings with documented RAI-MDS data and flowsheet data (McKeown, Woodbeck, & Lloyd, 2014). Though staff had reported the prevalence of bedtime debris as being 0%, this did not compare with the 88% noted by the dental hygienist. It was significant that 72% of residents with moderate to abundant debris were reported to have received oral care that day. The results of these two Ontario studies call to question the accuracy of self-reported oral hygiene practices.

The state of oral health of older hospitalized inpatients has not been studied except in critical care settings. In a study of the prevalence of oral health problems in patients being admitted to acute care in Denmark, 70% of patients had debris or plaque, decayed teeth, or damaged dentures (Konradsen, Trosborg, Christensen, & Pedersen, 2012).

Provision of oral hygiene care. Studies that have shown an explicit connection between oral care and good oral hygiene outcomes have reported on interventions that would not be considered feasible in a typical care setting, for example brushing for five minutes after each meal and decontaminating the oral cavity with povidone-iodine (Yoneyama, et al., 2002). The connection between nurses' provision of oral hygiene care and positive outcomes for patients is certainly an area that has not been well studied, and it is not known whether there may be no connection at all, or whether intervention by nurses is lacking. A few studies have demonstrated improved outcomes when a dental hygienist intervenes regularly as a supplement to the care provided by nurses (van der

Maarel-Wierink et al., 2013; Zenthöfer et al., 2013). Other studies have shown that having a dedicated person on staff who provides oral hygiene care--an oral care aide--will improve outcomes (Sloane et al., 2013; Wårdh & Wikström, 2014).

Variations in Oral Hygiene Care Intervention Decisions

A number of clinical practice guidelines related to oral hygiene care exist (Heath et al., 2011; Johnson & Chalmers, 2011; O'Connor, 2012; Registered Nurses' Association of Ontario, 2008). Oral hygiene care interventions recommended in current clinical practice guidelines are largely based on consensus rather than on rigorous studies. The nursing best practice guideline on oral health produced by the Registered Nurses' Association of Ontario (2008) acknowledges the lack of College of Nurses of Ontario practice standards or guidelines specific to oral hygiene care practice for nurses, but offers that such criteria should be integrated into the national health services accreditation program. In fact, the national accreditation organization has recently included standards on oral hygiene care that apply to complex care settings (Accreditation Canada, 2015).

In a concept analysis of oral hygiene care, we identified defining attributes, antecedents and consequences, empirical referents, and a working definition of nurse-provided oral hygiene care for dependent older persons in institutional settings who do not rely on mechanical ventilation and are not undergoing chemotherapy or radiotherapy (Coker et al., 2013). We argued that “a clear operational definition of oral hygiene care would provide nurses in practice with a common, observable way of describing the interventions they can offer to benefit the oral health of their patients, support research on the impact of oral hygiene care on patient outcomes, and facilitate the development of

optimal regimens and protocols” (p. 2361). The defining attributes of oral hygiene care in this concept analysis were identified as: (a) using care approaches informed by knowing the patient, (b) inspecting the oral cavity, (c) removing dental and /or denture plaque, (d) cleansing of oral tissues, (e) decontaminating the oral cavity, (f) using fluoride products, and (g) maintaining oral tissue moisture.

Individualized oral care regimens and protocols are lacking in many care settings, and decisions about oral care interventions are often left up to the individual caregiver at the time of care provision (MacEntee et al., 1999; Samson et al., 2009; Scannapieco, 2006). Oral hygiene care may be left to chance, and based on subjective evaluation (Gibson et al., 1997; Robertson & Carter, 2013). Nurses typically make a note in the patient’s health record, often by way of a checkmark, that mouth care or oral care was given, but rarely what interventions were provided. Studies of self-reported nursing practices related to oral care for older patients who depend on staff for their care revealed that oral hygiene practices occurred to different extents, but were inadequate (Adams, 1996; Chalmers et al., 1996; Dharamsi et al., 2009; Jablonski, Munro, Grap, Schubert, & Spigelmyer, 2009).

Oral hygiene care as a component of missed nursing care. There have been a number of recent studies investigating the concept of “missed nursing care” (Kalisch, 2006; Kalisch, Landstrom, Hinshaw, 2009). Missed care is “any aspect of required patient care that is omitted (either in part or whole) or delayed” (Kalisch, Landstrom, & Williams, 2009, p. 4). In one survey of 4086 nurses in eight hospitals in midwestern United States, 25.5% of nurses indicated they frequently or always missed giving mouth

care (Kalisch et al., 2011). It was the third most frequently missed element of care after (a) ambulation of patients three times per day, and (b) attendance at patient care conferences. In a study of 38 patients on seven units of an acute care hospital in the midwestern United States, patients reported not receiving offers of assistance with their oral care (Kalisch, McLaughlin, & Dabney, 2012). Nurses might have provided the supplies on admission, and would assist if asked, but did not initiate oral care. In their study, patients in rehabilitation settings reported that the occupational therapist, rather than the nurse, helped with oral care.

Rationing of nursing care is defined as “the withholding or failure to carry out necessary nursing tasks due to inadequate time, staffing level, and skill-mix” (Schubert et al., 2008, p. 228). According to the Schubert et al. framework, when resources are scarce and nurses are unable to provide all aspects of care to all patients, they ration their attention across patients and omit elements of care or provide them minimally. This then increases the risk of adverse patient outcomes.

In a study of rationed care, Papastavrou et al. (2012) surveyed 356 nurses on medical-surgical units in Cyprus and found that “oral and dental hygiene for the patient” was reported as occurring sometimes or often by only 31.5% of nurses and was the most frequently omitted nursing intervention. In a study of the nature and prevalence of “care left undone” by 2917 registered nurses in acute care hospitals in the United Kingdom, oral hygiene was found to be high on the list of missed care following comforting patients, educating patients, updating care plans, patient surveillance, and documentation (Ball, Murrells, Rafferty, Morrow, & Griffiths, 2014).

Nurses' observed oral hygiene care practices. Actual oral hygiene care practices are largely unknown as only three articles have reported on observations of nurses or personal care assistants performing oral hygiene care (Chami et al., 2012; Coleman & Watson, 2006; Gammack & Pulisetty, 2009). In all three studies, oral hygiene practices were inadequate. Coleman and Watson studied the oral hygiene care provided by certified nursing assistants to 67 dentate residents of five nursing homes in New York State by observing their adherence to predetermined oral care standards. Only 11 residents had their teeth brushed and mouths rinsed with water; one resident's tongue was brushed; and eight residents had their teeth swabbed with a foam swab. In all cases, soiled gloves were used. Basic oral care supplies were not at the bedside in 70% of cases. The authors concluded that the residents did not receive adequate oral care, and that documentation was inconsistent with the care observed. In this study, only morning oral care was observed, and care was provided in long term care settings by personal care assistants and not nurses. Nonetheless, this was the first study of its kind and it exposed oral hygiene care practices as a concern.

Gammack and Pulisetty (2009) observed the oral care activities of 28 staff (a mixed group of nurses and personal care assistants) from two nursing homes in Missouri before and after an educational program, and no improvement was shown. About half of the residents had their teeth brushed with paste; fewer than 20% had their tongues brushed; mouths were rinsed with water in half of the encounters, and with mouth rinse in a third of encounters. Gloves were not worn in one-third of encounters. Oral care was observed in the morning or evening. Study participants were nurses and personal care

attendants, but there was no differentiation between the two, nor was it noted whether the nurses were registered nurses, practical nurses, or both. Neither of the two studies showed that resident resistance was a significant barrier, but the authors of both studies noted that lack of supplies was a significant barrier.

In a letter to the editor, Chami et al. (2012) described a study, that has yet to be published, where they observed 42 caregivers (a mixed group of registered nurses and personal care assistants) on three geriatric units in France, Belgium, and Switzerland provide oral care and later engaged them in interviews. They noted inadequate oral care including the inappropriate use of toothpaste and rinses, the use of swabs rather than toothbrushes, and lack of attention to tongue, cheek, and gum brushing. Participants lacked knowledge of the consequences of poor oral hygiene and gave oral hygiene low priority. Patients were often not offered oral care and did not receive it.

Chapter Summary

Older adults who are hospitalized are at risk for poor oral hygiene because of disturbances of oral equilibrium in addition to functional decline and possibly cognitive decline. These risk factors can make older people susceptible to oral health related nosocomial infections, including oral candidosis, periodontal disease, and pneumonia. Studies have shown that risk factors can be modified through oral hygiene care that targets and controls plaque and promotes oral immunity by addressing salivary factors and impaired swallowing. These studies are few and often cited, though the interventions may not be feasible in practice because of the time they would take, and because interventions such as wiping the oral cavity with povidone-iodine might be objectionable

to patients, and is not reported to be done in North America. Despite this, oral hygiene care is understood to contribute to better oral health-related outcomes such as prevention of pneumonia.

Very few studies of the practices of personal care assistants in long term care are of strong methodological quality, and most fail to describe in adequate detail the interventions that may have led to an improvement in oral health outcomes. Nonetheless, the link between oral hygiene care and improved oral health outcomes is biologically plausible. It is argued that nurses have a role in modifying risk factors through providing or directing oral hygiene care. Nurses' oral hygiene care practices have not been studied, and in fact are relatively unknown.

There have been only three studies in which the oral hygiene care provided to long term care home residents, mostly by personal care assistants, was actually observed and it was found to be inadequate. There have been no studies in which nurses in hospitals have been observed, except in critical care areas. It is therefore not known whether hospital nurses' actual practices may also be inadequate, nor is it known what constitutes nurses' oral care practices.

Chapter Three

Methods

Introduction and Overview of Chapter

The purpose of this qualitative exploratory multiple-case study was to explore how bedtime oral hygiene care is provided by nurses on post-acute inpatient units where older patients have an extended hospital stay. This chapter begins with providing the rationale for the choice of a qualitative research design, and specifically the case study as the strategy of inquiry, with discussion about bounding the case and units of analysis following. The cases and recruitment of the participants within those cases is described. Following this is a discussion of procedures related to the research design, data collection, data analysis and synthesis, and data interpretation. The chapter concludes with ethical considerations and strategies used to ensure trustworthiness.

Rationale for Qualitative Research Design

A qualitative study was thought to be the best way to illuminate the actual oral hygiene care practices of nurses. One of the hallmarks of qualitative research is that it takes place within the natural setting where the participants experience the issue being studied, and as in this study, the researcher often goes to the site of the participants to see them behave and act within their context (Creswell, 2014). In the long term care sector, quantitative methods including surveys and focus groups failed to uncover the actual oral hygiene practices that observational methods did (Chami et al., 2012; Coleman & Watson, 2006; Gammack & Pulisetty, 2009; McKeown et al., 2014).

Study Design: Case Study as the Strategy of Inquiry

The specific strategy of inquiry used in this study was an exploratory multiple case study design. Stake (1995), Merriam (1998), and Yin (2014) provide much of the guidance on case study research that exists (Yazan, 2015), but Yin became the primary source of guidance in this study for a few reasons. First, advances in case study research have influenced subsequent editions of Yin's work, and he has continued to provide guidance in doing case study research rigorously (Yin, 2014). Second, Yin's approach to case study research is distinctive in that he provides guidance on: (a) framing of the question, (b) the utilization of a replication strategy in multiple case designs, (c) design considerations, especially with respect to the exploratory design used in this study, (d) collecting case study evidence with special emphasis on compiling components of the case study database, and (e) an inductive strategy for data analysis.

Yin (2014) explains that “a ‘how’ or ‘why’ question about a contemporary set of events over which the researcher has little or no control” supports the use of case study research (p.14). An answer to *how* nurses provide oral hygiene care to their older patients was therefore seen to lend itself to an exploratory case study approach. Unlike an explanatory case study where study propositions would reflect important theoretical issues, an exploratory study, in which a topic is the subject of exploration, does not start with propositions (Yin, 2014). However, the exploratory study will still have a purpose. According to Yin, “instead of propositions, the design for an exploratory case study should state this purpose, as well as the criteria by which an exploration will be judged successful (or not)” (2014, p. 30). Arriving at answers to the specific research questions

while maintaining trustworthiness would be the way in which this exploration could be judged as successful.

Case study inquiry “investigates a contemporary phenomenon in-depth and within its real world context, especially when the boundaries between the phenomenon and context may not be clearly evident” (Yin, 2014, p. 16). The phenomenon studied was the oral hygiene care provided by nurses within the context of the unit on which they practise. The unique strength of case study research is that it deals with a variety of evidence: documents, artifacts, direct observation of the events being studied, and interviews of the persons involved in the events (Yin, 2014).

Many of the design decisions in case study research are left to the researcher and this is both a strength and weakness of the case study approach (Meyer, 2001). Because of the relatively loose design, it is important in reporting to carefully address the choices that have been made along the way regarding design, data collection procedures, data analysis, and rigour which are described in this chapter.

Bounding the case. An exploratory multiple-case study design was used to study inpatient units (cases) in post-acute hospital settings where patients are likely to require assistance with their oral hygiene care. Boundaries of the case study related to timing, relevant informants, and type of inpatient unit have been defined and are presented in the following sections.

Timing. Oral hygiene care should be provided twice per day, but the most important time for this care to be given is bedtime. Salivary flow is reduced overnight and it is important to remove carbohydrate-rich debris before bedtime. Silent aspiration, the

aspiration of small amounts of oropharyngeal secretions, takes place mainly during sleep (Ebihara & Ebihara, 2011), so any attempt at reducing the oral bacterial load at bedtime would seem to be important. Meeting with informants in the evening ensured that the timeframe for oral hygiene care was narrowed so as not to be missed in observation. Oral care provided between the supper meal and bedtime was the focus. Nurses have larger patient assignments in the evening and this provided opportunities to observe more nurse-patient interactions.

Participants. Participants of interest included RNs and RPNs. These nurses work within an interdisciplinary team and provide most, if not all, patient care in the settings of interest. In two settings, the RN and RPNs were able to delegate some care to one or two personal care assistants who helped out on the unit, but they were not interviewed or observed. Other disciplines that might have insights to share were asked to be interviewed and they included speech-language pathologists and occupational therapists. Such team members were not on the units during the evenings, but were mentioned by nurses as being involved in oral hygiene care decisions.

Type of inpatient unit. Post-acute hospital units where patients are likely to require assistance with their oral hygiene care were of interest. Although oral hygiene care is required by patients on acute care units, those units tend to be very heterogeneous with respect to patient length of stay. Provision of oral hygiene care for a patient residing on a unit for a couple of days may not be critical, and since patient data were not collected, studying the care of a more homogeneous group of patients, insofar as length of stay is concerned, made sense. Units where patients were undergoing chemotherapy or

radiotherapy, and critical care settings where patients were receiving mechanical ventilation were not studied, as there are oral hygiene care approaches unique to those settings.

Units of analysis. A multiple-case study design was used to study inpatient units (cases). Yin (2014) asserts that the advantage over a single-case design is that “the evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust” (p. 57). He also explains that multiple cases should be thought of as multiple experiments, following what he calls a “replication design” (p.57). This is distinct from a *sampling design* where multiple cases would be likened to multiple responses to a survey. In multiple case studies, the cases are selected so they predict similar results (literal replication), or predict anticipated contrasting results (theoretical replication). In this case study, the aim was literal replication.

Cases and Participants within Cases

Hospital units where patients have completed their acute phase of care comprised the cases (e.g., complex care, rehabilitation, and alternate level of care units). This ensured studying nurses’ interactions with patients whose length of stay is longer than a few days, or what was referred to earlier as patients having an extended length of stay in hospital. A general description of these types of post-acute settings is in order. Patients on complex care units have completed the acute phase of care and are generally medically stable, but have multiple complex chronic conditions requiring daily skilled assessments and interventions by an interprofessional team. In our Local Health Integration Network,

four “streams” constitute complex care: behavioural health, end-of-life care, medically complex, and restorative care.

Patients on rehabilitation units have completed their acute care phase and are participating in rehabilitation activities to learn new skills and gain the strength required leading up to discharge. Lastly, patients on ALC medical units have completed their acute phase and are awaiting a bed where an alternate level of care will be provided such as long term care, complex care, or rehabilitation.

The study took place in an urban centre in Southern Ontario. The proportion of adults over the age of 65 years in the city was 16% in 2011—somewhat higher than the provincial (14.6%) and national (14.8%) proportions (Statistics Canada, 2011).

According to Patton (2015), there are no rules for sample size in qualitative research. Sample size very much depends on what one wishes to find out, why one wishes to find it out, how the findings will be used, and what resources are available for the study. Morse (2000) indicated that the following be considered when determining sample size: (a) the scope of the study, (b) the nature of the topic, (c) the quality of data, (d) the study design, and (e) whether there is use of shadowed data (where participants speak about the experiences of others). Too many factors are involved to make tight recommendations according to Morse.

Although there is no specific answer to the number of sites and participants to include in a qualitative research study according to Creswell (2014), Yin (2014) suggests literal replication with a few cases (2-3), and Creswell suggests that a case study includes about 4-5 cases. Therefore, a total of five inpatient units, one from each of five hospital

sites in the city were selected for the study. Three of the sites belonged to one multi-site hospital, one site was part of another multi-site hospital, and the fifth site was a stand-alone hospital that merged with one of the multi-site hospitals just prior to submitting the proposal to the research ethics board. The cases comprised three complex care units, one rehabilitation unit, and one alternate level of care unit. This complement of units meant that every hospital site in the city, where older adults are inpatients, was represented.

Recruitment of approximately five nurse informants was planned for each unit at the outset, with the intention of adjusting if required to reach a point where sufficient data had been collected such that no new insights were emerging. Mason (2010) indicated that this point might be reached earlier in studies that aim to describe something quite specific and when the researcher has expertise in the area. Marshall, Cardon, Poddar, and Fontenot (2013) indicated that 4-5 cases with 3-5 interviewees per case are recommended. This is consistent with other qualitative multiple case studies found in the nursing literature. Gerrish et al. (2011) studied 23 advanced practice nurses across seven health authorities. Endacott and Chaboyer (2006) studied one ICU consultant nurse at each of four sites. Thompson and Kagan (2010) studied fever management in 17 nurses across five units at two hospitals.

Recruitment of participants. One inpatient unit was studied at a time, and the five participants at each site were engaged in sequence over a period of weeks. Each participant spent a portion of a shift with me. Following a meeting with the unit manager to explain the study and gain support for the research ethics board submission, arrangements were made to set up meetings with the evening staff to explain the purpose

of the study and the data gathering plan. The study was explained to nurses and they were invited to participate. Their participation was to involve having me accompany them during patient care activities from suppertime (or in the case of 12-hour shifts, from the beginning of the shift at around 7:00 p.m.) until patients were generally settled for the night.

Participants were told that I would engage them in guided conversations about oral hygiene care and the barriers they face while “going-along” or as an aside— whichever suited better. I would observe oral care practices or ask about them if there were none to observe that shift, and I would make observations about the unit workflow and competing priorities to help put things into perspective. Managers had also been given a recruitment poster (Appendix A) and a recruitment e-mail message based on the poster that could be forwarded to staff.

Typically the clinical manager left a message for staff to indicate that I would come to the unit just after shift handover on a particular evening to explain the study. This timing was suggested by all managers. I recruited and spent time with staff most often on weekends. Observation involves enormous concentration and energy (Patton, 2015) and weekends were convenient for me. There should be no reason for bedtime care to differ on any particular night of the week. Most staff regularly have weekends in their schedules and a considerable group eventually rotate to night shifts on weekends. Recruitment meetings often took place on a Friday or Saturday evening in anticipation of recruiting a nurse for the next evening. This approach varied only minimally among cases.

Data collection took place between December 2013 and September 2014.

Recruitment for Case 1 involved my coming to the unit during an evening to present a short explanation of the study and invite nurses to participate. I planned the subsequent information session to take place when the nurse who had already participated was working with the hope that she would convey her experience to her colleagues as being non-threatening. In fact one of the recruits convinced two of her colleagues to participate.

Rather than my visiting the unit to explain my study and recruit on my own, the manager of Case 2 chose to send information out to staff and sent the name of a nurse I could approach. The four subsequent nurses' names were supplied to me by the manager as having come forward presumably through the recruitment e-mail.

The manager of Case 3 left messages with staff to indicate I would be meeting with them briefly after intershift report on certain evenings. Sometimes the message was not received, but staff were open to hearing about the project nonetheless. One particular nurse gave me tips about when to recruit as she suspected that certain nurses would likely be interested in participating.

The manager of Case 4 spoke with staff and forwarded the names of nurses who were interested along with some dates they were working. She circulated the consent form to those nurses. I went to the unit each time prepared to (a) explain the study in anticipation of meeting up with the nurse on another night, or (b) spend time with the nurse shadowing on that night. In all cases, the nurses were ready for my shadowing that night.

The manager of Case 5 suggested dates on which I could come to explain the study and recruit. I began by meeting with staff on a Friday. The first nurse finally did come forward, and I shadowed her the next evening. While shadowing her, another nurse agreed to have me shadow her the next night.

On the night of recruitment or at the outset of the shadowing evening, nurses signed a consent form. At the end of the evening, in appreciation, they were given a pin, a pocket flashlight (for inspecting the oral cavity), and a \$20 coffee shop gift card.

Collecting Case Study Evidence

Preparing for data collection involved identifying questions in the first two levels of questions outlined by Yin (2014, pp. 90-91). All five of Yin's levels of questions, along with specific questions created for the first two levels are shown in Figure 2.

Figure 2. Levels of questions (based on Yin, 2014)

Level 1: *Questions asked of specific interviewees.*

- How do you do oral hygiene care for your patient? What does s/he need? What are you trying to achieve?
- How do you decide whether to do oral hygiene care as part of morning (or bedtime) care?
- Is it always possible to do it? Are there barriers? What kind of things get in the way of doing oral care?
- How do you know what to do? (probe -> is it based on your experience? Is it written for you somewhere? Did you read somewhere that you are to do it this way? How would someone without your experience know how to do it?)
- What are the barriers? Are there things that make it easier to do oral care for your patient?

Level 2: *Questions asked of the individual case.*

- What is the rationale for not performing oral care? How do nurses decide?
- If they are able to perform oral hygiene care, what do they do? What products are used? What tools are used? How do they decide on these tools and products?
- Do the nurses know the goal of care (e.g., moisturize oral tissues, disrupt plaque) and intervene in a way to meet that goal?
- Is there a plan of care to consult? How explicit is it? Does it describe the patient's plan for oral hygiene in terms of products, tools, and approaches?
- Are the tools/products handy at the point of care?
- Are there policies/procedures/protocols that lay out expectations? BPGs?
- Is the plan of care individualized?
- What are some of the barriers nurses face when providing oral care, or barriers that prevent them from providing it?
- What supports the nurse's ability to provide oral hygiene care?

Level 3: *Questions asked of the pattern of findings across multiple cases.*

Level 4: *Questions asked of an entire study – for example, calling on information beyond the case study evidence and including other literature or published data that may not have been reviewed.*

Level 5: *Questions asked about policy recommendations and conclusions, going beyond the narrow scope of the study.*

Methods of data collection. The data collection methods used in this study were:

- (a) shadowing and observation of physical environment and workflow; (b) “go along”

guided conversations; (c) post-shadowing guided conversations; (d) interviews with others; and (e) examination of documents, tools, and supplies. In addition, demographic data were collected from participants for the purpose of being able to describe the informants as a group using the questionnaire in Appendix B.

Observations. Observational methods in qualitative research are used to provide factual, accurate, and thorough descriptions of the observed setting, the activities that took place there, and the people involved in the activities. They take place in the real-world settings of the cases, they are opportunities for direct observation, and they range from formal to casual data collection activities (Yin, 2014). Observations can be *structured* and systematic in their approach utilizing a checklist of activities, or as in this study may be *unstructured*, that is, I went “into the field” to describe and analyze what was seen and heard (Mulhall, 2003, p. 306). In this study, I observed consenting nurses: (a) providing oral hygiene care; (b) talking me through how they would provide oral hygiene care in other situations; (c) showing products, documentation tools, and other resources they have available to them; and (d) describing the challenges they face.

Observations of the patient’s environment and the care setting itself were also made. Specific observations included notable elements of the care environment, availability of oral hygiene tools and products and their proximity to the point of care, the location of the plan of care, and the amount of assistance available from others on the shift.

The field technique of direct observation can be divided into participant and non-participant observation. Participation is a continuum, with complete immersion in the

setting as a participant at one end of the continuum, and complete separation as a spectator at the other end (Patton, 2015; Spradley, 1980). DeWalt and DeWalt (2011) contrasted Spradley's (1980) continuum of participation with Adler and Adler's (1994) membership roles: (a) full, (b) active, (c) peripheral, and (d) no membership. In full membership, the researcher becomes immersed in the group and takes on its identity. In active membership, the researcher takes on some or all of the roles of members. Peripheral members are those who become part of the scene, but are not completely drawn in, and they interact enough to be seen as insiders. No involvement constitutes being in a no membership role.

Prior to embarking on data collection, I conceptualized my involvement as a peripheral member. However, Patton (2015) cautions that it is not simply a matter of deciding ahead of time how much one will participate. As fieldwork progresses, he says, the extent of participation can change. In fact this was the case. I found myself moving in and out of that peripheral member role and sometimes becoming more active, and sometimes taking on a no member role, even while partnered with the same participant. That is, I moved along the continuum and back. I took on what is described as an active member role while taking direction from the nurse (as a student would) to perhaps pass something to the nurse from the table on my side of the bed, help turn a patient, or rinse out a kidney basin into which the patient had spit toothpaste foam. I took on a "no member" role, for example, while observing two nurses use the ceiling lift to return a patient to bed, get him tucked in, and watch one of the nurses provide care for his dentures. For the most part, I did find myself in the peripheral member role.

I used two overlapping methods, shadowing and go-along conversations, to capture behaviours and opinions while in my observer role. The first, shadowing, involves following people for a time to investigate what they actually do in the course of their everyday work (Czarniawska, 2014; Quinlan, 2008). In the early 1970's, Harry Wolcott, the anthropologist, was labelled the “shadow” as he studied a school principal, and he then coined the term (Wolcott, 2014). Shadowing has been adopted in education, social work, information studies, and nursing (McDonald, 2005). Data from shadowing are grounded in actual events, not a reconstruction of events as in interviews or focus groups (Quinlan, 2008).

The main advantage of shadowing is the ability to be mobile and study participants as they move about (Czarniawska, 2014). Other advantages of shadowing are: (a) it can provide insight into invisible elements of the participant's work, (b) it offers participants an opportunity to explain what they are doing while doing it, and (c) it allows the researcher to come to understand elements of work that may be missed through interviews or focus groups (Gill, Barbour, & Dean, 2014).

A problematic aspect of shadowing is the possibility of a Hawthorne effect, that is, that participants will not behave in the way they normally would without an observer. Some evidence of the effect of my presence is discussed in Chapter 5.

Czarniawska (2014) maintains that shadowing is a type of non-participant observation. She contrasted participant observation and shadowing, arguing that shadowing is easier because it does not require action and observation at the same time, and because researchers may find it impossible to engage in professional activities. She

also added that participant observation may lead to “going native” and shadowing does not set up that opportunity. I believe that some level of engagement was necessary to be able to comfortably ask questions as we went along and would argue that shadowing, at least in combination with interviewing, is further along the participant-observation continuum than non-participation. In my experience it would have been almost impossible to be a fly on the wall while moving along beside someone, asking questions.

Blending in is important so that attention is not attracted to the activity of shadowing. I had received advice from a nurse who had been a participant-observer. She describes in her thesis how she donned a uniform and made herself available to help (Dahlke, 2013). Rather than wearing “scrubs” I wore a pastel cotton knit short-sleeved shirt and uniform-looking pants. I introduced myself to patients by name and either explained that I was a student with “nurse so-and-so” or simply that I was “with her or him for this evening” and they accepted that explanation readily. Only one fellow made a joke about the nurse being followed by a supervisor—on the night I wore a ¾ sleeved tailored shirt. I did not wear it again.

Go-along conversations. The method used in conjunction with shadowing was the “go-along”, considered a hybrid between participant observation and interviewing (Carpiano, 2009; Kusenbach, 2003). In case study research, interviews tend to be guided conversations rather than structured queries (Yin, 2014), so the go-along was a good fit given that the shadowing technique was used. In these conversations, Yin cautions that the verbal line of inquiry must be distinguished from the mental line of inquiry. This meant that in the field, I had to keep in mind the Level 2 questions while articulating the

Level 1 questions (shown in Figure 2) during the go-along interview. Likewise, when examining a document, Level 2 questions were considered.

Based on Yin's (2014) suggestion, throughout the process I followed the line of inquiry reflected in the case study protocol, and asked conversational questions in an unbiased way while serving the needs of the line of inquiry. In summary, the guided conversations required me to operate on two levels simultaneously: satisfying the needs of my line of inquiry (level 2 questions) while putting forth non-threatening questions in my open-ended interviews.

The go-along conversations allowed me to examine the participants' interpretations of the situation while experiencing the situation, and were audiotaped at the bedside if appropriate and possible. Otherwise, guided conversations were audiotaped in the hallway, nursing station or medication room, the stock room, or another place where others were not present. I asked participants about facts, opinions, and insights (Yin, 2014). The questions used to guide conversations are found in Appendix C and reflect the Level 2 questions in Figure 2.

Unlike a sit-down interview, the go-along provided an opportunity to increase the participant's participation, and presented less of a burden than a sit-down interview. The nurse served as a tour guide of sorts for me, and as suggested by Carpiano (2009) the traditional power dynamics between the interviewer and the interviewee seemed diminished. The go-along method helped me to establish rapport by portraying myself as interested, respectful, and willing to reciprocate --within reason of course. The method

also provided an opportunity to meet and recruit other participants as they were able to watch how things unfolded with their colleagues (Carpiano, 2009).

On each unit, I was present with each nurse from the time the shift changed at 7:00 p.m. (from 6:00 p.m. in the case of 8-hour shifts) until the patients were settled for the night, or until the nurse dismissed me by telling me that I would see no further oral hygiene care given. I sensed in some cases that nurses wanted to move on to other tasks such as documentation, without my hovering. Sometimes nurses would tell me that I could leave and made a kind-hearted comment about my not staying later than I needed to. I would counter that I planned to stay until at least 11:00 p.m. I believe that some nurses found my shadowing to be intense, and wanted relief from my constant presence once the purpose of my observation, in their mind, had been fulfilled. My earlier intent of hanging around and getting a full sense of the competing priorities on the unit was lost on them. Out of respect, I complied when dismissed. On the first two units, I stayed until all patients were settled for the night, but on the other units, I left after all oral hygiene care was completed and nurses told me that I would see nothing more. I spent an average of 2 hours shadowing each of the five nurses in Case 1; an average of 3.55 hours shadowing each of the five nurses in Case 2; an average of 2.5 hours with each of the five nurses in Case 3; an average of 1.5 hours with each of the five nurses in Case 4; and an average of 3 hours with each of the five nurses in Case 5. Approximately 70 hours were spent directly shadowing and conversing with nurses as they interacted with about 195 patients.

Recording data. All but one nurse consented to my audiotaping the conversations as we went along. Some settings, with their inherent routines, were more conducive to

this than others. It was difficult to juggle the audiorecorder discreetly. I did not want to make patients feel ill at ease, and was therefore not overt in my recording. Patients' voices were sometimes captured, but not purposefully, and if recorded were not transcribed. This was a condition of the research ethics board. I did not leave the recorder on throughout the evening—I paused and unpaused it. It was difficult to capture bits of relevant conversation because the oral hygiene interlude was often brief, and on occasion I found myself asking participants to start over if they unexpectedly began speaking about something related to the issue I was studying.

I did not make handwritten notes in the presence of the participants. Rather, once shadowing was completed, I stayed back on the unit, or off the unit in the coffee shop or lobby, rapidly jotting down reminders about every interaction I could remember-- every answer to every query, and every relevant observation about the setting. I purchased a small combination laptop computer and tablet, thinking I could type my notes rather than write them in my steno pad. However, I felt very self-conscious and wondered if participants might become uneasy as they wondered what I might be writing, so I reverted back to the comfort of my steno pad. As soon as I got home, I typed the written notes and embellished them with more detail. The drive home allowed me to play the events of the evening over and over in my head, and with my jottings I was able to nicely construct my field notes.

While on the units, I drew little maps of the layout and location of patient rooms in relation to each other. To keep track of the bigger picture, I reconstructed nurse-patient encounters, giving each a pseudonym, and then constructed a table for each case that

outlined the oral care received by each patient. Some patients were seen again by a different nurse over the course of my stay, so I was able to compare oral hygiene care given by different nurses to determine whether care was variable.

When the transcripts of the audiorecordings were available, I listened to them while checking the transcripts for accuracy. While listening to the recordings, the evening came alive again for me. I was able to see faces, reconstruct interactions, and feel the pace. I was then able to augment my field notes, fill in gaps, and ensure that the order of events recalled in my notes was correct. I also made some notes in the transcripts themselves to paint a picture of the interaction with the patient since the patient's own words could not be transcribed for ethical reasons. I wrote memos about some of the things I had seen and heard and wondered about. At the end of my weeks on each unit, I reflected on some of the general observations in the setting in my memos.

Physical documents. A variety of documents were reviewed, including oral care policies, procedures, protocols, and tools including care plans (or “kardexes”) and documentation flow sheets. Some units had patient information pamphlets that I reviewed as they contained information about the personal items a patient should bring to the hospital.

Physical artifacts. A source of evidence in case study research is a physical or cultural artifact, for example a technological device, tool, or instrument. A variety of oral hygiene products and tools (see Appendix D) as well as equipment such as cups and kidney basins were observed or shown to me, and details documented in field notes.

Analyzing Case Study Evidence

Data management, organization, and analysis. Data were collected on-site by observing and listening; information was recorded through audiorecordings and hand-written field notes. The combination of transcribed recordings and typed field notes became the beginning of my case study database. I tried to avoid moving on to shadow the next participant until information was recorded and checked for the prior participant. In a few circumstances, this was not possible.

In addition to organizing field notes, transcripts, and memos, a few other charts were constructed to summarize data. These included the chart of oral hygiene supplies shown in Appendix D, the hand drawn maps, and the chart summarizing nurse encounters, and they too became part of the case study database.

Toward the end of data collection on the first unit, I began interacting with the data and reading them over and over. Patterns and categories became obvious to me, so I prepared to begin some preliminary coding of transcripts and field notes.

Decision regarding data analysis software. I made a decision not to pursue using computer-assisted qualitative data analysis software (CAQDAS) after carefully weighing the pros and cons. Authors of many qualitative research texts now present a more balanced discussion of the advantages and disadvantages (Patton, 2015; Creswell, 2014). They are clear that although software may ease some of the work involved, the person doing the analysis must still decide on how to formulate patterns, what constitutes a theme, what to call it, how to frame the case study, what to include, and how to tell the story. Yin (2014) suggested that the minimum conditions for choosing to use software

include “when (a) the words or verbal reports represent verbatim records and are the central part of your case study evidence, and (b) you have a large collection of such data.” (p.135). I did not believe that the volume of records I would ultimately collect would warrant using CAQDAS.

Analytic strategy. Yin (2014) suggested that the best way to prepare for analysis is to have a general analytic strategy. Such a strategy links the case study data to concepts of interest, and those concepts in turn will give a sense of direction in analysis of data.

I avoided quantitatively analyzing qualitative data, that is, “quantitizing” (Patton, 2015, p. 656). It would have been possible to count events as I observed them, and to have compared cases using “counts” but this is strongly discouraged in qualitative analysis (Patton, 2015).

Yin (2014) suggested starting an analytic strategy by playing with the data and looking for “patterns, insights, or concepts that seem promising” (p. 135). To this end I began constructing data displays and matrices. These arrays and displays can help movement toward a general analytic strategy according to Yin (2014). The strategy should follow repeated cycles involving the original research questions, the data, my handling and interpretation of the data, and my ability to state findings and draw conclusions. Working backward in the cycle and then forward can help make connections.

Yin (2014) lays out four general analytic strategies: relying on theoretical propositions, working data from the ground up, developing case descriptions, and examining rival explanations. I chose to work the data from the “ground up” as opposed

to relying on theoretical propositions (p.136). Identifying concepts after playing with the data became the start of the analytical path. I found myself going backward in the cycle as Yin suggested I would. There were times when I envisioned what I might conclude from the study and then examined data to see how they supported or did not support the conclusion as Yin (2014) suggested.

Within the general analytic strategy, Yin (2014) recommends employing one of five specific analytic techniques. Because I would be analyzing multiple case studies, cross-case synthesis as described by Yin is the technique I chose to use. This technique involves treating each case study as an individual study (within-case analysis), and then aggregating findings across cases. One possibility for analysis suggested by Yin involves creating tables that display data from the cases according to some uniform categories. Cross-case synthesis relies on strong plausible arguments supported by data rather than, for example, presenting tallies. It involves asking questions of the data that would be considered Level 3 questions in Figure 2. In the following, I describe how analysis proceeded. A photographic record of the major steps in the process from initial coding through generating the list of findings is shown in Appendix E.

I went through the transcripts and field notes line-by-line and coded the data in terms of observations I made or comments made by participants (e.g., “Nurse brushes dentures under running water in sink”, “Patient agrees that it makes mouth feel fresh”, “Moistens mouth with Oral Balance gel”, “Explained that since it took three nurses to change a patient she wasn’t going to approach about mouthcare”).

Once the transcripts and field notes from Case 1 were coded, the concepts were categorized according to the research questions. Those categories represented: (a) oral hygiene interventions and how they were carried out, (b) sources of information or knowledge used by nurses, and (c) barriers or facilitators to completing oral hygiene care. They were then sorted into sub-categories. After some rearranging and collapsing, we (i.e., members of my supervisory committee and I) were satisfied with the preliminary categories.

Analysis of the second case took place when data gathering was almost complete in that setting. The same procedure was followed, but this time, the concepts seemed to fall into place under the existing categories. This process continued for all five cases. Minimal new categories had to be constructed, and some were re-named.

The analysis process took place while data were still being collected; that is, data collection and data analysis was an iterative process, and I believe this influenced the way I probed during future conversations. For example, if I had learned something about Cases 1 and 2, I became interested in learning whether it was an issue in Case 3 and might probe during the “go-alongs”.

When it came time for cross-case analysis, some further combining and collapsing took place to reduce categories, and members of my supervisory committee participated in this process. I then constructed a matrix that illustrated patterns across cases. From the information in that matrix, I was able to construct a list of findings. Further winnowing with input from supervisory committee members resulted in my constructing a table of findings with evidence taken from each of the cases where relevant. It was this list,

customized to their setting, which was shared with participants so they could comment on whether the findings were representative of their site, that is, the particular case.

The findings for each case were printed and mailed to all nurse participants within each case, along with a self-addressed return envelope. The findings document was set up such that each across-case finding was listed and supported by evidence from the setting to which it was sent. Nurses could agree or disagree that the finding seemed representative of their unit, and if they disagreed, they were asked to provide a brief response.

Ethical Considerations

Research ethics board approval. Consultation with the co-chair of the Research Ethics Board (REB) took place prior to and during the writing of the research proposal and later with the Research Ethics Officer prior to submission. Approval was sought to observe nurses in their natural settings as they provided oral hygiene care to their patients, many of whom were expected to be older and frail with cognitive impairments. The logistics of obtaining consent ahead of time from the substitute decision makers of the patients with whom the nurse might interact required some discussion with the REB. It was agreed that consent from the patients was not required (as observation by students is commonplace in hospital settings) as long as patient information was not sought from the chart, nurses, or patients. Patients whose nurses were observed were verbally asked permission for me to be present with their nurse. Not being able to consult patient charts and care plans seemed a reasonable trade-off as I would then be able to include any consenting nurses in the study, not merely those assigned to consenting patients.

The study received full board approval from the research ethics boards at both organizations. The REB approvals are found in Appendix F.

Anticipated ethical issues. Inherent in observing nurses in their natural settings are some anticipated ethical issues. Protection of human rights first involved gaining access to nurses via their clinical manager. Though in some cases clinical managers suggested prospective participants, they were not told who ultimately participated. Informed consent was obtained from nurses by sharing the purpose of the study and asking them to voluntarily participate. Nurses were asked to give consent to being observed and having their conversations with me audiorecorded. The consent letters and forms for nurses and additional participants are found in Appendices G and H.

The purpose of the study was disclosed to participants. It may be seen as a sensitive topic because the literature indicates that nurses may overlook doing oral hygiene care altogether. It was important to be aware of this possibility and not make nurses feel uncomfortable if they chose not to offer oral hygiene care to an individual. I was able to set the scene such that they were given a way out if they wished (e.g., they could say it takes place in the morning and not typically at night).

Safeguarding data. Protecting the privacy and confidentiality of participants has been achieved by using aliases and developing a composite picture of the nurses within the settings. Participants' names appear on their consent forms only. The demographic information is not linked to a name. The consent form was placed in a manila envelope with the nurse's alias written on it e.g., "Nurse 2b" (agency 2; nurse b). When the member checking process was complete, the envelope with the code was destroyed and

the consent form, now the only record of the nurse's identity was filed in a congregate envelope with others. There was no further need to match a name with the corresponding data and the participant is known only as a numeric/alpha code.

The audiorecordings were hand delivered to the transcriptionist who signed a confidentiality agreement. Only the numeric/alpha identity of the participant was known to the transcriptionist, and the transcriptionist did not transcribe any names that were mentioned inadvertently, or any recordings of patient voices.

Issues of Trustworthiness

In qualitative research, trustworthiness is established through assessment of confirmability, dependability, credibility, and transferability (Guba & Lincoln, 1998). Guba and Lincoln argue that trustworthiness of qualitative research should be assessed differently than in quantitative research. However, Yin (2014) outlines four “tests” that are relevant in judging the quality of a case study research design and describes various tactics to deal with these tests. The tests are construct validity (parallel to the concept of confirmability), reliability (dependability), internal validity (credibility), and external validity (transferability).

Construct validity. Yin (2014) suggests that particular strategies to ensure construct validity should be used during the data collection phase, that is, the use of multiple sources of evidence and establishing a chain of evidence. To ensure that case study findings are the result of research rather than my own biases and subjectivity, member checking took place and an audit trail was established. Three supervisory

committee members, all with expertise in qualitative research, participated in confirming findings.

Member checking did not involve participants' examining their own raw data (transcripts). Rather, it involved mailing grouped findings (both within-case findings and across-case findings) back to all participants to determine whether they thought the findings were reflective of the situation on their units. A follow up e-mail was sent with the document attached to enhance the return rate. In four cases, two or more participants responded, however, in one case, none responded. It can be assumed that non-response meant agreement as this is how the request for feedback was framed. Almost all participants agreed with all findings presented to them. However, one participant replied that she did not have a sense of how others on her unit perform oral hygiene care, that other disciplines often do not communicate their assessments, and that most often there are other priorities. Another participant disagreed with the idea that a policy was not used to inform practice, but further follow up revealed that there is currently no written policy on her unit. Reviewing and discussing findings with professional colleagues—peer debriefing—served to ensure that the findings resonated with others, adding validity to the account (Creswell, 2014). The professional colleagues included a dentist, dental hygienists, and speech-language pathologists. Yin (2014) suggests that having key informants review the case study report will enhance construct validity. Results of the case study were shared with units upon study completion.

Reliability. Unlike reliability in the quantitative research sense where it refers to research findings being replicated in similar studies, in qualitative methods it has to do

with the consistency of processes and procedures used to collect and interpret data (Creswell, 2014). Yin's (2014) recommendations for ensuring reliability were followed and included (a) setting up a detailed case study protocol to ensure that coding schemes and categories were used consistently, (b) creating a case study database—an orderly compilation of the data from the case study, and (c) creating a chain of evidence—from the initial case study questions to the conclusions. Transcripts were checked against original audiorecordings to make sure they did not contain transcription errors. A constant comparison technique was used to ensure that codes had the same meaning between and among cases. Some time after the initial coding of data from each case, the data were checked against the codes again (intra-rater consistency).

Internal validity. Yin (2014) indicates that internal validity is a concern in explanatory studies where causal relationships are being explained, but not for exploratory studies. Creswell (2014) refers to “qualitative validity” which involves the researcher using multiple procedures for enhancing the credibility of the study: triangulating (data and analysts); member checking; clarifying researcher bias; presenting negative or discrepant information; and using peer debriefing (p. 201). Regardless of the terminology used, “the qualitative researcher has an obligation to be methodical in reporting sufficient details of data collection and the process of analysis to permit others to judge the quality of the resulting product” (Patton, 1999, p. 1191).

To enhance methodological validity, I gathered data from multiple sources and through multiple methods in an effort to establish themes based on convergence of data and perspectives. It must be pointed out, however, that the purpose of triangulation is not

to attempt to obtain essentially the same result through a variety of methods. Different kinds of data may produce different results because of real-world variation in forms of inquiry (e.g., data obtained through observation sometimes conflicted with data obtained through interview). Data triangulation in these circumstances offers deeper insight into the phenomenon (Patton, 2015). Triangulation involved comparing observations with interviews; comparing the perspectives of people from different points of view (i.e., between nurse participants, between nurses and other members of the health care team, and checking interviews against program documents). Triangulating observers was not possible as I was the sole observer, but triangulating analysts took place as members of the supervisory committee independently analyzed transcripts and field notes and compared findings with mine.

To enhance interpretive validity, I clarified my assumptions up front and reviewed the literature based on those assumptions--that is, I have been told and read that nurses may not provide adequate oral hygiene care. I sought and presented discrepant evidence. Although most of the evidence built a case for each theme, presenting contradictory evidence makes the account more believable in the eyes of the reader (Creswell, 2014). Presenting what Yin (2013, 2014) refers to as plausible rival explanations can therefore enhance credibility.

External validity. The intent of qualitative research is not to generalize findings to individuals or sites beyond those being studied, nor is it about seeking a representative sample (Creswell, 2014). It refers to the reader's view of the fit between the research context and other contexts. Detailed information about each setting is presented in

Chapter 4 and paints a picture for the readers who can then judge the extent to which their own settings and context are shared. In this multiple case study, replication logic was used (Yin, 2014) and studying several cases lends an element of external validity.

Yin (2014) also provides some principles to ensure a high quality analysis. Analysis should show that attention has been paid to all the evidence and this can be done by covering all the research questions. In fact, in the next chapter, findings are presented as answers to the research questions. Second, the analysis should consider all alternative explanation of findings, including rivals. This was accomplished by asking questions of the data and findings over and over again. Third, the analysis should address the most significant aspect of the case study as opposed to lesser issues. This is consistent with Patton's (2015) description of determining substantive significance of findings which involves distinguishing signal from noise. In Chapter 5, I present four significant contributions to the field that arise from the study findings. Lastly, Yin recommends using my own prior knowledge and expertise, and to demonstrate awareness and current thinking about the topic. The analysis was influenced by my prior experience in the clinical setting and what I have learned about oral hygiene care both through the literature and at the bedside with a dental hygienist.

Rigour as it relates to studies using observational methods was the subject of a paper written prior to developing the proposal for this study (Coker et al., 2013). We proposed six key areas for consideration when assessing rigour in studies where nursing interventions were observed, and they were incorporated into the study design, data collection, and analysis. The six areas are: (a) observer (discipline and qualifications, role,

disclosure, consideration of observer effect, and degree and nature of collaboration with other researchers); (b) observations (number and duration, focus, sensitizing concepts reported); (c) choice of participants (rationale for sampling strategy, basic features of participants); (d) data sources (data sources and real time observation of care); (e) comprehensive data collection (data recording process, iterative or concurrent data collection and analysis, analysis driven stopping point, organization and interpretation of data); and (f) data analysis and corroboration of findings. Appendix I shows how the criteria have been considered in this study.

Chapter Summary

In summary, this chapter provided a detailed description of the research methodology used in this study. An exploratory multiple-case study was used to illuminate the bedtime oral hygiene care practices of nurses who care for patients in post-acute hospital settings. The cases were inpatient units at each of five hospital sites, and five nurse participants were recruited from each of the five units. Data collection methods included observation through shadowing, go-along conversations, and examination of documents. Issues of trustworthiness were addressed through a variety of methods including using multiple data sources, member checking, and maintaining an audit trail. Data analysis involved working the data from the ground up, followed by cross-case synthesis as recommended by Yin (2014).

Chapter Four

Findings

The purpose of this qualitative exploratory multiple-case study was to explore how bedtime oral hygiene care is provided by nurses on post-acute inpatient units where older patients have an extended hospital stay. In this chapter, findings from observations and go-along conversations with nurses, interviews with non-nursing participants, and examination of documents in five inpatient settings will be presented. The chapter begins with a description of each of the five cases and the participants, a description of the physical artifacts, that is, oral hygiene tools and products, followed by the findings associated with each of the study questions. I have chosen a reporting format that is a hybrid of two formats suggested by Yin (2014). As Yin suggests,

...there may be no separate chapters or sections devoted to the individual cases.

Rather, [the] entire report may consist of the cross-case analysis, whether purely descriptive or also covering explanatory topics. In such a report, each ...section would be devoted to a separate cross-case issue, and the information from the individual cases would be dispersed throughout each...section (2014, p.186).

In addition, the findings are presented in question and answer format, based on the answers to the specific research questions that have become part of the case study database.

Description of Cases

The five cases are described in terms of their patient population, physical layout, and routines, with nurse participants described later in Table 1.

Description of Case 1. Patients on the unit were working toward rehabilitation goals after a stroke, fracture, surgery, or other illness. The evening routine consisted of nurses helping patients back to bed, providing prescribed snacks, and providing bedtime care including oral hygiene care until around 8:30 p.m. when the medication round began. Oral care was not offered after the medication round except to those patients who had asked earlier to postpone removal of their dentures. Although nurses had their own assigned patients, they helped other nurses' patients. For example, if a patient asked to go to bed and the assigned nurse was busy, another nurse would help the patient to bed.

The unit was laid out traditionally—a long hall with a nursing station at each end. There were one to four patients in each room. There were two supply rooms. Drinking water was available across from each of the two nursing stations. All rooms had bathrooms within them, and each bathroom was shared by all room occupants. The bathrooms were adequate in size, and the rooms were fairly modern and not “tired” in appearance. Each patient bedside had a table with drawers and shelves above.

Patients were expected to provide their own oral care supplies, and were given a booklet at the time of admission that communicated this expectation. Patient oral hygiene care supplies were for the most part kept in or on the patient's bedside table, often in a blue kidney basin.

Description of Case 2. Patients on the unit had completed the acute portion of their stay and were waiting for a more appropriate level of care. Several patients demonstrated agitated behaviours associated with their cognitive impairment. Personal care assistants were part of the staffing mix on the unit and they helped by picking up

tasks such as incontinence care and providing snacks. I was aware of only one occasion on which they, instead of the assigned RPN I was shadowing, provided oral care to a patient because they apologized for doing so without my being able to observe. The evening routine consisted of nurses checking in with patients and signing off on a rounding sheet, checking charts for orders, measuring vital signs and capillary blood glucose levels, providing prescribed snacks, preparing and administering medications, and providing bedtime care including oral hygiene care.

The unit was laid out in two hallways with the nursing station and adjacent medication room as well as the supply room located centrally between the two hallways. There were one to four patients in each room. The rooms were very small and cramped. A number of patients were under infection prevention and control (isolation) precautions and tended to be grouped together. The gowning and ungowning required by nurses as they moved between patients in those rooms contributed to an even greater workload.

Drinking water was available at one end of the unit in a small kitchenette. Rooms had bathrooms within them, and each bathroom was shared by all room occupants. The tiny bathrooms had pocket sliding doors to conserve space. Patient bedsides did not have traditional sized tables and nurses relied on the window ledge for storage of items. Patients were asked in a welcome booklet to provide their own oral care supplies, but the unit was well stocked with those supplies. Patient oral hygiene care supplies were for the most part kept by the bedside, often in a blue kidney basin.

Description of Case 3. Patients on this unit were working toward rehabilitation goals after a stroke. The evening routine consisted of nurses helping patients to the

washroom, measuring vital signs, preparing and administering medications, providing snacks, measuring blood glucose levels, and helping patients get ready for bed.

The unit was essentially a large square with the nurses' station in the middle. There were one, two, or three patients in each room. Drinking water was available in the patient lounge. All rooms had bathrooms within them, and each bathroom was shared by all room occupants. The bathrooms were very spacious and were well designed. They were reminiscent of a hotel room bathroom with a counter and set-in sink. There was ample room in each patient room. This contributed to a clutter-free appearance. There was also a “quiet” feeling to the unit, possibly because at the time no patients were exhibiting calling-out behaviours associated with dementia, and many patients were quietly visiting with families and tended not to use call bells at this time.

Patients were able to access oral care supplies through their nurse if they did not have their own. Patient oral hygiene care supplies were often kept in the patient's own toiletry pouch or on the bathroom counter in a private room.

Description of Case 4. Patients on this unit had completed the acute portion of their hospitalization and were preparing to go home or to another level of care. Some were receiving palliative care. The RPNs provided care to the patients while the RN administered medications and provided treatments.

The unit was laid out traditionally—a long hall with a nursing station at one end. There were one, two, or three patients in each room. There were two supply rooms. Drinking water was available in the nursing station. The common patient bathroom was at the end of the hall. Each patient bedside had a table with drawers.

Patients were expected to provide their own oral care supplies. Oral care supplies were not available on the unit and were sometimes borrowed from another unit, or were made up in bags by the volunteers as a courtesy. Nurses often purchased oral care supplies for patients. In the supply room there was one bottle of mouth rinse, and one bag of green cellulose sponges (foam swabs), presumably from another unit. Nurses reported that dry mouth products were infrequently requested by nurses or ordered by physicians. Patient oral hygiene care supplies were for the most part kept in or on the patient's bedside table, often in a blue kidney basin.

Description of Case 5. Patients on this unit required complex care. The unit was large and spacious with a non-traditional layout around a huge central common room. There was a main nursing station and another smaller nursing station, and two medication rooms. Only one medication room had the automatic dispensing unit for narcotics and controlled drugs, so nurses constantly walked back and forth if a medication was required from the dispensing unit while medications were being prepared in the other medication room. Drinking water was available at both ends of the large common area in an open-style kitchenette. This is where snacks were prepared—toast, tea, etc. Patient rooms were well designed with ensuite bathrooms. The rooms were modern with a fair amount of clutter. Patient oral hygiene care supplies were kept by the bedside or in the bathroom. Table 1 shows the characteristics of nurses in each case.

Table 1

Characteristics of Nurse Participants

	Case 1	Case 2	Case 3	Case 4	Case 5
Shift worked	3:00 p.m.- 11:00 p.m.	7:00 p.m.- 7:00 a.m.	7:00 p.m.- 7:00 a.m.	7:00 p.m.- 7:00 a.m.	7:00 p.m.- 7:00 a.m.
Nurse: Patient ratio	1:7-10	1:7-10 (usually 1:10)	1:7	1:4 prior to 8:00 p.m. 1:6 after 8:00 p.m.	1:8
Personal Care Attendants	no	yes	no	no	yes
Nurse participants	5 RPNs	5 RPNs	3 RPNs 2 RNs	5 RPNs	3 RPNs 2 RNs
Gender	male & female	female	female	female	male & female
Median age	30-34	25-29	45-49	35-39	35-39
Education					
RPN diploma	4	4	3	4	1
RPN certificate	1	1		1	2
RN degree			1		
RN diploma			1		2
Number who had continuing education in oral health	2 of 5	1 of 5	3 of 5	1 of 5	2 of 5

Description of Physical Artifacts: Oral Hygiene Tools and Products

Yin (2014) indicates that tools or instruments can be sources of evidence, and that they may be observed as part of a case study. Although not always relevant in a case study, in this study the oral hygiene tools and products available to nurses in the settings are integral to the oral hygiene care provided. The tools and products available in each case are shown in Appendix D. One of the tools, the foam swab, has been shown in

studies to be ineffective (Addems, Epstein, Damji, & Spinelli, 1992; Pearson & Hutton, 2002). Another product, alcohol-free, minty BeFresh Mouth Rinse (Chester Packaging, Cincinnati, OH) has no antibacterial properties.

Question 1: What Oral Hygiene Care Interventions are Provided by Nurses?

Oral hygiene care interventions observed to be provided by nurses in the five settings are listed in Table 2. They included interventions related to brushing teeth, cleansing the tongue, rinsing or cleaning the oral cavity, caring for dentures, relieving dry mouth, and activities related to engaging patients in oral care.

In Table 2 the frequency with which certain interventions were observed at each site is not represented, just that the intervention was observed. Variation in practice is illustrated by the different ways of carrying out interventions within each category. Some categories of interventions were not observed at some of the sites.

Table 2

Oral Hygiene Care Interventions and Activities Observed

<i>The nurse:</i>	Case 1	Case 2	Case 3	Case 4	Case 5
<i>...provided interventions related to cleaning teeth</i>					
Took patient to sink for oral care	✓	✓	✓	✓	✓
Set patient up to brush teeth	✓	✓	✓	✓	✓
Set up and supervised patient brushing teeth	✓	✓	✓		✓
Cued/prompted patient by handing brush with paste to patient (refused to participate)		✓			
Took over brushing patient's natural teeth	✓	✓			
Cleansed patient's teeth with BeFresh Mouth Rinse			✓		✓
Brushed patient's teeth with brush and paste		✓			
Assisted to brush with suction toothbrush/paste					✓
Inspected teeth after brushing	✓				
<i>...provided interventions related to tongue cleaning</i>					
Demonstrated tongue brushing	✓				
Prompted tongue cleansing with foam swab	✓				
Prompted tongue cleansing with brush		✓			
<i>...provided interventions related to rinsing</i>					
Helped rinse with water	✓	✓	✓		✓
Helped rinse with BeFresh Mouth Rinse followed by water	✓	✓			
Helped rinse with water followed by BeFresh Mouth Rinse		✓			
Set up to rinse with patient's antiseptic mouth rinse					✓
Offered BeFresh Mouth Rinse straight from bottle		✓			✓
Offered BeFresh Mouth Rinse from cup		✓			
Delivered two sprays of chlorhexidine gluconate		✓			
<i>...provided interventions related to denture care</i>					
Tried to get denture out for cleaning but unable	✓				
Brushed dentures with brush and paste	✓	✓		✓	✓
Cleaned denture with foam swab and BeFresh rinse	✓				
Rinsed denture in water		✓			
Following brushing, soaked dentures in water with denture cleansing tablet (Polident)	✓	✓		✓	✓
Soaked dentures in plain water following brushing				✓	✓
Soaked unbrushed dentures in cup with water		✓			✓
Soaked dentures in water with denture cleansing tablet (Polident) without brushing		✓			
Washed denture cup		✓			
Supervised patient brushing denture while in place	✓	✓			
Supervised patient brushing denture		✓			

Table 2 (continued)

<i>The nurse:</i>	Case 1	Case 2	Case 3	Case 4	Case 5
<i>...provided interventions to cleanse the oral cavity</i>					
Cleaned edentulous mouth with foam swabs dipped in BeFresh Mouth Rinse	✓				
Cleaned edentulous mouth with foam swabs dipped in water					✓
Offered to clean/brush/rinse edentulous mouth, but patient declined		✓		✓	✓
Supervised cleaning of gums with toothbrush and paste	✓	✓			
<i>...provided interventions to relieve dry mouth</i>					
Applied lip balm		✓			✓
Applied Moi-Stir Spray (artificial saliva)	✓	✓			
Applied Oral Balance Gel to oral cavity		✓			
<i>... tried to engage patients in oral hygiene care</i>					
Assumed independent patient performed own oral care	✓	✓	✓	✓	✓
Reminded/asked independent patient if care had been done	✓	✓	✓	✓	
Knew that family had done evening oral care	✓		✓		
Offered to help with oral care, but patient declined	✓	✓	✓	✓	✓
Offered to help with oral care, but patient said it had been done	✓		✓		✓
Offered to help with oral care, patient said it had been done, but nurse suggested it be done again		✓			
Chose not to offer oral care to agitated patient		✓			
Chose not to awaken patient for oral care		✓			
Knew patient refuses, so didn't ask			✓		
Did not offer oral care to patients who looked like they might require help			✓	✓	✓

Question 2: How do Nurses Enact their Oral Hygiene Care Practice?

Nurses enacted their oral hygiene care practice through four key processes: (a) engaging patients, (b) intervening with patients, (c) assessing outcomes of their care, and (d) communicating the care they have given. Nurses *engaged* patients in performing oral hygiene care in a variety of ways and these varied from nurse to nurse. Nurses *intervened* with patients who have dentures, natural teeth, swallowing problems, dry mouths, and who receive enteral nutrition, but approaches varied among nurses, with no consistent

site-specific approach. Nurses usually bypassed *assessing* the effectiveness of outcomes of oral care. Nurses *communicated* the oral hygiene care they had given by way of paper or electronic documentation but not at inter-shift handoff. A more in-depth discussion of these processes follows.

Nurses engaged patients in performing oral hygiene care. Nurses engaged patients in performing oral hygiene care in a number of ways, and the activities associated with engagement were not case dependent (i.e., they varied among nurses and among patients). Engaging included: (a) asking or offering assistance; (b) responding to refusal by either persisting (sometimes through cajoling or explaining the benefits) or taking “no” for an answer; (c) involving patients in oral hygiene care by setting up, cueing or directing, initiating to promote joining, taking over care, and providing care.

Asking patients about oral care or offering assistance was the most common method used to engage patients in oral hygiene care activities. This simply involved asking patients if they wanted to do their teeth, or if they had done their teeth. Many nurses used a variation of the approach described by Nurse 4B: “I would personally just say do you want to? And they will say ‘yes’, ‘no’, ‘I don’t do that’, ‘maybe tomorrow’.”

A number of patients across all cases were considered by nurses to be independent in their ability to carry out their own oral hygiene care. On a few occasions the nurse asked, and those patients indicated they do their own care, but most often they were not asked about doing their oral care. Patients with rehabilitation goals had presumably been assessed by an occupational therapist as able to complete their own oral hygiene care. However, nurses did not explicitly indicate that they knew particular

patients had been assessed as capable of performing their own oral hygiene care or that doing so was one of their rehabilitation goals. Rather, nurses nodded toward those patients and told me they complete their care on their own. Sometimes, when asked how they knew certain patients were able to perform their own oral hygiene care, the nurse was unsure:

For him, I'm not sure. He is kind of hit and miss at allowing things, and not allowing things. He is independent, so I don't know if he kind of takes care of it himself. I'm sure he would be the same as [another named patient]...wanting to be set up, and probably brush and [interrupted by chair alarm]...(Nurse 2B).

Sometimes patients were not offered assistance with oral care, but they did require assistance in other aspects of care making it difficult to imagine how they would be able to complete adequate oral hygiene care. One man who had been known to throw juice at one of the nurses and call her foul names responded well to Nurse 3C as described in my field notes:

She asked what he had for lunch and he replied that he didn't have lunch. She asked if he needed help with his teeth and he replied that he would do them himself later. The nurse replied, "as long as they get done". Well, in my estimation, there was no way this fellow with a catheter was going to get up to the bathroom to brush his teeth on his own...We went back to this patient. He had a few of his own teeth. He was given pills with applesauce and fed a thickened protein pudding. A container of thickened cranberry juice was left at his side. These thickened textures point to swallowing problems—aspiration risk—which makes him an ideal candidate for bedtime oral care, but it was not provided to him (Case 3 field notes).

In my own practice, I see documentation indicating that patients who perform oral care independently require total assistance from the nurse in other aspects of personal care such as feeding or washing. This was heard to be true in this study as well:

Everyone's very independent as far as [oral] care. They might need help with the bigger things like transfers, dressing, peri-care – that kind of stuff, but other than that everyone is pretty independent (Nurse 4E).

Patients went into the bathroom to complete their oral hygiene on their own, but based on their need for other elements of care, I wondered if they were able to adequately complete care.

...a patient named “K” had just been at the sink with his toiletry bag and had brushed his own teeth. His teeth were natural. He needed help getting on to the commode and being wheeled to the bathroom and to the toilet. He did not have use of his left arm. We got him back in bed and tucked in. Later I learned from the nurse that he had a snack after brushing his teeth. When I asked if his teeth would be brushed again, the answer was “no” (Case 3 field notes).

Another method of engaging patients in oral hygiene care activities took place when the patient initially declined oral care and the nurse persisted or encouraged.

Although nurses' persistence may have been for my benefit as observer, some patients would then agree to oral care. Nurse 2A convinced a patient, who initially refused, to perform oral hygiene: “You brushed them already?...Yah. Well if you want to brush them again, you can. Do you want to rinse your mouth? It's up to you... Okay – let's do that then.”

When Nurse 1D decided not to take “no” for an answer, the patient gave in: “...would you like to brush your teeth or anything? [patient replied no] Do you have dentures in? Yeah? Would you like me to clean them for you?” Another nurse had similar success when she persisted and offered specific interventions:

And you're sure you don't want to brush your teeth? I have to get some rinse— ...That's the toothpaste. If I set it up for you, do you want to brush your teeth...yeah, that's right. Perfect. Here, I'll help you out... (Nurse 2D).

An engagement technique occasionally used by nurses after an initial rejection was the use of humour or cajoling. Nurse 4C tried to convince a patient who planned to wait until morning, “Could you humour me? This is my friend...she’s doing research on how people brush their teeth.” Nurse 1B described how she cajoles some of the older men into doing oral care by drawing on a potential need for social propriety by saying “...well, there’s lovely ladies around--you never know who might be...”

Nurses tried to convince patients to participate in oral care by explaining the benefits of bedtime oral care, that is, by conveying the importance in only a couple of observed encounters. Nurse 2C provided this explanation to one patient, “Before you go to bed it’s always good to brush your teeth—get rid of all the germs.” Nurse 4E was persistent with a man who was going home the next day and had a habit of only brushing in the morning:

She asked him if he was going to brush his teeth and he said that he does them in the morning...However, she did tell him that he should brush his teeth at night because his teeth will be exposed to the sugars from food that has accumulated all day and cause cavities. She commented that she herself brushes now more frequently. He still protested, but brought his oral care supplies to the sink... (Case 4 field notes).

Occasionally, nurses seemed surprised at their own success after persisting:

Nurse 2E: I’m shocked because a lot of the patients don’t usually let us take their teeth out, so the fact that you are here and she’s letting me...

Observer: So this is a bit of an unusual situation?

Nurse 2E: Well yes because we’ve done [i.e., had success with] three or four in here, right?

In all settings, when patients declined oral care, the nurse more frequently accepted the response and did not pursue it further. Nurse 3C responded to the patient

who declined oral care with, “Only in the morning, eh? Okay. All right.” Another nurse provided her own rationale for not pursuing further when the patient declined care:

... you ask the person, “Do you brush your teeth before you go to bed?”, and it’s challenging to tell someone “do you want to”, and they refuse it. You really have to go with it; they have to make their own decisions, even though you know it might not be the best thing for them (Nurse 4B).

Involving patients in oral hygiene care was another way of engaging patients and incorporated different approaches depending on the needs of the patient: (a) gathering and assembling supplies in front of the patients (setting up) so they could perform oral hygiene care; (b) cueing or directing after setting up supplies; (c) initiating care in an attempt to get the patient to join in; (d) taking over care when patients seemed to be unable do perform their own oral hygiene care; and (e) providing oral hygiene care, sometimes after a snack, for patients who were dependent and relied on the nurse.

Some patients were able to complete their own oral care if the nurses collected the necessary items and placed them in front of the patient. For example:

[The patient] was sitting up in her chair and was ready to brush her teeth. When the nurse offered, it appeared to me as if this lady always does her teeth at night. The nurse emptied her k-basin of extraneous items and provided toothpaste and toothbrush. The lady waited for water but then used the remainder of her ice water and poured it into her k-basin. She brushed [her bridge] and brushed her teeth, and replaced the bridge (Case 4 field notes).

Sometimes the nurse provided some cueing and directing after setting up. Nurse 1A cued the patient to perform care by saying, “So I’ll set you up, and you can do as much as you can, and then I’ll help you with the rest—okay?” Another nurse set the patient up at the sink and then prompted him along with clear instructions while standing behind him at the sink:

So I'm just going to get you a little cup...I'm going to use one of these, because these are all brand new cups, okay? We'll just get some rinse water...okay, and we'll put that up there...Do you want to get that a little wet there...get it [head of toothbrush] a little wet and soft there, and lean over that sink a little bit... (Nurse 3A).

Nurse 1A directed a patient to brush his tongue: "Here, can I show you something? Just stick your tongue out, and just brush it down, okay?" Nurse 2A directed the patient to rinse by saying, "So just take a little sip and swish it around your mouth, then I'm going to give you the kidney basin here and you're going to spit into it, okay?"

Nurses described how some patients who are unable to initiate care benefitted from the nurse getting them started, and then they joined in and continued on their own as the nurse stood by:

...some may need cueing, and some you need to actually stand there and watch them doing it, because some people have trouble with the cognitive part of it. They see the brush, but they don't know what to do with it. So you pretty well bring it to their teeth, and once you tell them, "Brush – go up, go down" – so they will do, but you have to be there to assist (Nurse 3C).

Another nurse described how the patient required help initiating care after setting up:

We have to set him up and do a lot of his care. We have to initiate it, and then as soon as we initiate, then he realizes what we're doing, and then he'll take off his shirt, or like when I put the toothbrush in his hand...But to say to him "Can we brush your teeth", and have him initiate the brushing of teeth—he doesn't register (Nurse 1B).

Occasionally, a nurse took over oral hygiene care when patients were struggling with doing it on their own. Sometimes the patient had a cognitive impairment and had difficulty following instructions, so the nurse watched the patient struggle for a moment and then took the swab from the patient and provided care:

...brush inside your mouth with the mouth rinse. Are you going to do it? [pause] You seem to want me to do it. [pause] Okay, open up. [nurse takes swab

from patient] Don't suck on it [i.e., foam swab] or bite down on it. Just let it go along your gums (Nurse 1A).

Sometimes the patient was not able to be thorough because of lack of manual dexterity associated with frailty. In this case, the nurse followed the patient's attempt to clean her own dentures by discreetly cleaning them for the patient:

...so the patient allowed me to watch her brush her dentures with fluoride toothpaste and a brush...Once the lady was finished, the nurse put gloves on and brushed her upper and lower denture more thoroughly at the sink (Case 4 field notes).

In a few cases, a nurse engaged patients with dementia in oral care by providing it for them right after the snack:

So they are not really sure what you are doing to begin with...I find it easier to give her a snack first, because then she associates maybe the cleaning of the mouth after having something to eat, and it kind of gets her into the whole waking up a bit, and she's eating using her mouth. Otherwise it's very difficult if she's partially asleep, and then you go in and try to do mouth care on her (Nurse 5A).

Another nurse used the same strategy, but it was not successful:

The nurse fed her some pudding and gave her pills with applesauce. She went to the supply room to get oral care products as the nurse did not see them above the sink. She put toothpaste on a brush, but the lady refused (Case 2 field notes).

Nurses *intervened* with patients who had a variety of oral care needs. Nurses' approaches to care of patients who had dentures, natural teeth, dry mouths, and who received enteral nutrition varied among nurses and were not case specific. The observed interventions are described in terms of: (a) caring for patients with dentures (e.g., removing dentures, cleaning and soaking them, and cleaning the oral cavity); (b) caring for patients with natural teeth; (c) caring for patients with dry mouth; and (d) caring for patients who receive enteral nutrition.

Care of dentures was the intervention most associated with bedtime oral care. Inconsistent practices related to (a) removing dentures, (b) mechanical cleaning (brushing) of dentures, (c) soaking dentures, and (d) replacing dentures took place across cases. Practices were not case-specific, but rather nurse-specific and relied on patient preferences and supplies available to the nurse.

Most nurses asked patients to remove their own dentures, while a few nurses removed the patient's dentures for them. Nurse 1D tried, but could not remove the dentures of a lady who required oral care:

Sometimes they are a little tricky. Do you have an upper plate? Let me see...can I try? We should brush your teeth. They're stuck? Can I try? ...It's not looking promising...Can take them out and clean them for you?

In one case, the nurse did not realize at first that the patient had dentures and supervised the patient brushing dentures while in situ:

The nurse dipped a foam swab into a bottle of BeFresh Mouth Rinse and offered it to the lady who proceeded to brush her upper teeth with it. Her teeth were actually an upper denture. It seemed she used the foam swab to clean the outside of the upper denture because she could not properly clean her denture with one hand, i.e., manipulate it. The nurse offered to help and when she took the denture out, there was a visible biofilm/plaque on the denture and the nurse offered to rinse them for her and she consented (Case 1 field notes).

When finished, the nurse commented, "Oh, I didn't even notice actually...to be honest" (Nurse 1D).

A nurse set a patient up and never did notice that she did not have her own teeth:

The lady brushed her teeth with Crest toothpaste, rinsed, and spit...the nurse left the bedside to help another patient and I lingered at patient E's bedside ...She has an upper denture and lower teeth...she therefore had brushed her upper denture while still in place instead of removing it to clean properly and to ensure that debris was removed from the roof of her mouth (Case 2 field notes).

Prior to soaking overnight in a denture cup, some nurses brushed the dentures with a toothbrush and toothpaste followed by a water rinse, and some brushed with water. Others soaked without brushing first; they rinsed under running water, or just put dentures directly from the mouth into the denture cup.

One nurse was uncomfortable using toothpaste on the dentures:

The toothbrushes are fine because they are really soft, but I keep trying to tell them you are not supposed to use regular toothpaste on dentures...it's too abrasive...I won't brush dentures with toothpaste. If they don't have their own [denture paste] I just use water because it's better than using toothpaste and causing scratches (Nurse 2C).

Another nurse worried about using a toothbrush on dentures:

Now this is where the controversy comes in with brushing dentures, or not brushing them. But she has it [toothbrush], so I'll do it: because it must be what they do...before I soak them. I'll brush them, then I'll soak them (Nurse 1A).

Depending on the availability of an effervescent denture cleansing tablet (e.g., Polident), nurses soaked the denture in a cup with plain water, or water with a dissolved cleansing tablet. Some nurses used hot water, and some cold water. Some said they occasionally add mouth rinse to freshen the water when there are no tablets. As Nurse 4C said, "I always brush them with toothpaste and soak them in water, or sometimes I put mouthwash in the water and soak them."

In every setting where dentures were cared for, some patients preferred to wear their dentures overnight after cleansing rather than removing them for the night. Nurses, such as Nurse 2A, honoured this preference: "Do you want to put those in a container? No? You are going to put them back in?"

When asked, some nurses explained that in the morning they rinse dentures and return them to patients, others brush them if they think they were not brushed the night before, and still others brush them regardless. One nurse explained how returning the dentures may be overlooked if the morning nurse is not aware of the dentures:

Sometimes I'll just write on the flowsheet, "Dentures soaking in cup at bedside"...just so the next person...might see it and know that they are there to do it. Because sometimes they come in and just set people up for breakfast and they don't have their teeth in (Nurse 5B).

Nurses did not help patients to mechanically remove plaque from their edentulous oral cavity using a toothbrush on gums, palate, and tongue. Rarely did a nurse encourage the patient to cleanse his own edentulous oral cavity and tongue with a toothbrush or swab. Instead, patients without teeth were sometimes asked if they wanted to rinse, and if they did, water or BeFresh Mouth Rinse was used—often straight from the bottle. As Nurse 4A explained, "I'm going to soak it [denture], and then it's up to them if they rinse their mouth, but I always ask if he wants to rinse." Patients often declined the opportunity to rinse.

In caring for natural teeth of patients dependent for care, nurses most often set the patient up and stood by but did not directly supervise. There were very few observations of nurses brushing patients' teeth for them. When patients brushed their teeth while the nurse was distracted with other things in the room, the patients appeared to do a superficial job of cleaning teeth and gums about half the time. As an example, one woman cleaned her own teeth at the sink and her gums bled...

...when she brushed with Crest toothpaste, her spit was mixed with blood. I asked if she knew why there was bleeding and she didn't—but this gingivitis I was

seeing had been pointed out to me some time ago by a dental hygienist as being the result of inadequate brushing over the past while (Case 4 field notes).

In another example, the patient did not brush for the two minutes recommended by dental health professionals:

The nurse put toothpaste onto a toothbrush...Patient C leaned over the sink and brushed her teeth for 10-15 seconds. She then spit into the sink. She rinsed with water twice, and the expectorated water contained some brown bits of debris (Case 5 field notes).

Yet, about half of the patients who cleaned their own teeth under indirect supervision appeared to be more thorough, as described in this example:

She was blind. The nurse put the patient's Aquafresh toothpaste on an electric toothbrush with a small, round head. A plastic cup with water was placed in the patient's left hand. I held the empty cup to hand to the patient. She did what appeared to be a very good job of cleaning the outside and inside surfaces of her teeth and she scrubbed her tongue, rinsed with water, and spit into the cup. I was surprised that someone could brush as long as she did with all that foam without spitting! (Case 5 field notes).

Saliva substitutes in the form of moisturizing spray and gel were observed to be used only in Cases 1 and 2, and were reported to be only rarely used in other settings, though more freely available to nurses in Cases 3 and 5. One nurse explained the purpose of the spray and how the patient should participate:

This is a moisture spray, okay?...It keeps your mouth moist. Can I put a little spray in your mouth?...Okay—ready? Okay—tell me when. You're going to move it around your mouth. So just move that around...good? (Nurse 2A).

There were only three opportunities to observe interactions with patients receiving enteral nutrition. In one setting, there was an alert patient without teeth who received enteral nutrition but sometimes ate pudding in the evening. Nurse 1B thought it odd that he pointed toward his toothbrush when she mentioned oral care, and she asked him, "The

brush? Even without your teeth?” She turned to me and said, “He has a toothbrush, which is interesting, because he doesn’t have teeth, but he has dry mouth solution.” Without cleansing his tissues, she continued, “Here, I’m going to spray this stuff in your mouth.”

In another case there was a patient who received enteral nutrition and was allowed nothing by mouth. Her oral care was performed with a suction toothbrush and paste, and she was given water with which to rinse, and she suctioned it out with a rigid plastic Yankauer suction tip. Another patient on this unit required set-up to use her own electric toothbrush with paste. She thoroughly cleansed her teeth and oral cavity, rinsed with water using a Yankauer suction tip, and followed this with some BeFresh Mouth Rinse.

A couple of nurses mentioned having seen a thickened mucous or hard build up of coating on a patient’s palate that results when mouth care is not done regularly in patients receiving enteral nutrition. Nurse 1D described her own patient’s oral cavity: “I’ve seen a lot of patients who have had tube feeds in the past, and their mouth is very dry, and have that white look to them. His is actually quite nice.” Nurse 5C spoke about two patients on another unit in this way: “Well [with] Patient G [it]is more like on the palate and stuff, where [with] Patient W it’s all in his teeth ... he looks like he’s got multiple teeth on top of each other.”

Nurses usually bypass assessing the effectiveness of their oral hygiene care.

Nurses occasionally and only minimally assessed the effectiveness of their oral hygiene care. This amounted to checking for debris on the teeth, noting a sore mouth, and confirming that oral care resulted in a fresher feeling mouth.

For example, after supervising oral care, Nurse 1A asked, “Can you smile like this? [nurse demonstrated] Can I see your teeth when you smile?” Nurse 1B commented while looking inside the mouth of a patient receiving enteral nutrition, “It’s quite moist actually. Even the inside. Can you open your mouth for us? The sides of his mouth are really nice. Things look good.”

Two patients were assessed as having a sore mouth. Nurse 1A asked, “Is it sore? Is it sore here? You are still sore. What about over here? No?” Nurse 4C explained, “He didn’t put his top teeth in today because he said they were uncomfortable, so I don’t know if they are just not fitted properly.”

On occasion, nurses confirmed with the patient that following oral care the patient’s mouth felt fresh. Nurse 1B asked, “Does that feel good? Yah.” Nurse 2A asked “Yah, nice and fresh, eh?”

Nurses communicate the oral hygiene care they provide. Nurses regularly communicate that oral hygiene care was given and the extent to which the patient required assistance by completing the relevant section of a documentation tool. These were paper tools in all but one case where electronic documentation was used.

Documentation of patient information in the health records of patients was not viewed in this study, but blank documentation tools were shown by nurses and guidelines for their use explained as illustrated in the quotes in Table 3. All tools had a section for oral hygiene care to be documented, but in very little detail as shown in the examples in Table 3.

Table 3

Documentation of Oral Hygiene Care on Patient Care Flow Sheets

Contents of Oral Care Section of Patient Care Flow Sheet	Quotes from Nurses Describing How Care is Documented
Case 1: Flow sheet consists of indicating, using a checkmark and initials, that oral care was provided according to the care plan.	“...on the flow sheet, and it is literally a checkmark, and it’s a checkmark to say you followed the care plan. So it just says oral hygiene and you checkmark if it is provided as outlined in the care plan, and that’s what you are signing to. So when you look in the care plan ... oral care ... and it will tell you whether they need to be assisted, but it doesn’t give you much more” (Nurse 1A)
Case 2: The flow sheet has a place for the nurse to indicate that denture care and mouth care were completed and the amount of assistance given using a code.	“We do have a daily care flow sheet, and it does have a section for hygiene, and one of them is denture care, mouth care, and you can just write down if the patient did it themselves, or if they required assistance... You write self-assisted or total care, and then if you need to elaborate, you can do that in the nursing documentation; in the chart” (Nurse 2A)
Case 3: The nurse uses a drop-down menu on an electronic documentation screen to indicate any combination of chlorhexidine, dentures care, independent, mouth wash, oral care, saline rinse, suctioning oral cavity, toothbrush with paste, water, or other.	“So you write down if you use toothpaste, mouthwash, water, if you assisted them or if they were independent” (Nurse 3A)
Case 4: The nurse indicates “self”, “assist” or “total” beside oral care on the flow sheet.	“Yes – so you can put total – meaning that you did assist or set them up, or ‘S’ for self” (Nurse 4B)
Case 5: The nurse circles “independent”, “assisted”, “complete”, or “family assisted” beside mouth care on flow sheet.	“...it’s ‘totally independent’. Yes – for ‘assist’, it’s if you have to set up ... like a couple of our people, they were able to brush themselves, but they needed you to get stuff for them. ‘Complete’ is when you actually have to brush their teeth for them” (Nurse 5A)

Intershift report is an opportunity for nurses to transfer accountability for care to the oncoming nurse. Often care provision tips are passed along during these reports.

However, discussions related to oral care do not take place at intershift report:

It's not really something that's discussed over report, unless their condition changes, like they've gone palliative and there's nothing by mouth. If they're taking nothing by mouth, obviously you are doing more mouth care because they are mouth breathing, and oxygen. But other than that, it's not really discussed (Nurse 5D).

Question 3: How do Nurses Know what Oral Hygiene Interventions to Provide for their Patients?

Nurses rely on three main sources of knowledge about how to provide oral hygiene care: (a) verbal cues from patients; (b) knowing the patient; and (c) observations of the patient and the patient's environment, including supplies at the bedside that serve as cues. Sometimes nurses rely on other members of the health care team such as the occupational therapist and speech-language pathologist. Although available to them, nurses almost never rely on the plan of care or on hospital policies, procedures, or protocols for guidance on the oral hygiene interventions to provide for patients.

Verbal cues from patients. Nurses most often provide oral hygiene care based on verbal cues from patients. These are expressed patient preferences or directives that are received in-the-moment at the bedside:

I was wondering if you need any help. Do you want me to rinse them out for you? Yah – okay. You need a little assistance with that – right? Do you usually rinse them out on your own at all? No – okay. Do you want me to do that now or later? Later before you go to bed? Okay, you let me know when – okay? (Nurse 1D).

Nurse 4C asked the patient how he preferred denture care to be carried out:

Tell me how you want me to care for your teeth... Do you scrub them first? ...Don't scrub them, just rinse them – okay. And you soak it over night? What about inside your mouth ... do you want anything for your gums? No? – okay (Nurse 4C).

Knowing the patient. Nurses who have cared for patients previously seem to be able to predict patients' responses to asking if they require help with oral care, or what they might be willing to do. According to Nurse 3A, "They're here for four to six weeks, so you become familiar with what they can do, and what they can't." Knowing that her patient would not participate in having his teeth brushed, one nurse explained how she automatically seeks an alternative to mechanical brushing:

That was the chlorhexidine. It is ordered by the physician. I only used that because he didn't want to brush his teeth, and I know he doesn't brush his teeth, so that's just like an antibacterial, which is better than nothing – right? So a quick spray like that ... most people are okay with that because they know it's quick... (Nurse 2A)

Knowing the patient's demeanour at different times of day helped a nurse in decision-making:

Nurse: I find that he often is very confused at night, so to even try and explain - he's not really focusing on what you've been saying.

Observer: But in the daytime is he a little bit better?

Nurse: Yes, he's great in the daytime and we could probably brush his teeth; we would probably be able to (Nurse 2B).

One nurse knew the patient would ask if she needed help:

Some of these people like "F" have been here for quite some time, so you kind of develop a routine, and she can speak for herself, so when she wants something, she'll ask. So if she wants to brush her teeth, she'll ask. Lip balm – like she knows to ask, and it kind of develops into a routine. So when you are constantly on the floor and have these people, it's kind of built into the routine (Nurse 5D).

Observations of the patient and environment. Some nurses based their interventions on what they observed in the patient's environment. This means they relied on supplies that were present at the bedside to provide clues about oral hygiene care

requirements. Nurse 1E explained, “Sometimes if you go to the bedside, sometimes we find a toothbrush and toothpaste. So we just” Nurse 2B commented, “So it is kind of hit or miss. How I notice – I look for the denture containers, and then” Nurse 5C noted, “They’ll have their own toothbrushes, their own toothpaste and stuff. So you already know what they are using; it’s there in the room.” As illustrated earlier, decisions related to denture care (e.g., brushing or rinsing, soaking solution, etc.) were most often based on what was available at the bedside.

Some nurses look at the patients in the context of their environment to determine how much help the patient will require. For example Nurse 3A stated, “We know . . . if their one side is affected, they are going to need help.”

Other members of the health care team. On units where they have such support, especially when patients may have swallowing difficulties, nurses may receive instructions from speech-language pathologists (SLPs) and occupational therapists (OTs) who provide guidance in oral hygiene as in the following examples. On one unit, nurses reported that the SLP and OT assess patients and provide instructions related to their oral hygiene care on the patient’s plan of care.

Yah, so what they do is – Speech will say to us, especially if they have some sort of swallowing difficulty, and they’ll post it - with every meal please rinse with this sponge, and just cleanse all of their palate, just to get rid of the debris. OT will do a full ADL [Activities of Daily Living assessment] on the patient, and then will specifically write notations in the care plan, and let us know exactly how to brush their teeth, or what they need, or how to set them up (Nurse 1B).

I asked an Occupational Therapist on one of the study units about how such an assessment plays out and is communicated:

So in terms of assessing their morning care, we look at washing, dressing, and often we will look at brushing their teeth. So we are looking at their ability to actually put the toothpaste on the toothbrush, or if they are able to take their dentures in and out...So you are looking at ...their cognitive perceptual ability, because sometimes a lot of people with the ideational apraxia, they don't have the capacity to plan and sequence what they need to do to actually get to do the task. ...They [may] have the physical capability to say just brush one side, and you get over-brushing. ...We do try to report ...back to the nursing staff, that basically they need cueing, they're not thorough, or they are not able to sequence the task. I know for myself, usually after any ADL [assessment] I always go talk to the nurse and say this is how they did, this is what the problems were ... so usually it's a one-on-one verbal. I always chart my ADLs, so it's always documented. Then probably if there's a set up type of thing, so that would be the care plan probably. Sometimes it will be the client's responsibility to tell the nurse ... "I need my suction cup thingy so I can do my teeth – this is what I need for set up" (Occupational Therapist A).

Nurses did not mention creating a plan of care from documented suggestions from the Occupational Therapist.

On one unit, nurses reported that the SLP recommends the frequency of oral hygiene care:

I mean our SLP will come; they will assess, and tell us how many times we need to do oral care ... twice a day, three times a day (Nurse 3A).

However, Speech-Language Pathologists do not systematically provide input for every patient on other units:

But they would ask me if it was a problem, and I would have to say that with my caseload, I don't look at every person with oral care – not at all. Only if they have swallowing problems; I might explicitly take a look at that (Speech-Language Pathologist A).

If it becomes, "well the Speech Path lets us know when we do that" ... I think we are in trouble. We don't see nearly everybody, and we may not see them for long periods (Speech-Language Pathologist B).

Nurses do not rely on care plans for information. The oral care section of the care plan (also known as ‘kardex’) is rarely consulted, according to nurses, and contains, at most, information about whether the patient has dentures and the type of assistance required. Nurse 1D explained, “I would much prefer just to go ask them than to even look [at the care plan].” Nurse 5D explained, “If it’s not in the kardex [care plan], it’s kind of to each their own.”

Another nurse illustrated the limitations of the care plan:

Nurse: So if you were coming on the floor we have the kardexes, and if they are properly updated, it will have an area for hygiene, and then it will say dentures, and it will indicate what their needs are.

Observer: Would it tell me what product to use?

Nurse: No – so that’s your own judgment call. Most people are going to require the toothbrush and toothpaste, and then after that it’s kind of personal I guess. Then there’s the mouthwash, and then you can always ask the patients what they prefer (Nurse 2A).

In my review of documents, I noted that on all care plans there is space for the amount of assistance required and whether the patient has dentures. Further, the care plan used by nurses in Case 5 provides for frequency of mouth care and use of suction toothbrush; the care plan used in Case 1 has some space labelled “describe.”

Nurses do not rely on hospital policies, procedures, or protocols. Nurses were generally unaware of the existence of hospital policies, procedures, or protocols related to oral hygiene care. When asked about the existence of policies or procedures to guide practice, nurses answered: “Not that I’m aware of” (Nurse 1D); “I don’t really know” (Nurse 4B); “No – not that I’m aware of” (Nurse 3D). The exception was Case 5 where a nurse looked on the hospital’s website to see if a policy existed and was able to find one

for patients at risk of aspirating. In that policy was reference to a textbook that guides oral hygiene practice for patients not at risk for aspiration. If policies did exist, they did not seem to be used to guide practice—at least intentionally.

In summary, Cases 1, 2, and 3 had access to oral care guidelines, though unknown to participants. Case 4 apparently did not have a policy, though in the member checking process someone thought they may. Case 5 used a textbook procedure for those not at risk for aspiration, and a policy for those at risk.

Question 4: How do Factors Related to the Nurse, Patient and Family, and the Clinical Unit Influence Oral Hygiene Care Provision by Nurses?

The following factors influence nurses' ability to provide oral hygiene care: (a) nurses' skills, knowledge, attitudes, and beliefs; (b) the extent to which the patient is able or willing to cooperate; (c) routines and workflow; (d) access to supplies; and (e) family involvement. The factors are discussed in turn below.

Nurses' skills, knowledge, attitudes, and beliefs. Some nurses commented that they have never learned how to brush patients' teeth. For example, Nurse 1B commented on oral care content in her nursing program: "We literally had one topic one day of oral care, and more of the ... what you can find with oral care, and what it can lead to. Not necessarily actually *how* to do it." Nine of the 25 nurses revealed on the demographic questionnaire that they had attended a workshop or some form of continuing education related to oral health.

There was some knowledge shared with me during conversations with nurses that was not consistent with what is currently accepted practice. For example, Nurse 1A said,

“In actuality I think the gums and tissue are more a concern than the dentures would be, because the dentures are false.” While it is true that dentures would not be subject to dental caries, plaque accumulates on them as it does on real teeth so dentures, gums, and tissues should be cleaned. Nurse 1B was surprised that an edentulous patient would point to his toothbrush, “The brush? Even without your teeth? He has a toothbrush, which is interesting, because he doesn’t have teeth.” This nurse didn’t understand the importance of mechanical cleansing of oral tissues in patients without teeth.

Some nurses shared their beliefs and attitudes related to oral health that would seem to promote or facilitate their providing oral hygiene care. Some nurses had insight into the importance of their patients’ oral hygiene. One nurse spoke of the importance of oral health in terms of its contribution to patients’ nutritional status:

It gets really frustrating too, because I know that if people don’t take care of their mouths, then they start to lose their teeth, or just in general their gums get sore, and then they don’t eat as healthily, or they are just eating softer foods, and if you are not eating in proper fashion, then your health is just going to go downhill, and I don’t think a lot of people really realize that your mouth is the gateway to your body (Nurse 2C).

Another nurse made the connection between oral health and aspiration pneumonia when she said, “I guess it’s important, because I’ve never thought of ... especially with our patients who aspirate ... it can cause pneumonia” (Nurse 5E). A contrasting attitude is that oral care is considered grooming and not infection prevention:

There’s not really ever an excuse not to, but unfortunately it is one of those things that we don’t always ... that and shaving, are two of the things that we don’t always get a chance to do (Nurse 1C).

Other beliefs and attitudes seemed to have the potential to limit nurses’ provision or promotion of oral hygiene care. A predominant belief was that people who seem to be

able to manage their own oral care should not be questioned about having done so because it could be perceived as being intrusive. Nurses' hesitance to question or pursue further is illustrated in the following. Some nurses leave it to patients to ask if they need help—otherwise nurses will keep a distance if patients require supervision but want to do things on their own:

Yes and sometimes we understand that he wants to do things, so we don't try to argue with them. We have to supervise them, but we give them the freedom to do their own things that they want to do. We have been seeing that he can do his own things, so we really trust that he does those things. The only thing that we always ask him to do is just in case he feels like he cannot do things, or maybe he feels like he's sick or something like that. If he comes to us, we try to help him (Nurse 1E).

Other nurses will not interrogate patients who do not have a cognitive impairment:

Yes – I cannot question. Sometimes he says yes, and I can say like – okay. I cannot say “are you sure about that?” So I guess ... we are in a rehab unit, and most of them are conscious of the things that they do. So we have to trust everything that the patients say (Nurse 1D).

Although it's funny because anybody whose got dementia or is truly unable to make the decision for themselves, you don't mind doing a little bit of that. Anybody else, you almost feel like you are violating them, you know what I mean? (Nurse 5C).

Some nurses, who would be prepared to reposition patients whether they like it or not, would not be as insistent with oral hygiene care:

People are very stubborn and are set in their ways here. Like with turning and repositioning, there is a lot of patients that hate that too, but you can kind of force them because they are not that strong. You can turn them, but how can you make someone open their mouth, and they could bite you, too (Nurse 5E).

Nurse 2E had a different way of looking at this than some nurses, and believed that patients are in hospital for a reason:

...but you still see the same kind of things get missed, and mouth care being one of them on [this] floor. They are thinking oh, they're independent; they should be doing it themselves. Or you know... who did that before they came in here? Well the difference being is that now they are here for a reason, and they may need that little bit of help – right? (Nurse 2E)

Nurses mentioned that their own oral hygiene practices influence their care decisions. Nurse 1A commented, “But that’s the other thing with nurses, we are taught to do mouth care, but a lot of the stuff you learn is from your own mouth and your own dentist telling you how to brush. Brushing teeth is very personal I find.” Nurse 4C added, “I know I’m very particular about my teeth, so I think I have a heightened awareness, and therefore I do it more for other people, but that might be a personal thing too.”

The extent to which the patient is able or willing to cooperate. The extent to which patients are able or willing to cooperate with care influences nurses’ ability to provide oral hygiene care. Lack of cooperation by the patient is seen as a barrier to nurses’ ability to provide oral hygiene care. As Nurse 5C commented, “Co-operation-- that’s the biggest thing. I would say right off the bat, 50% of the patients here at least, will just automatically say no.” Nurse 2A said, “The biggest barrier is just the patient being compliant, and willing to co-operate with you; that would be one of the biggest ones.” This lack of cooperation is apparent in: (a) patients who exhibit self-protective (care-resistant) behaviours; and more frequently in (b) patients who decline offers of oral hygiene care, or refuse when prompted to perform their own care, because of their knowledge, beliefs, or previous oral hygiene practices.

Some nurses described the challenges associated with providing oral hygiene care to patients who have dementia and exhibit self-protective behaviours such as hitting or

pushing away. Such patients are often responding to a threat in their environment, though this was not explicitly suggested. Nurse 2E warned, “I don’t know if I’m even going to attempt him, just so you know. It took three [staff] to change him; I’m not going there.”

Other nurses gave the following examples of patients with dementia refusing:

...and every time I went near with a toothbrush, or even to give him his pills sometimes, he clenches down and he absolutely refuses. Sometimes he’ll swat your hand away. Sometimes people will just flat out refuse saying ... like you heard him there; it was kind of like, “You’ve taken hours to come here, now I’m not going to do what you want me to do because it’s taken you so long to come and help me” (Nurse 2B).

Patient...does his own care, but if you ask him anything, he gets really upset; he’s somewhat condescending (Nurse 1B).

Particularly in Case 2, nurses described challenges with patients with dementia who don’t understand that their oral care has not yet been completed:

Patients who are really confused will just sometimes be like – oh no, I’ve already done it. You kind of know they haven’t and we try to redirect them and say, well just try it again – it doesn’t hurt to do it twice kind of thing, but they are adamant; no – it’s done, it’s done (Nurse 2E).

Some nurses were observed interacting with patients who had no or mild cognitive impairment, but who chose not to participate in oral care for various reasons including having brushed earlier in the day, brushing not being part of their usual bedtime routine, or just not understanding the value of a clean mouth at bedtime. One nurse believed that some patients consider oral hygiene as something private:

Some people think of it as a private thing; that’s their routine, they don’t want you to be a part of it. I’ve noticed that with some little old ladies, some ladies that are from a different culture; that’s not your business. And sometimes that’s frustrating because you don’t always know if they’ve been on their own, or if they are used to being on their own, they don’t feel comfortable having somebody help them with their mouth. Sometimes it’s almost better if they’re not as aware,

because then you can just do it. You still might have some obstacles, but not as many obstacles (Nurse 1C).

Another nurse shared how patients unaccustomed to rinsing their oral tissues seemed surprised at the suggestion:

I'll say, "Do you want to rinse out your mouth?"- and just get a toothbrush. I said the toothbrushes are soft, so just kind of do your gums and that. And they look at me like ... I've never done that before. They usually just clean their dentures and then they put them in. And I'm thinking, well food gets stuck in between; you still have to rinse your mouth out, you know? (Nurse 3E)

Routines and workflow. Oral hygiene care is not well embedded into evening care routines, but may not, according to nurses, be embedded into daytime routines either. The flow of evening work presents a barrier to optimal oral hygiene care being completed because of the timing of medications, timing of bedtime snacks, patient preferences related to timing of settling for the night, and sometimes an assumption that elements of care have been looked after by other nursing team members or families.

There were some explanations given for oral care not being part of the evening care routine. Some nurses acknowledged that it gets missed because they just don't think to do it:

Sometimes when we get too busy, sometimes we forget to do things... Sometimes like I told you before, you get too busy during the night helping to get patients into bed, and you completely forget about oral care (Nurse 1E).

Another nurse commented that denture care at bedtime is a routine, but natural teeth may be overlooked:

In the evening ... I would say most people will get it done, but there are some that do get missed in the evening. Whether it's because they don't want to do it ... generally like I said, if it's their own teeth, they sometimes get missed. If they are in bed already you can take their denture out, but if they are not, it makes it a lot harder work (Nurse 4D).

The number of assigned patients in the evening makes it difficult to do everything for everyone:

...more often than not it [oral hygiene care] kind of gets overlooked. If a patient's with it enough, you have that lady that was in that room ... she knows to brush her teeth, or like the lady in (room y) – she knows to brush her teeth. But especially like you said, having to care [for] all eight patients, do meds, do everything ... it's a lot to do on night shift, and sometimes it does get overlooked (Nurse 5D).

Other nurses spoke of competing priorities in the evening, with medication administration being the biggest culprit by far when it comes to a competing priority. Patients know that they must receive their medications before they can settle for the night:

Tonight went fairly well, but on nights when we are short staffed, or just in general it's crazier, then unfortunate as it is, it kind of gets lower and lower on my list of things to do because a lot of our patients, they want to be asleep by now... Yeah – they start asking for their pills around 7:30. They want to be asleep by 9. Not all of them, but a lot of them. They want to be settled, all of their care done, all of their pills done. So if I'm in a big rush, it's like – okay, I'm not going to fight you on your teeth, I'm just going to move along (Nurse 2C).

Timing of medications is mandated, and everything else has to fit around those times:

I think just the time ... like when you are too busy, you have too much stress trying to help people get to bed, and you have to come and do medications after that, because you have certain times for the medications too ... to try to finish all the things you have to do during the shift. So sometimes you forget things you are supposed to do (Nurse 1E).

Some nurses explained that oral care suffers particularly on evenings where patients with dementia become the priority because they are restless and climbing out of bed:

I mean it can be hard to find the time; as you saw the two patients there, they are up and down, and behavioural; they need a lot of attention. So that sets less time for the other patients, and if the other patients are sleeping, they don't want to be woken up for brushing their teeth. They think – why are you waking me up to brush my teeth? I'm asleep right now (Nurse 2A).

Other nurses concurred with Nurse 2A when it comes to care being missed for some patients because other patients require more attention:

Yes – there's nights when we have blood transfusions that we are doing, we have people climbing out of bed, you have people that become acutely sick, and you have to focus your attention on them, not necessarily giving the attention that the other patients deserve or need, but you kind of have to prioritize. So is oral care always done? Not necessarily, but if it can be, I just kind of ask (Nurse 5D).

Some nurses believe that oral hygiene care takes place more consistently in the morning:

Right ... and more so in the morning because morning care is a little more routine. Even for myself, I have a checklist that I do this, this and this. The patient will have flow sheets; we need to fill out oral care done independently by themselves, with assistance, or totally done for them. So I find that is more of a guarantee as opposed to bedtime, where sometimes it may not get done (Nurse 4C).

Other nurses disagreed that daytime oral care was more guaranteed, and explained that it is often missed:

...sometimes if it's really busy, it is kind of one of the things that might get neglected or pushed aside. It is fast-paced in the daytime because you are trying to get them up for physio or meetings, and you don't have long for each patient. They allow you 15 minutes, but it always takes longer than that, so you are always trying to catch up (Nurse 5A).

The flow of the work in the evening made it difficult for patients to go to sleep with clean teeth and mouths. Oral care was done earlier in the evening when time allowed, and sometimes this was followed by a snack, and often it was followed by medications given in applesauce. It was rare across cases to observe oral care following both the snack and medication. As explained by nurse 1D:

... sometimes like they wash their teeth, but sometimes they have snacks through the night. So basically we cannot go back again to make them wash their teeth again, so basically they just eat the snack and they go to sleep.

In Case 5, an hour or so after being assisted with brushing her teeth at the sink...

...the nurse went for some applesauce and the patient explained that she takes her pills with applesauce when there are so many. The nurse gave the pills with applesauce and the patient choked them down. The nurse told the patient that one pill had to be dissolved in her mouth. Prior to this pill, the nurse gave the patient ginger ale to drink. I looked at the can and it was not sugar-free (Case 5 field notes).

Nurse 5C described the typical behaviour of one of the patients who is assisted with oral hygiene care: “She goes and gets her teeth brushed before she goes to bed, but then they order pizza, and she’ll eat a whole bunch of food, and she won’t be cleaning her teeth again.”

Sometimes nurses can be unsure in the evening about the most effective timing of oral care, it gets postponed, and then perhaps overlooked altogether:

... even though they get freshened up and ready for bed, they might sit up and watch TV for a little bit. So at that point you’re not sure if they are going to have a little snack or something like that, so yes it does get pushed off a little bit. Whereas the morning you do your face, you do your teeth – all that kind of stuff. But at least if you ask, then you know. Like *patient x*, he doesn’t like to brush them at night. But then some people will say “I’ll brush them later”...(Nurse 4E).

Access to supplies. Access to supplies and oral hygiene products may influence nurses’ ability to provide effective oral hygiene care. By “access” I refer to having supplies available both in the stock room and handy at the bedside. The oral hygiene tools and supplies that were present in the stockroom varied from case to case and they are shown in the chart in Appendix D. Patients of nurses in Case 1 were expected to bring their own supplies to hospital and the unit stocked some mouth rinse and swabs as backup. In observing, I noticed that there seemed to be no lip balm substitute, and if mouth wash was not at the bedside, the nurse used water. If the patient did not have a toothbrush, a foam swab was used, or dentures were just rinsed with water prior to

soaking. If there was no cup handy at the bedside, a foam swab was dipped directly into the small bottle of mouth rinse. Nurses were often not prepared with towels and cups. A nurse in Case 1 thought that oral hygiene care might be enhanced if we could offer toothbrush and toothpaste to patients who did not have them:

It's almost like ... it'd be different if ... when they come admitted, that you say – here's your basin, here's your urinal, here's your bed pan, here's your soap, your lotion – oh here's your toothbrush and toothpaste ... like they do in a hotel sometimes – right? So maybe if it was like that, maybe the mouth care would be done more often. You only come and get it almost as needed ... even the mouthwash stuff (Nurse 1A).

Nurses on units where oral care items are not supplied said that they donate items to patients who do not have their own supplies:

Yah, and you know what ... some of the staff here are so good that some of us even just bring it in for them (Nurse 1B).

Nurses from Case 4, where items were not supplied, seemed able to procure supplies from volunteers, other units, and even donate them themselves. They did not find lack of supplies to hinder their ability to provide oral care:

So here we don't necessarily have toothbrushes, but what happens is our own nurses will bring in soaps, shampoos, conditioners, toothbrushes; we do that for anybody ... because we do get some patients who don't have family around, or aren't involved (Nurse 4A).

On this particular unit they bring from home. We do have nice nurses that tend to buy packages of Polident and boxes of whatever when they are on sale and bring them in for those patients that don't have them. But it is supposed to be provided by them (Nurse 4C).

Nurses from Case 2 were supplied adequately with the basics, although unlike any other unit, they had a supply of denture cleaning tablets. It is very likely that the manager purchased these supplies for them, rather than being part of the stock. Some nurses in

Case 2 constantly needed to fetch supplies because they were not handy at the bedside. This added to the workload and I wondered if this frequent retrieving of supplies would have taken place had I not been observing:

Nurse 2A: I'm just going to run and grab her some mouthwash...

Nurse 2A: Yah; it [toothbrush] doesn't look very clean. I'm going to get you a new one.

Nurse 2A: I'll get you a cloth; don't worry. You just brush your teeth and I'll be back.

Nurse 2A: Excellent; fresh and clean – right? Do you have any lip chap? Okay – I'll get you something.

Nurse 2C: Yeah – I'll go grab you some more water.

Nurse 2C: Okay – I'll go and get you a toothbrush – okay?

Nurses in Case 3 were well outfitted with supplies and lack of supplies was not seen to be a barrier to oral care. Rooms were spacious, as were bathroom counters, so supplies could easily be stored at the point of care.

Case 5 nurses were well outfitted with oral care tools and supplies, and it was the only unit to have suction toothbrushes that were used for patients who can have nothing by mouth (n.p.o.) or had swallowing difficulties. A nurse described the benefits of suction brushes:

The whole reason they are on n.p.o. is usually because they have swallowing issues. So you put it to the suction and you are cleaning, and you are not putting them at risk at all. Nothing is dripping and it's good. You can actually add moisture to their mouth too, and you basically are just putting it onto the skin or whatever, so the rest of it is kind of getting sucked away (Nurse 5C).

The regular toothbrushes supplied on this unit were not as substantial as the brand offered on the other units where toothbrushes were available. "Nurse ...told me that she once used one herself and the bristles came out and stuck between her teeth" (Case 5 field notes). They are likely meant as a temporary measure until a toothbrush can be brought

from home. Lack of supplies was not said to hinder nurses' ability to provide oral hygiene care in Case 5.

Family involvement. The extent of family involvement may influence oral hygiene care. In some cases, families are relied upon for supplies. If they bring them in it facilitates care; if they do not it presents a barrier. One nurse described how relying on families for supplies can both hinder and promote oral hygiene care:

Where some [families] you ask, and they may not be back in for another week. So they'll do it, but you know you're not going to see it any time soon. Others come in like Mrs. ____ - very active in his care, very helping, help make sure his teeth are brushed, so she's very active in his care. So if I said to her his toothbrush is looking old and ratty, she'd probably go ... get him a new one the next day, and it would be on the top of her list (Nurse 1A).

In some cases, staff reported that families also provide oral hygiene care. Nurse 1E said, "...and the family as I told you before, comes in the evening and helps him also."

However, in these cases, there was no indication that the family had provided care on that evening. A nurse discovered that care had not been done while a patient's wife had been on vacation:

Make sure you ask the nurses to do this. Make sure you ask them. I know it's hard to communicate though right? Have you been trying to ask them? ... So when your wife isn't here ... they just haven't been done at night? (Nurse 1A)

On one occasion, "Nurse 3E suggested to a patient's family that they could help her get ready for bed and brush her teeth. They seemed quite willing and able to do so" (Case 3 field notes).

Some patients tell nurses that their family is involved:

Because sometimes I'll say, "Can I do your teeth?", and they'll say no – my wife was in and she did it. Or I've walked in where they've done it ... you see them doing it, or the basin is wet. Or other times too I'll say, "Oh your teeth haven't

been done.” They’ll say “Yep – my wife did it and she dried them.” You have to sometimes take them at their word, but generally yah, and obviously if it looks really bad, then you would step in, but generally you trust what they tell you (Nurse 1C).

Chapter Summary

In this chapter, the five cases were described in terms of setting, participants, and oral hygiene tools and supplies available to them. Findings related to each research question were presented. Oral hygiene care interventions observed to be provided by nurses in the five settings included interventions related to brushing teeth, cleansing the tongue, rinsing or cleaning the oral cavity, caring for dentures, relieving dry mouth, and activities related to engaging patients in oral care.

Nurses engaged patients in performing oral hygiene care in a number of ways and these varied from nurse to nurse. They intervened with patients who have dentures, natural teeth, swallowing problems, dry mouths, and who receive enteral nutrition, but approaches varied among nurses, with no consistent site-specific approach. Nurses usually bypassed assessing the effectiveness of outcomes of oral care. They communicated that they had given oral hygiene care through paper or electronic documentation but not at inter-shift handoff.

Nurses relied on three main sources of knowledge about how to provide oral hygiene care: (a) verbal cues from patients, (b) knowing the patient, and (c) observations of the patient and the patient’s environment, including supplies at the bedside that serve as cues. The following factors influenced nurses’ ability to provide oral hygiene care: (a) nurses’ skills, knowledge, attitudes, and beliefs; (b) the extent to which the patient is able

or willing to cooperate; (c) routines and workflow; (d) access to supplies; and (e) family involvement.

Chapter Five

Discussion and Implications

The purpose of this qualitative multiple-case study was to explore how bedtime oral hygiene care is provided by nurses on post-acute inpatient units where older patients have an extended hospital stay. This study makes important new contributions to the understanding of nurses' oral hygiene practices in hospital settings outside of critical care. Until now, those practices have remained invisible and were represented by only a checkmark on a flow sheet that indicates the oral care was given.

According to Yin (2014), it is important in the analysis of findings to attend to the “most significant aspect of your case study... and [avoid] excessive detours to lesser issues” (p. 168). Observations and conversations with nurses have resulted in the identification of four significant contributions to the field:

1. Nurses often convey oral hygiene care to their patients as being optional.
2. Nurses are inclined to preserve patient autonomy in oral hygiene care.
3. Oral hygiene care is often spontaneous and variable, and may not be informed by evidence.
4. Oral hygiene care is not embedded into bedtime care routines of nurses.

Oral Hygiene Care Conveyed as Being “Optional”

Nurses invite patients to participate in oral hygiene care in a way that makes it seem optional. When a patient declines, nurses most often accept “no” for an answer. This is unlike other interventions I observed where nurses asked permission or declared their intention to do something for the patient.

The portrayal of oral hygiene care as being optional may be explained by an assumption among nurses that oral hygiene care is a bedtime-routine preference of the patient that was likely based on prior oral health behaviours and values. Nurses may assume that patients have life-long oral hygiene habits that are unlikely to be modified by coming to hospital. When patients decline care at bedtime, nurses accept this as their usual practice and nurses honour these preferences in the name of patient-centred care and patient choice. In fact, the majority of older adults do brush their teeth before going to bed. In the Leisure World cohort study where 5486 adults were followed from 1992 to 2010 into their old age, 80% of adults reported that they brushed their teeth every night at bedtime, with only 9% reporting that they never do (Paganini-Hill, White, & Atchison, 2012).

In an acute care study, patients reported that they valued oral care and identified mouth care to be a frequently missed nursing intervention (Kalisch et al., 2012). Patients reported that it was not offered, and although they were supplied with products and tools, nurses did not help unless asked to do so.

The Registered Nurses' Association of Ontario (2008) best practice guideline, *“Oral Health: Nursing Assessment and Interventions”*, recommends that as part of a patient's admission assessment an oral health history is obtained and it should include oral hygiene beliefs, practices, and current state of oral health. This would be an opportunity for facilitating patient learning about oral health and to contribute to a patient-centred plan of care that includes goals of oral care.

Nurses may present oral hygiene care as being optional because it is possible they are unaware of the science behind controlling plaque to reduce the risk of colonization by respiratory pathogens. This includes: (a) the impact of changes in salivary flow at night, (b) silent aspiration taking place during sleep, and (c) pneumonia risk. These processes were presented extensively in the review of the literature in Chapter 2. Although knowledge was not assessed in this study, it has been shown to be lacking in studies of hospital nurses (Costello & Coyne, 2008). If nurses do not in fact have this knowledge, they cannot translate it into practice or share it with their patients.

In the Leisure World longitudinal study, brushing at night was found to be the most important tooth brushing variable related to mortality (Paganini-Hill, White, & Atchison, 2011). Even if they brushed in the daytime, those who did not brush at night had a 13-26% increased risk of mortality. If patients understood that oral care is a necessary bedtime intervention that will prevent negative health outcomes—especially while in the hospital, nurses might not face opposition from patients when reminding them about brushing their teeth, or engaging them in doing so.

Some patients who declined oral care when asked by the nurse wished to wait until another time—like “later” or until the morning, and some indicated, whether true or not, that oral care had taken place earlier. Some patients appeared too tired or weak to engage in oral care and expressed that they didn’t feel like doing it. There may be a sense of relief on the part of nurses when the patient declines, because it puts nurses in a position to continue to address other priorities without the culpability associated with not

having completed care. That is, it may be seen as justifiable to miss the care of a patient who is asked but refuses.

Patient refusals may not just have to do with a patient preference, or not wanting to burden the nurse. With increasing frailty, patients may perceive that the effort required to brush their teeth effectively is not worth the benefits, and they disengage from the goal of optimal oral health (Niesten, van Mourik, & van der Sanden, 2013). Frailty factors that influenced oral care behaviour in different ways were identified by the authors. Chronic pain, low energy, and low morale impacted oral care behaviours by changing patients' attitudes toward oral health, and in fact devaluing it, and this resulted in reduced motivation to participate in care. On the other hand, impaired mobility and dexterity and cognitive impairment presented structural barriers that would seem to be able to be overcome by support from nurses. There are several factors that may contribute to patients declining oral care, many of which could be mitigated by nurses.

Preserving Patient Autonomy in Oral Hygiene Care

It seemed for nurses, the goal of honouring dignity by preserving patient autonomy trumped ensuring adequate oral hygiene outcomes. There was an underlying concern about being perceived as disrespectful, and that checking on patients to ensure that oral hygiene was completed or performed adequately was an assault to patient dignity.

Nurses may believe that patients should be offered choice, and that the choice of not brushing teeth in the evening should be honoured. Nurses seemed very hesitant to “push” the suggestion to perform oral care except in a couple of situations where the

patients had a mild to moderate cognitive impairment, were known to be able to perform their own care, but thought they had already brushed their teeth. Even so, persistence in convincing those patients to accept the “invitation” may have been more for my benefit as an observer of oral care practices, than being a usual approach to care.

This excerpt from the College of Nurses of Ontario practice standard on ethics would imply that nurses have an obligation to provide information to patients about the consequences of poor oral hygiene so they can make informed choices about participating in oral hygiene care:

Client choice means self-determination and includes the right to the information necessary to make choices and to consent to or refuse care. Clients know the context in which they live and their own beliefs and values. As a result, when they have the necessary information, they can decide what is best for themselves (College of Nurses of Ontario, 2009, p. 6).

Nurses actively or passively encouraged patients to participate in their own oral hygiene care. Most often they assumed that certain patients performed their own oral hygiene care and therefore they did not ask about it. Occasionally nurses would ask patients if they had completed their care. For select patients known to be unable to complete their own care, nurses collaborated by setting them up for care, prompting, or completing oral care for them. I wondered how nurses knew that patients were able to adequately complete their own oral care and could therefore leave them on their own with no prompts or encouragement. Though some nurses made reference to the occupational therapist providing some input, an occupational therapist reported that they communicate through the health record or care plan. Nurses suggested that care plans may not be up to date or completed at all, and further suggested that they were not routinely consulted.

Therefore they may be missing some important communication if they do not read the notes of other disciplines and incorporate this information into the patient's plan of care.

In a study of the effect of autonomy on the ability of long term care home residents to perform oral hygiene care, Taverna, Nguyen, Wright, Tysinger, and Sorenson (2014) found that care staff were reluctant to intervene if the resident did not ask for help. Residents portrayed themselves as being capable of completing their own oral hygiene care and declined offers of assistance from staff. "Excessive autonomy" was the term Taverna et al. used for the consequence of not requesting help when residents were left without assistance or supervision. The shifting of oral care responsibility to the resident resulted in what the authors termed "iatro-compliance." They speculated that staff were possibly exploiting respect for resident autonomy as an excuse for not carrying out an intervention. They suggested that this welcomed respite from providing oral care may have actually resulted in benign neglect. There is no reason to suggest that the same factors were in play in the five cases in this study, as it was not possible to determine whether patients who were independent and therefore left on their own, might have asked for help. Patients were not observed to have done so. In another study of patient perceptions of missed care in acute care hospitals, patients indicated that nurses would assist them if asked, but nurses did not offer (Kalisch et al., 2012).

A qualitative study of data collected through interviews with personal care assistants in LTC homes in Sweden revealed that when daily oral care assistance is needed, staff believed that by providing it they can easily violate the integrity of the patient as the oral cavity is considered a sensitive area (Lindqvist, Seleskog, Wårdh, &

Bültzingslöwen, 2013). Staff believed there was something insulting about oral hygiene care. Bedtime brushing was not seen to be vital, so they respected the person's autonomy and integrity by not forcing care.

Dale (2013), in his institutional ethnography on locating critical care nurses in mouth care suggested that “probing into another person's mouthcrossed the public-private divide” (p. xxix). It is possible that avoidance of oral hygiene care may have had something to do with it being perceived as too invasive, as mentioned by one of the nurses in this study.

In a U.K. study of how dignified care is understood and delivered by health professionals, researchers found a discrepancy between how staff and patients perceive dignified care (Cairns et al., 2013). Health professionals were more likely to conceptualize dignity as an approach focusing on *respect, individuality, patient involvement in decision-making*, and *privacy* by ranking those dimensions high and, unlike patients, were less likely to rank *providing adequate help with personal care* and *helping patients at meal times* as high. The authors suggested that this limited interpretation of dignity by staff might explain some of the neglect of basic standards of care experienced in some jurisdictions in the U.K. (Cairns et al., 2013).

Oral self-care by frail hospitalized older patients has not been studied. One qualitative study of the impact of frailty on oral self-care behaviour of older people in the Netherlands who were in day care or residential care, but who were not completely functionally dependent, cognitively disabled, or receiving end-of-life care, sheds some light on the issue (Niesten et al., 2013). Many of these older adults recalled and reflected

on a prior hospital experience. Three themes emerged from interviews: (a) oral hygiene routines sustain a sense of self worth, (b) daily oral hygiene is perceived not worth the effort by some, and (c) structural barriers, i.e., I'd like to, but I can't (Niesten et al., 2013). Patients wanted to adhere to their former oral hygiene routines, and this became even more important when they felt weak. They felt able to preserve their autonomy and ultimately self-worth—both in how they viewed themselves and how they were perceived by others. One participant indicated that when a nurse brushed her teeth it was a message that she still counted as a human being who was worthy of care. The authors noted that almost all participants wished to keep their independence and insisted on brushing their teeth themselves for as long as their general health allowed them to do so. People with disabling disorders like impaired dexterity or vision, had to continually weigh their need for properly brushed teeth against their loss of independence. “The thought of losing independence was clearly mitigated by the attitude of the caregiver, who, according to several participants, could make the difference between people’s asking for help and accepting it or people neglecting their oral care” (Niesten et al., 2013, p. 7).

Oral Hygiene Care is Often Spontaneous and Variable

Oral hygiene care practices varied among nurses and may not be informed by evidence. This may be attributed in part to variations in sources of practice knowledge. Policies and procedures were not reported by nurses to have guided practice. The exception was the hospital site where the decision to use a suction toothbrush was made according to policy, that is, for anyone who has swallowing problems and is receiving nothing by mouth (n.p.o.) and is therefore at risk for aspiration.

Nurses did not seem aware of the existence of guidelines or policies. Despite this, some of their practices were consistent with hospital guidelines but some were not. Guidelines that were not evident in observed oral hygiene practices included: (a) facilitating or providing oral care to mucous membranes twice daily; (b) ensuring every patient has and uses a toothbrush; (c) encouraging, cueing and assisting, or brushing the mouth twice per day; (d) brushing dentures after removing them from the mouth, and leaving them out overnight; and (e) encouraging, facilitating, or brushing the tongue twice daily. Daily oral cavity assessment using a flashlight and tongue depressor is also an expectation according to guidelines in some settings. This may have occurred in the daytime but was not observed in any of the cases in the evening.

In one case, the on-line policy and procedure library housed a policy for patients at risk for aspiration. It redirected users to a nursing fundamentals textbook (Potter & Perry, 2009) for patients not at risk for aspiration. In reviewing the procedure in the textbook, I noted that some practices were not supported by evidence, for example, the use of foam swabs to clean the oral cavity (although elsewhere in the text they are not advocated), the use of toothpaste to clean dentures, and no mention of cleaning the oral tissues of patients with dentures. Jablonski (2012) also noted similar limitations in the procedure in this particular textbook.

Best practice guidelines did not appear to inform practice. In settings where nurses cared for patients who have had a stroke, the Canadian Best Practice Recommendations for Stroke Care have been adopted (Lindsay et al., 2010). These guidelines indicate that patients should have an individualized oral care protocol that includes twice per day or

more brushing, oral care products to use, management of patients with dysphagia, and consultation with interdisciplinary team members when concerns with implementing such a protocol are identified. Nurses on units where they cared for patients who had a stroke did not mention these guidelines, nor was their care consistent with them.

Each of the study sites, by virtue of their membership in the Local Health Integration Network, is a Registered Nurses' Association of Ontario (RNAO) Best Practice Spotlight Organization, which means that all have formally agreed to implement multiple RNAO Best Practice Guidelines. There are 12 practice recommendations, two educational recommendations, and seven organization and policy recommendations in the current RNAO Best Practice Guideline, "*Oral Health: Nursing Assessment and Interventions*" (Registered Nurses' Association of Ontario, 2008). The bulk of the recommendations (16 of the 21 recommendations) rely on evidence obtained from expert committee reports or opinions of respected authorities on oral health (level IV evidence), with the balance relying on evidence obtained from descriptive studies (level III evidence). Level 1 evidence (obtained from meta-analysis of randomized controlled trials, or from at least one RCT) and Level II evidence (obtained from at least one non-randomized controlled study or quasi-experimental study) does not currently exist.

With the exception of providing, supervising, reminding, or cueing oral care for patients at least twice daily, most recommendations in the RNAO guidelines are not specific enough to have guided the practice of nurse participants in this study even if the nurses had been aware of them. For example, it is recommended that nurses "are knowledgeable of oral hygiene products and their applications" but there is no guidance

on the products except a statement that the most appropriate ones should be used and that toothbrushes are the most common tools (Registered Nurses' Association of Ontario, 2008, p. 36).

Another recommendation relevant to this study is that “nurses use appropriate techniques when providing oral care to clients” (Registered Nurses' Association of Ontario, 2008, p. 38). Some techniques are specified, such as using a flashlight to visualize the oral cavity (no nurse in this study did), but the guideline recommends using suitable or appropriate techniques without much elaboration on what those would be.

The lack of detailed guidance in practice guidelines is a reflection of the paucity of evidence supporting oral care techniques. Many practices are recommended in clinical practice guidelines, but this “best evidence” has little to support it other than consensus, and as a result, a mix of practices based on evidence, along with practices with no evidence to support them, or indeed evidence to refute them, have evolved.

Structured oral health assessments were not conducted, but any observations about the patient's oral status were said to be documented in progress notes to augment the information captured on flow sheets. Documentation flow sheets generally allowed only for an indication that oral hygiene care was completed, but no detail surrounding the interventions provided. As a result, nurses cannot rely on previous documentation of interventions in the patient's health record to guide their practice, and according to nurses, oral health interventions are not discussed at change of shift unless there is something significant to report, so nurses do not rely on each other for information during transfer of accountability.

Formal oral health assessments using a standard tool were not reported as being carried out. I know from experience that the three complex care units complete an oral health assessment as part of their Continuing Care Reporting System requirements. In Ontario, clinical data on long term care residents and patients in complex care settings are collected using a provincially-mandated standardized tool, the RAI-MDS (Resident Assessment Instrument-Minimum Data Set) 2.0 (Community Care Information Management, 2015). In hospital-based complex care settings, as in long term care, it is used to screen and record the health status of patients upon admission, quarterly, on significant change in health status, and annually. The patient's oral status is reported by checking all that apply in the last seven days: (a) debris present in mouth prior to going to bed at night; (b) has dentures or removable bridge; (c) some or all natural teeth lost—does not have or does not use dentures (partial plates); (d) broken, loose, or carious teeth; (e) inflamed gums (gingival); swollen or bleeding gums; oral abscesses, ulcers or rashes; (f) daily cleansing of teeth or dentures, or daily mouth care—by resident or staff (McKeown et al., 2014).

McKeown et al. (2014) compared data reported by nurses for RAI-MDS 2.0 with data collected by a registered dental hygienist (RDH). Even after an educational intervention, there continued to be discrepancies between RAI-MDS data collected and sent to the Ministry of Health and Long Term Care and what was assessed during on-site assessment by the RDH. Nursing staff completing the tool reported a 0% prevalence of debris while the RDH reported 84% prevalence based on observation. Nurses reported a 0% prevalence of inflammation, but the RDH recorded 23%. Further, daily flow sheet

documentation indicated that a very high proportion of residents, who were seen by the RDH to have moderate to abundant debris, had apparently received oral care. This raises the question of the quality of oral hygiene assessments and care, or the reliability of the documentation.

Reliance on experiential knowledge, that is knowledge gained through observations during nursing practice, was described by Estabrooks et al. (2005). They explained that it is one of the most predominant sources of practice knowledge for nurses and is based on what has worked or not worked in the past, and on explorations and intuition. It is based primarily on nurses' own experiences, and it is only when not confident in the knowledge gained in this way that nurses interact with other nurses to validate their experiences. A priori knowledge, according to Estabrooks et al. (2005), comprises personal beliefs, basic education, and common sense. This is consistent with observations in the study settings and would help explain why oral hygiene care practices may vary among nurses.

Nurses were observed to deliver oral hygiene care interventions in-the-moment, or perhaps more accurately, while flying by the seat of their pants. This aviation idiom, which can be applied to nurses deciding on the course of action as they go along, means “using their own initiative and perceptions rather than a predetermined plan” (Martin, 2015). This may be due in part to not relying on care plans which might have the potential to lead to consistent practice if they are comprehensive and up-to-date.

Nurses did not seem to utilize a care plan to understand or communicate their patients' oral hygiene requirements, and they indicated that they would not typically

consult the care plan. In fact, care plans on all the study units (or kardexes as they are known) offered little direction. They typically contained a checkmark beside the amount of assistance required, and indicated whether the patient had dentures—that is, if they were completed. One nurse acknowledged that even this minimal amount of information had not been added to the care plans until recently in anticipation of my coming to observe.

Oral care provided by nurses did not seem purposeful except in a few situations where the patient had an ongoing predictable routine, often directed by the patient. This is described by De Visschere et al. (2015) as demand-driven oral health care. When a patient had a comprehensive plan of care initiated by another discipline (e.g., dentist or SLP) it was placed at the bedside or above the bed, the care seemed more purposeful.

Products at the bedside seemed to help nurses decide on the oral care interventions they would provide in-the-moment and how they would provide them. Despite the supplies being available on some units, they were not always available in close proximity to the patient. A few studies have reported on the merits of placing oral hygiene care supplies in a basket by the bedside with an oral care instruction card (Dyck, Bertone, Knutson, & Campbell, 2012; McNally, et al., 2015).

In two settings, the message from a clinical manager that patients should supply their own personal care items including oral care items may give the impression that oral hygiene is not important and does not have to be provided by nurses. It also reinforces the misconception that oral hygiene is a personal care intervention rather than an infection prevention intervention. Nurses commented on the paucity of supplies on their unit, but

they did not indicate that they had advocated for more or better products and were denied. This may mean that they in turn do not value providing oral hygiene care to the extent that they would go to the trouble to request supplies.

Nurses commented that they would ask the patient about oral hygiene care in lieu of consulting a care plan. Often they seemed to know that the patient performed his or her own care, or that the family does care. Liaschenko and Fisher (1999) referred to patient knowledge as a type of knowledge used by nurses. It includes knowledge of the patient's response to treatment, knowledge of how to get things done for the patient, and knowledge of how others are involved in providing care. When the nurse monitors the patient's response to an intervention it is referred to as "knowing the patient" (p.36) and takes place in the context of relational practice. Nurses' knowing the patient within the context of relational practice was not evident to me as I observed care. It seemed as if nurses assumed that certain patients had done their care, but if nurses were confident that the patients performed their own care, and performed it adequately, they did not articulate this.

Although there is a general lack of evidence to inform oral care practices, I saw examples of nurses not being aware of the evidence supporting or refuting the few practices that are based on evidence. For example, based on observations of nurses brushing dentures with toothpaste, most nurses did not know that toothpaste, being abrasive, can make microscopic scratches into which bacteria can settle (Felton et al., 2011).

Nurses who worked on units where foam swabs were available used them in lieu of toothbrushes to clean teeth and oral cavities. There is evidence that the mechanical action of a toothbrush removes plaque (Asadoorian, 2006b; Hayasaki et al., 2014), and there is evidence that foam swabs are not effective at removing plaque (Addems et al., 1992; Pearson & Hutton, 2002). Foam swabs were not used on units where they had been banned, and a toothbrush was more likely to be used. The foam swabs had been removed from some units a few years ago, and at least one nurse lamented the disappearance of this once favoured tool.

While patient-supplied commercial alcohol-free antibacterial oral rinses containing cetylpyridinium chloride (e.g., Crest® Pro Health™ Proctor& Gamble, Colgate® Total Colgate-Palmolive) or essential oils (e.g., Listerine® Johnson & Johnson) may control plaque or prevent gingivitis (Asadoorian, 2006b), the alcohol-free BeFresh Mouth Rinse supplied to and used by nurses in this study has no antibacterial properties. It contains water, colour, sweetener, flavour, and preservatives according to the label. This mouth rinse, though used in all study sites, would therefore be ineffective in reducing oral microbial flora.

By far, denture care was the most observed intervention provided by nurses. The most recent Cochrane review suggests that dentures can be brushed with denture paste, soaked in chemicals, or cleaned in microwave or ultrasonic devices (de Souza et al., 2009). A variety of denture cleansing routines were observed.

Although it is generally accepted that dentures should be left out at night, the evidence is mixed (Felton et al., 2011). However, in a recent study, Inuma et al. (2015)

reported that the risk of pneumonia in older adults who wear their dentures while sleeping at night doubles. The risk for denture stomatitis is also great (Duyck, Vandamme, Muller, & Teughels, 2013). Some patients wished to leave their dentures in overnight and stated they had not suffered ill effects from doing so in the past. However, a few patients would have their dentures cleaned prior to having them returned to their mouths for the night, and others did not have them cleaned at all, but left them in. Oral cavities were not cleansed prior to returning dentures to the mouth after cleaning.

With the exception of the few examples above, there is little evidence behind the tools and products I observed nurses using. There is evidence, however, that some products such as foam swabs and alcohol-free rinse are ineffective, yet continue to be supplied and used because they are available (Dyck et al., 2012).

Oral Hygiene Care is not Embedded into Evening Routines

A number of factors influence nurses' ability to carry out oral hygiene care and some may explain its not being embedded into evening routines. One possible explanation for oral hygiene care not being embedded into the evening routine of nurses, as discussed earlier, is that nurses may not appreciate the importance of a clean oral cavity at bedtime, and the intervention is not placed above others on the list of priorities. These findings are consistent with those of Horne et al. (2014) who studied oral care practices on stroke units through focus groups and found a lack of awareness of the importance of oral hygiene, and that oral care did not appear to be as important compared with other aspects of patient care.

In some of the cases in the current study, nurses associated oral care with morning care, while others thought it was a struggle to squeeze it into the morning routine. Denture care was associated with bedtime care, but was most often not accompanied by care of the oral cavity.

Another explanation for oral care not being embedded into evening routines may be that nurses themselves do not clean their own teeth at bedtime and their personal practices are reflected in the care they give. Yoon and Steele (2012) found that nursing staff were motivated to give oral hygiene care because of their own personal oral hygiene values.

The flow of work in the evening makes providing timely oral hygiene care particularly challenging. Ideally, oral care is provided after snacks and medications (especially if the medications consist of syrupy preparations or pills having to be given in applesauce). However, this was not feasible. Standard medication administration times are dictated by hospital policy. Medication administration in all cases was the most time-consuming of interventions and seemed to interfere most with nurses' ability to provide optimal oral care.

Much has to occur for patients in the first four hours of the evening shift, and even with that, many patients wish to be settled well before 11:00 p.m. Medication administration activities were given high priority by the nursing staff. This is not surprising as medications are ordered by the physician and nurses typically place higher priority on executing physicians' orders. In recent years the emphasis on medication safety has been prominent, and accreditation bodies and other organizations such as the

Institute for Safe Medication Practices have put forth safety standards that make medication administration safer but more time consuming (Jennings, Sandelowski, & Mark, 2011).

On many evenings medication related activities took about an hour, except at one site where the nurse giving medications each evening was not the nurse providing care, and medication administration was therefore not a competing priority. This time expenditure is consistent with studies in the literature, and similar to what I have seen in my own setting, that is, about 25% or more of a nurse's day is taken with medication preparation, delivery, and associated documentation (Folkman & Rankin, 2010; Jennings et al., 2011; Keohane et al., 2008) . However, it is often a race to the finish to complete this and other interventions before the patient dozes off for the night.

Oral hygiene observed in this study took place earlier in the evening. This may have been to satisfy the observer, but it is almost certain, based on my observations, that if it had not taken place when it did, it would not have occurred later. Nurses across all cases acknowledged that oral care did not occur after medications were given. When it was observed, the nurse acknowledged that it would not always happen, that is, it was not usual practice.

I noted a variety of ways nurses prepared and administered their medications: (a) some prepared them, one patient's at a time, by putting medications into a medication cup in the medication room, and then taking it to the bedside; (b) others prepared all of their patients' medications, put them into labelled cups, and took them around on a cart or wheeled table; (c) some prepared all their patients' medications and put each into a

drawer in a medication cart; and (d) some prepared their medications outside of the medication room from a cart in the hallway, patient by patient. Consistent with observations by Jennings et al. (2011), I noted that nurses had to find another nurse to independently double check insulin doses and sign the medication administration record to prove they had done so. On all units wastage of unused portions of doses of controlled substances by one nurse had to be witnessed by another and entered electronically into the computerized automatic dispensing unit. These activities contributed to an already inefficient system as nurses hunted each other down.

Although few of the medication practices I observed were “by the book”, I generally noticed that nurses who took “shortcuts” were able to trim some time from their medication round, allowing them to stay on time with their routines. On the other hand, nurses who prepared and administered medications “by the book”, perhaps for my benefit, were less likely to be able to find the time to persist with oral hygiene care, and when they did, they fell very far behind—to the point of having to awaken patients to complete their care. Nurses in this situation confessed that they did not normally have the time to provide oral hygiene care, or at least not to the extent they performed it during my observations.

Medications were often due at 9:00 p.m. or 10:00 p.m. which meant that for most patients it was the last thing the nurse did for them before they retired for the night. Teeth would not be brushed after this time. For many, this meant a residue of applesauce or juice on their teeth or in their oral cavity, or if they had had a snack, it meant some kind of sandwich, muffin, or cookie debris.

Papastavrou et al. (2014) found that the nursing activity most often missed, according to nurses, was reviewing previous patient documentation as the shift began. This was closely followed by oral hygiene. The authors also found that instead of withholding a nursing intervention, nurses may provide lesser quality care to save time, or they stretch the time between offering the intervention again. In the case of oral hygiene care interventions I observed, this could mean dipping a foam swab into BeFresh Mouth Rinse to swab the mouth, or skipping oral care altogether and waiting until the next episode of care, i.e., in the morning.

On the evening shift in some cases, but not others, it was not unusual to see nurses help each other as a team. Nurses admitted that when a colleague puts a patient to bed, it is assumed that oral care has been done prior to doing so, though this may not always be the case. On two units, personal care attendants helped out here and there, and they could potentially provide oral care without reporting it to the nurse. Sometimes nurses forgot to go back to a patient who wanted to wait until later for oral care. These workflow issues all contributed to oral care being missed.

Strengths and Limitations of the Study

This is the first known study in which oral hygiene care practices of nurses in hospital settings other than in critical care were observed, and it is strengthened by having studied multiple cases. It is also unique in that bedtime practices were observed. Although observing bedtime practices exclusively could be considered a limitation, bedtime is the most important time to clean teeth. In fact, whether older people brushed during the day

or not, it was bedtime brushing habits that contributed to a lower mortality rate in one longitudinal study (Paganini-Hill et al., 2011).

Some of the limitations of this study are related to the familiar critiques of qualitative research in general and observational methods in particular. Qualitative research is seen to be judgement dependent --it depends on the insights, conceptual capabilities, and integrity of the researcher (Patton, 2015). A concern is researcher bias, and one of the key limitations of this study is the issue of subjectivity and bias of the lone observer—likely a common issue among doctoral students doing their own research. However, this was partly mitigated by having members of the supervisory committee participate in data analysis.

The biggest criticism of observational methods has to do with validity (Adler & Adler, 1994), but measures outlined earlier were employed to minimize the impact. Other shortcomings associated with observational methods include potential ethical problems related to informed consent and deception, participants' changing behaviour in the presence of the observer, and assuming the role of the observer including gaining entry and trust (Mays & Pope, 1995). Participants were told about the purpose of the study and knew that their oral hygiene care practices were being observed. This may have led to their “putting on a performance” for me.

The cases in this study were drawn from the hospitals in one city, and this may be a limitation if practices are indeed geographic. Some hospitals were related to each other by being part of the same large hospital system. Thus, it is possible that the availability of supplies and equipment could have been impacted by being part of the same regional

purchasing group, though purchasing of supplies from the common warehouse seems to be a local decision by the unit's own administration, as were documentation tools and care plans which were not the same on any two units.

Implications

Implications for nursing practice. Nurses should become aware of policies, procedures, and guidelines that portray standards of care related to oral hygiene care of the patients within their specialities. Those documents are informed by clinical practice guidelines and other sources of knowledge, for example from dental hygienists and speech-language pathologists. Nurses must advocate for standards of care that lead to optimal outcomes and are also feasible.

An oral health history and oral health assessment should be conducted by nurses, not in a mechanistic way, but as the start to what Kitson et al. (2014) describe as a commitment to the fundamentals of care. Assessment data are essential to the co-creation of an oral hygiene plan of care that addresses risk factors and care needs. For example, nurses must know which patients are at risk for aspiration and target interventions appropriately. Patients with bleeding gums upon brushing, or those with dry mouths, or patients receiving enteral nutrition will also require specific interventions. Nurses must also learn, through the oral health history, the importance patients place on their oral health. For example, knowing the value placed on brushing their teeth at bedtime would help nurses respond appropriately to frail patients not feeling up to performing oral hygiene in the evening. The oral health history would also set the stage for facilitating patient-centred learning related to disease prevention and to help patients understand why

they will be prompted or assisted during hospitalization to brush their teeth and cleanse their oral cavity and tongue.

As they do with wound dressings, nurses must become familiar with the oral hygiene care products and tools available to them, and how such products can contribute to oral hygiene. Many oral hygiene care products can be initiated by nurses, and nurses should advocate for a range of effective products by helping those who supply them or prescribe them learn more about their importance.

Communication of patients' oral health needs among team members must take place. The outcomes of an activities of daily living assessment by an occupational therapist or a swallowing assessment by a speech-language pathologist must be known to nurses so they can adjust care accordingly. For example, patients may require cueing, they may not be able to manipulate a toothbrush, or they may be at high risk for aspiration. Further, nurses need to understand how the outcomes of the assessment will impact how they must partner with patients to accomplish oral hygiene care.

Implications for education. Practising nurses require education on the importance of oral hygiene care for hospitalized patients, how to facilitate patient-centred learning in this area, how to engage patients to co-create plans of care, and how to balance patients' needs for scrupulous oral hygiene care with their need for dignity and autonomy. Nurses reported they have not had instruction on the hands-on aspects of care, and this may include some relatively new strategies for working with patients who resist care, and the use of structured oral health assessment tools.

In designing and carrying out education programs, educators must pay particular attention to ensuring attendance by staff, intervention integrity, and adherence to protocols, as these were identified as limitations in a systematic review of educational interventions (Coker et al., 2014). Nursing students should learn more about the consequences of poor oral hygiene as well as hands-on care in their curricula, but preceptors in the clinical areas have an opportunity to transfer their knowledge as well.

Implications for administrators. Given that nurses are likely to use the supplies available to them, products and tools that have evidence of being effective should be stocked on patient care units and at bedsides. For example, the use of toothbrushes should be promoted over the use of foam swabs for removing plaque from teeth and gums. Commercial antiseptic mouth rinses may be superior to hospital-issued mouth rinse with no antiseptic properties. There is little use for alcohol-free rinses such as BeFresh with their lack of active ingredients, so they might be considered a waste of resources and their use limited. Suction toothbrushes should be considered for use with patients who cannot rinse and spit, have swallowing problems, and are therefore at risk for aspiration. Having these available might instill the confidence nurses find necessary to embark on brushing the teeth of such patients. Toothpaste with pumice or foaming agents might be replaced by a non-foaming gel that is not harmful if accidentally swallowed by patients who are unable to rinse and spit. Withholding oral care supplies required by patients because they are said to be personal care items, likened to a face razor or facial tissues, can only give the impression that oral hygiene care is optional and serves to trivialize it.

Documentation tools including basic care flowsheets and care plans should be designed to capture more detail about the oral hygiene care needs of patients and the oral hygiene care interventions provided by nurses. These needs and interventions should not be invisible.

There is rapidly growing evidence across a number of studies that oral hygiene care is consistently close to the top of the list of care interventions that are reported by nurses as being missed in hospitals (Ausserhofer et al., 2014; Kalisch, 2006; Kalisch, Landstrom, & Hinshaw, 2009; Kalisch et al., 2011; Kalisch et al., 2012; Papastavrou et al., 2014). In error reporting, omissions of care are not addressed in the same way as commissions, and until this recent body of knowledge began to emerge, was not spoken about. Nursing leaders have an obligation to make the admission of these omissions safe for nurses, and to discover the root causes of care, including oral hygiene, not being provided.

Currently, oral hygiene care provided to hospitalized patients is not subject to evaluation and feedback, except in critical care areas where the incidence of ventilator associated pneumonia is a reported outcome. Little is known about the prevalence of hospital acquired pneumonia, but it has been suggested that it is as prevalent as VAP and rates could be reduced if appropriate oral hygiene care is provided. This requires further investigation and measurement. There is a preoccupation in hospitals with pressure ulcer rates, hand hygiene rates, and falls rates. Only recently are hand hygiene rates being examined in light of infection rates. Falls are the biggest adverse event in hospitals today (Accreditation Canada, Canadian Institute for Health Information, and the Canadian

Patient Safety Institute, 2014), but fifteen years ago in my hospital setting, they were not being tracked and they were not known to be an issue. Today they are publicly reported and great efforts are being made to reduce their rate. Perhaps oral hygiene and its contribution to patient safety could be examined in the same way.

Complex care units report oral health measurements through their provincial continuing care reporting system requirements. One of the parameters, debris on teeth prior to going to bed at night, is likely never reported as being present because the assumption is that patients receive oral care at bedtime. Those who complete the forms do not observe patients' mouths at bedtime, and from the reports it would appear as if this is not an issue. In contrast, a stage 2 or greater pressure ulcer would be more accurately reported, and therefore be cause for alarm. Inaccurate reporting or under-reporting may lead to poor oral hygiene being dismissed as a non-issue. This area is worth investigation by administrators.

Many studies have demonstrated the benefit of professional dental cleaning by a dental hygienist as an adjunct to daily oral hygiene (van der Maarel-Wierink et al., 2013; Zenthöfer et al., 2013). Oral care provided by a dedicated staff member in long term care settings has also shown improved patient outcomes (Sloane et al., 2013; Wårdh & Wikström, 2014). Staffing models incorporating such roles could be considered. Access to the services of dental hygienists and dentists for patients who have extended hospitalizations should be made possible, even if on a fee-for-service basis.

Implications for research. Best practice guidelines for oral health in older hospitalized patients require more evidence to support the products that should be used,

techniques to use, and frequency of interventions. Very little research has been done in this area. The few studies that have contributed to our knowledge of oral hygiene in relation to pneumonia prevention are often quoted despite those studies not reporting on interventions that nurses can practically employ in care settings. Other studies have lacked intervention integrity and the oral health outcomes that were measured could not be directly related to caregiver approaches. Much more work is needed in this area so nurses can choose interventions known to be effective.

Nurses' oral hygiene care documentation practice is a potential area for future research. However, this cannot occur until documentation tools are redesigned to facilitate more comprehensive oral care documentation standards.

Knowledge related to oral hygiene care practices gained in the clinical setting could advance the theoretical phase of a recently conducted concept analysis of oral hygiene care (Coker et al., 2013). The process of refining such a concept is described in the hybrid model of concept development (Schwartz-Barcott & Kim, 2000).

This area of inquiry may lend itself to the generation of practice-based evidence which includes consideration of “contexts, experiences, and practices of healthcare providers working in real-world practice settings” (Leeman & Sandelowski, 2012, p. 171). The authors argue that qualitative inquiry into the experiences and practices of healthcare providers and the contexts in which they practice is essential to the creation of evidence-based practice. Experiences of nurses, occupational therapists, speech-language pathologists, and dental hygienists could contribute evidence to oral hygiene care interventions that are perceived by nurses as being feasible in the clinical settings. No

doubt many of the wound care products we see today are the result of consultations between staff and industry partners.

Novel interventions that might take less nursing time should be explored. Given that oral hygiene is often omitted from care routines, and that nurses default to using swabs and mouth rinse because it is easy and takes little time, it is apparent that quick and simple solutions are being sought. For example, a recent Japanese study makes reference to oral wipes, something not available in North America (Ikeda et al., 2014). Perhaps an alternative to applesauce as a medium for medication administration could be explored. Chlorhexidine gel might be explored as an alternative to chlorhexidine rinse as most frail older patients are unable to swish and spit.

The recent international work by Kitson, Conroy, Kuluski, Locoock, and Lyons, (2013) and Kitson et al. (2014) related to nursing practice around fundamental care, which would include oral hygiene care, holds much promise for research opportunities. For example: (a) a fundamentals of care framework has been proposed and requires testing; (b) the evidence base for a range of activities, such as oral hygiene care, including their relational aspects requires systematic review; (b) oral hygiene care interventions require designing and testing; (c) research into skill acquisition for basic care is much needed; and (d) there is a need for the evaluation of the impact of systems changes on how patients experience basic care.

Kitson et al. (2014) saw a need for a practical framework that would ensure that fundamentals of care—both physical and psychosocial—are embedded in nurses' practice and thinking, reflection, and assessment processes. My findings demonstrate a need for

this as well. An integrated fundamentals of care framework has been proposed (Kitson et al., 2013; Kitson et al., 2014). The relationship between the patient and the nurse is central to this framework, and it is based on a commitment by the nurse to care for the patient. At the next level, the nurse's assessment is used to identify a series of actions addressing both physical and psychosocial dimensions of fundamentals of care. This might include: (a) controlling plaque build-up on teeth, dentures, and oral cavity; (b) reducing the bacterial load, hydrating tissues, and enabling optimal swallowing reflex through the production of substance P; and (c) working with the patient to keep him or her involved, and respecting choices and dignity. Inherent in this assessment is determining what patients can do for themselves, and what help they need.

The “sustaining nursing care practice” framework advanced by Vollman (2013) as an extension of her “Interventional Patient Hygiene” work is a yet untested model that may hold promise. It was described as a way to ensure the reintroduction and valuing of evidence-based fundamental nursing care practices. She describes an organized approach to moving the latest evidence into our fundamental practices. In this study, the first step has now been accomplished, i.e., performing an initial assessment of current oral care practices. However, Vollman (2013) predicted that until resources are present, systems are designed to deliver care, and ways to evaluate effectiveness devised, it will be difficult to hold individual nurses accountable for their practice.

Implications for policy. Agendas such as patient experience, patient safety, patient care quality, and patient-centred care will be influenced by knowledge generated though further research. In the meantime, the Canadian Dental Association (2009)

continues to propose and advocate for strategies to improve the oral health of our current and future population of older adults. Nursing organizations such as the Canadian Nurses Association can offer a voice. The Registered Nurses' Association of Ontario is in a position to continue to support nurses in providing best practice as it will soon be revising the best practice guideline, "*Oral health: Nursing Assessment and Interventions*" (2008).

Conclusions

Nurses do not engage with patients in ways that result in oral hygiene needs being met in consistent and appropriate ways. Nurses do not conduct oral health assessments and assessments of self-care abilities to the extent that oral health goals are mutually set and individualized care plans are created with patients. An oral hygiene plan is generally not part of the plan of care (though some plans indicate whether the patient has dentures and the extent to which they require assistance). The absence of an assessment of oral hygiene values and beliefs, and not co-creating a plan unique to the patient precludes opportunities for facilitating patient-centered learning in the area of oral health. Oral health behaviours of hospitalized older adults, therefore, are unlikely to be improved. That nurses regard oral hygiene care activities at bedtime as optional, and may not offer assistance except to patients known to ask, or who do ask, would imply that oral hygiene care is not seen as being important.

There is a tension between the physical and psychosocial aspects of oral hygiene care. Nurses' beliefs related to patient choice drive their inaction around ensuring adequate oral hygiene has been completed. Nurses in this study did not want to seem

disrespectful or intrusive by checking up on patients. If patients were left to complete their own oral care, nurses would document that it had been done independently.

Kitson et al. (2013, 2014) argue that nurses have a role in connecting with the patient to meet, or help the patient meet, fundamental care needs competently and respectfully. They describe the need to integrate: (a) the patient's physical needs related to fundamental care (in this instance, keeping the mouth clean, the patient safe from infection, and the oral cavity comfortable) and (b) the psychosocial needs (e.g., maintaining dignity and respect and keeping the patient involved, informed, calm, and hopeful). Nurses are challenged with integrating these two dimensions through relational care that is consistent and respectful, and where the nurse ensures continuity and mutually set goals.

With few exceptions, whether oral hygiene care is provided at bedtime, and how it is provided is left to the discretion of the nurse assigned to the patient. Nurses do not rely on plans of care that are based on prior assessments, nor do they rely on protocols, policies, or guidelines. They rely on patients telling them how they can assist, or they rely on products and tools at the bedside to give them clues about how to provide oral hygiene care. Regardless of the care provided, the documentation expectation is that the nurse simply charts that oral care took place.

Oral hygiene care is often missed care as it is not built into bedtime routines for a variety of reasons, most having to do with workflow and timing issues. Mouth care does not often accompany denture care, the main bedtime oral hygiene care activity. Although oral care is a standard of care in all cases studied, vital sign measurement, medication

administration, incontinence care, and transfers to bed were some of the other competing activities that had to be accomplished within a small window of time prior to the patient going to sleep at night.

Researcher Reflections

On July 27, 2007 I attended an Alzheimer Knowledge Exchange (AKE) webinar entitled, “Best Practice Guidelines and Practical Strategies for Oral Care and Dementia.” It was led by a nurse and a dental hygienist—both were panelists on the soon-to-be-released RNAO Best Practice Guideline, “*Oral health: Nursing Assessment and Interventions*”. Little did I know that on that summer day I would be launched into a field of knowledge that I knew next to nothing about, and that these years later I would have read just about every article on the topic.

It should not surprise me that others may not have the same in-depth understanding of the importance of oral hygiene care and how as nurses we have the potential to impact the health and quality of life of our patients. It should also not surprise me that oral hygiene care is seen by many as a trivial pursuit. When I’m asked about my thesis topic, I cringe in anticipation of the blank looks I receive. Even some participants in my study, though accepting of participating, seemed somewhat puzzled. There is much more to do before there is widespread acceptance that oral hygiene care should not be missed care, and should not be optional care, and should not be assumed to have been completed by patients who require assistance with other activities of daily living.

In this study, I wanted to see the oral hygiene care practices of nurses for myself. I was not sure how recruitment would go. Being followed while providing care is pretty

awkward, if not threatening. In some settings, I was known to participants. In the setting in which I am employed, I chose a study unit on which I did not work, but I happened to know all participants. In another case, by coincidence, I knew a few staff from years before who migrated to the unit, and ultimately two of them participated in the study. On another unit, the day charge nurse was known to me and I believe helped facilitate my delivering my first recruitment speech at change of shift time. Although I did not expect to know anyone at another site, two had been students at my hospital and remembered me. There was one setting in which I was unfamiliar to everyone, and where I worried, ever so briefly, that I might leave without a recruit on my first visit. I do believe that prior connections may have facilitated recruitment—at least initially. It seemed easier to recruit when there was someone who could even indirectly vouch for me as being trustworthy and non-threatening in my approach.

It is true that observing nurses can cause them to do things they might not ordinarily do. Some of the behaviours I suspected may have been out of the ordinary were: (a) asking patients early in the evening (upon greeting them) if they wanted to brush their teeth; (b) asking a second time if they refused; (c) going to the store room to obtain and bring oral care supplies to the bedside (because in most cases they should have been there from the night before when the same nurse cared for the patient). On one unit, oral care became the first order of business on the evening round. On another unit, the nurse finished with her patients quite late and others pitched in. She acknowledged that she doesn't always have time to do things the way I saw her do them, and commented that if it had not been for my fetching the odd thing for her, and helping a bit here and there,

she never would have finished. Some nurses exposed themselves when patients appeared surprised at the offer of oral care, or surprised that they were being reminded. A couple of patients even stated that this was the first time someone has asked them about doing their teeth. This reaction led me to believe that for many patients oral care was not part of the routine every night.

I found that nurses were often unable to fulfil their commitment to keeping the patient safe from potential infection while, at the same time, respecting dignity. Respecting dignity seemed to take precedence. Or was it a respect for dignity? Respect for dignity as demonstrated by nurses involved not being intrusive by asking about oral care completion, and not checking its adequacy. This assessment of self care abilities should be an expected component of care.

Achievement of these physical and psychosocial dimensions is made possible through each encounter between the patient and nurse. “Characteristics of this encounter are based on the clinical knowledge, skills, and competence of the nurse and the ability of the nurse and patient to set mutual goals for each fundamental of care according to the specific needs of the patient” (Kitson et al., p.336). Evidence of goal setting related to oral care was seen in only a few encounters. When it was observed, the patient directed care, and the approach was consistent.

I do believe that oral hygiene is a nursing sensitive outcome, but we need to be able to make the connection between the interventions nurses provide and oral health outcomes such as pneumonia rates. This study has shown that oral care interventions are not consistent and are not informed by evidence—in fact, the evidence is not yet there for

us. Outcomes are not being tracked and reported. This work is well underway in critical care and we must make the same connections elsewhere.

“Oral health is among the ‘non-thrilling problems’ in gerontological [nursing care] for which minimal intervention can create maximum benefit for quality of life, psychological well-being, and life satisfaction” (Thorne, Kazanjian, & MacEntee, 2001, p. 271).

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Appendix A

Recruitment Poster



Oral Hygiene Care Practices of Nurses Caring for Older Patients in Hospital



Although oral hygiene care is a fundamental nursing practice, surprisingly little is known about what is included in our interventions because oral hygiene care varies from nurse to nurse. We do know that providing oral care to older adults who are dependent on nurses for their care can be challenging.

On _____ at _____ Esther Coker, RN a McMaster Graduate Nursing Student will be coming to share information about a research study she is conducting on a few inpatient units. She is hoping to learn as much as she can about the oral hygiene care provided by nurses to older adults, how nurses decide what oral hygiene measures to provide, and what nurses think supports or hinders their ability to provide oral hygiene care. If we learn more about what nurses are currently able to do and the challenges they face, we can provide input into clinical practice guidelines to ensure that such guidelines are feasible for nurses. We may discover some tips from other units about what supports oral hygiene care.

Esther will spend some time on the unit for a few evenings and she hopes to recruit about 5 nurses who would be willing to have some conversations with her as she goes along with them for part of their shift (as a student would).

Participation in the study is completely voluntary, and those participating will receive a small gift (\$20 Tim Horton's card and pocket flashlight) in appreciation. Details will be explained [as on the consent form] during the meeting.



Appendix B

Demographic Questions



Demographic Questions

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Please answer the following questions about yourself. The purpose of collecting this information is so we will be able to describe, as a group, the informants for this study.

1. Male Female
2. RN RPN
3. Age range: under 25 25-29 30-34 35-39 40-44
 45-49 50-54 55-59 60-64 65 or older
4. Approximately how long have you practised as a nurse? Less than 1 year
 1-2 years
 3-5 years
 6-10 years
 11-15 years
 16-20 years
 21-25 years
 26-30 years
 31-35 years
 36 years or more
5. Approximately how long have you worked on this unit? Less than 1 year
 1-2 years
 3-5 years
 6-10 years
 11-15 years
 16-20 years
 21-25 years
 26-30 years
 31-35 years
 36 years or more
6. Are you a nursing graduate of the equivalent of an RPN certificate program
 RPN diploma program
 RN diploma program
 RN degree program
 other _____
7. Have you attended a workshop or other training session in oral health? Yes No

Appendix C

Interview Guide (Guided Conversation)



Interview Guide (Guided Conversation)

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

- Can you tell me how you do oral hygiene care for your patient? What oral hygiene care does s/he need? What are you trying to achieve when you do the care (probe →remove plaque? Moisturize?)?
- How do you decide whether to do oral hygiene care as part of morning (or bedtime) care?
- Is it always possible to do it? Are there barriers or challenges? What kind of things get in the way of doing oral care?
- How do you know what to do? (probe →is it based on your experience? Is it written for you somewhere? Did you read somewhere that you are to do it this way?) How would someone without your experience know how to do it?
- Are there any things that make it easier to do oral care for your patient?

If this is not observed:

- If your patient has a cognitive impairment and resists oral care, what do you do? What have you found helpful?
- If a patient is not interested in engaging in oral care when asked, do you have a particular way of convincing them that they should?

Appendix D

Oral Hygiene Products Available on the Units

Items Stocked on Unit	Case	1	2	3	4	5
	Fluoride toothpaste		✓	✓		✓
	Soft-bristled toothbrush		✓	✓		✓
	Suction toothbrush					✓
	BeFresh mouthrinse (alcohol-free, non-antiseptic)	✓	✓	✓		✓
	Biotène Moisturizing Mouthwash			✓		✓
	Denture cup	✓	✓	✓	✓	✓
	Biotène Oral Balance Dry Mouth Moisturizing Gel			✓		
	MoiStir Dry Mouth Spray			✓		✓
	Foam swabs "toothettes"	✓				✓
	Effervescent Denture Cleaning Tablets		✓			
	Foam Bite Block					✓

Appendix E

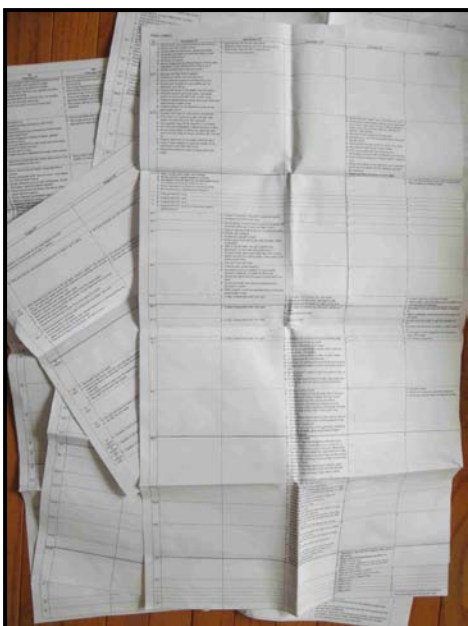
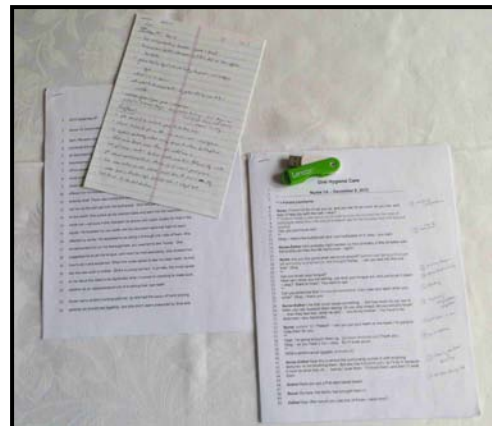
Process for Organizing, Preparing, and Analyzing Data



1. Audiorecordings and field notes were collected on site.

2. Handwritten notes were typed and audiorecordings were transcribed.

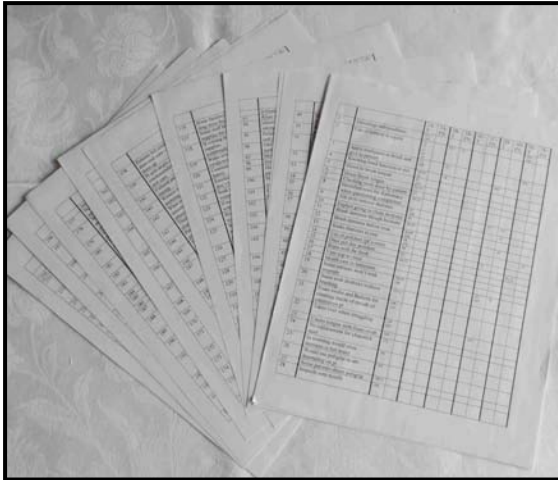
Each became a document ready for coding i.e., the beginning of the case study database.



3. In addition to the chart of oral care supplies shown in Appendix D, a chart showing the oral care activities in all nurse-patient encounters was constructed for each case.

Appendix E (page 2 of 3)

Process for Organizing, Preparing, and Analyzing Data



4. Data (in the form of observations or comments) extracted from documents pertaining to each case were numbered and listed on the left of this table.

The five columns on the right indicate the source of the data, i.e., the line number in the typed field notes or transcript.

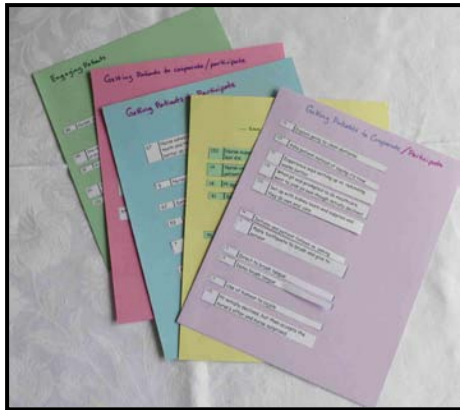
5. When this table had been created for the first case, I made a copy of the matrix and enlarged the font in the left column, keeping the numeric code beside each observation or comment so I could trace it back to a transcript or fieldnote. I then cut them into strips and sorted them on a large piece of butcher paper on a large table. There were three general sections to the butcher paper representing (a) the oral hygiene interventions and how they were carried out, (b) the sources of information or knowledge used by nurses, and (c) barriers or facilitators to competing oral hygiene care. Emerging themes were written on sticky notes and the strips of paper were sorted beneath.

Analysis of the second case took place when data gathering was almost complete in that setting. The same procedure was followed, but this time, I used the same sticky notes to categorize the slips of paper. The slips of paper were categorized on the butcher paper and seemed to fall into place under the existing sticky notes. This process continued for all five cases. Minimal new categories had to be constructed, and some were re-named.

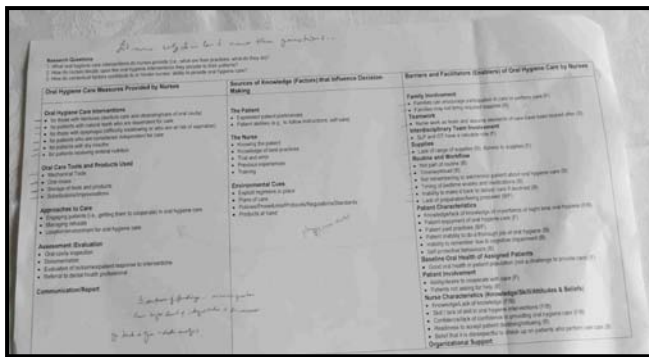


Appendix E (page 3 of 3)

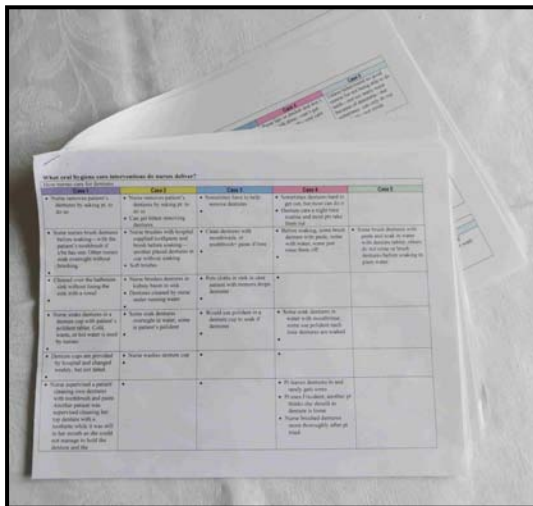
Process for Organizing, Preparing, and Analyzing Data



6. After some rearranging and collapsing, and when we were satisfied with the categories on the sticky notes, I transcribed each category to sheets of cardstock in one colour—ultimately each case would have its own colour. I then taped the slips of paper that had been sorted on the butcher paper to the card with the matching category heading. This was especially helpful during cross-case analysis. This photo shows one category across all five cases.



7. Upon completion of this process for the second case, I constructed the first iteration of a table showing themes, and this evolved over time as categories and themes were collapsed or new ones were added. The first draft is shown to the right.



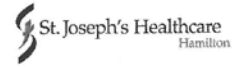
8. Each case had a stack of coloured cards associated with it—the colour being unique to the case. When it came time for cross-case analysis, I sorted each of the five piles so as to match each card with its counterparts from the other cases. At this point, some combining and collapsing took place, and rather than working from the stacks of cards, I constructed a table that illustrated patterns across cases.

From the information in this document, I was able to construct a list of findings. Further winnowing resulted in my constructing a table

of findings with evidence taken from each of the cases where relevant. It was this list of findings that was shared with participants so they could comment on whether the findings were representative of their site.

Appendix F

Research Ethics Board Approval



Hamilton Integrated Research Ethics Board (HIREB)

293 Wellington St. N., Suite 102, Hamilton, ON L8L 8E7

Telephone: 905-521-2100, Ext. 42013

Fax: 905-577-8378

October 22, 2013

PROJECT NUMBER: 13-634

PROJECT TITLE: Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

PRINCIPAL INVESTIGATOR: Esther Coker

LOCAL PI: Jenny Ploeg

This will acknowledge receipt of your letter on October 15, 2013 which enclosed revised copies of the Protocol and the Application Form for the above-named study. These issues were raised by the Hamilton Integrated Research Ethics Board at their meeting held on October 2, 2013. Based on this additional information, we wish to advise your study has been given *final* approval from the full HIREB.

The following documents have been approved on both ethical and scientific grounds:

- The submission
- Study Protocol version 2 dated October 15, 2013
- Information/Consent Form version 1 dated September 8, 2013
- Advertisement version 1 dated September 8, 2013
- Interview Guide (Guided Conversation) version 1 dated September 8, 2013
- Unstructured Observation Guide version 1 dated September 8, 2013
- Demographic Questionnaire version 1 dated September 8, 2013

Please note attached you will find the Information/Consent Form and the Advertisement with the HIREB approval affixed; all consent forms/ advertisements used in this study must be copies of the attached materials.

We are pleased to issue final approval for the above-named study for a period of 12 months from the date of the HIREB meeting on October 2, 2013. Continuation beyond that date will require further review and renewal of HIREB approval. Any changes or revisions to the original submission must be submitted on an HIREB amendment form for review and approval by the Hamilton Integrated Research Ethics Board.

PLEASE QUOTE THE ABOVE-REFERENCE PROJECT NUMBER ON
ALL FUTURE CORRESPONDENCE

Sincerely,

Dr. Raelene Rathbone;
Chair, Hamilton Integrated Research Ethics Board

The Hamilton Integrated Research Ethics Board operates in compliance with and is constituted in accordance with the requirements of: The Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans; The International Conference on Harmonization of Good Clinical Practices; Part C Division 5 of the Food and Drug Regulations of Health Canada, and the provisions of the Ontario Personal Health Information Protection Act 2004 and its applicable Regulations; for studies conducted at St. Joseph's Hospital, HIREB complies with the health ethics guide of the Catholic Alliance of Canada

Appendix F (page 2 of 3)**Research Ethic Board Amendment Request and Approval**

**Hamilton Integrated Research Ethics Board
AMENDMENT REQUEST**

REB Project #: 13-634

Principal Investigator: Dr. Jenny Ploeg

Project Title: Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Document(s) Amended with version # and date:

- Protocol Amendment - Protocol Ver: 3 Dated: 07 April, 2013
- Consent Form (Main) - Letter of Information/Consent for Additional Participants Ver: 1 Dated: 07 April, 2014
- Interview Guides - Interview Guide (Guided Conversation) Additional Participants Ver: 1 Dated: 07 April, 2014
- Interview Guides - Interview Guide (Guided Conversation) Ver: 2 Dated: 07 April, 2014
- Other - Synopsis of Amendment Requests

Research Ethics Board Review
(this box to be completed by HIREB Chair only)

Amendment approved as submitted

Amendment approved conditional on changes noted in "Conditions" section below

New enrolment suspended


Study suspended pending further review

Level of Review:

Full Research Ethics Board

Research Ethics Board Executive

The Hamilton Integrated Research Ethics Board operates in compliance with and is constituted in accordance with the requirements of: The Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans; The International Conference on Harmonization of Good Clinical Practices; Part C Division 5 of the Food and Drug Regulations of Health Canada, and the provisions of the Ontario Personal Health Information Protection Act 2004 and its applicable Regulations; For studies conducted at St. Joseph's Hospital, HIREB complies with the health ethics guide of the Catholic Alliance of Canada


Suzette Salama PhD., Chair
Raelene Rathbone, MB, BS, MD, PhD, Chair

4/29/2014
Date

All Correspondence should be addressed to the HIREB Chair(s) and forwarded to:
HIREB Coordinator
293 Wellington St. N. Suite 102, Hamilton ON L8L 8E7
Tel. 905-521-2100 Ext. 42013 Fax: 905-577-8378

Appendix F (page 3 of 3)

Research Ethics Board Amendment Request and Approval



**Hamilton Integrated Research Ethics Board
AMENDMENT REQUEST**

REB Project #: 13-634

Principal Investigator: Dr. Jenny Ploeg

Project Title: Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Document(s) Amended with version # and date:

- Other - Summary of Changes
- HIREB General Application - Addition of SJHH as Study site (Two Units) to reflect LPI at that site ver: 23 July, 2014
- Consent Form - Letter of Information/Consent - SJHH Ver: 1 Dated: 12 May, 2014
- Consent Form - Letter of Information/Consent - For SJHH Ver: 1 Dated: 12 May, 2014

Research Ethics Board Review
(this box to be completed by HIREB Chair only)


- Amendment approved as submitted
- Amendment approved conditional on changes noted in "Conditions" section below
- New enrolment suspended
- Study suspended pending further review

Level of Review:

- Full Research Ethics Board
- Research Ethics Board Executive

Conditions:

The Hamilton Integrated Research Ethics Board operates in compliance with and is constituted in accordance with the requirements of: The Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans; The International Conference on Harmonization of Good Clinical Practices; Part C Division 5 of the Food and Drug Regulations of Health Canada, and the provisions of the Ontario Personal Health Information Protection Act 2004 and its applicable Regulations; For studies conducted at St. Joseph's Hospital, HIREB complies with the health ethics guide of the Catholic Alliance of Canada


Suzette Salama PhD., Chair
Raelene Rathbone, MB BS, MD, PhD, Chair

7/9/2014
Date

All Correspondence should be addressed to the HIREB Chair(s) and forwarded to:
HIREB Coordinator
293 Wellington St. N, Suite 102, Hamilton ON L8L 8E7
Tel. 905-521-2100 Ext. 42013 Fax: 905-577-8378

Appendix G

Letter of Information/Consent for Nurse Participants (with J. Ploeg LPI)



LETTER OF INFORMATION / CONSENT

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Investigators:

Local Principal Investigator:

Dr. Jenny Ploeg
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
(905) 525-9140 ext. 22294
E-mail: ploegj@mcmaster.ca

Student Investigator:

Esther Coker
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
905-777-3837 x12227
E-mail: cokerme@mcmaster.ca

Purpose of the Study (What am I trying to discover?)

You are invited to take part in a research study on Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients because you care for older patients who are dependent on nurses for some elements of their oral care. This is a student research project supervised by Dr. Jenny Ploeg. Although oral hygiene care is a fundamental nursing practice, surprisingly little is known about what is included in such interventions because oral hygiene care varies from nurse to nurse. We do know that providing oral care can be challenging. I am hoping to learn as much as I can about the oral hygiene care provided by nurses, how nurses decide what oral hygiene measures to provide, and what nurses think supports or hinders their ability to provide oral hygiene care to older patients. If we learn more about what nurses are currently able to do and the challenges they face, we can provide input into the creation of clinical practice guidelines related to oral hygiene care to ensure that such guidelines are feasible for nurses. In this way, we may be able to improve the care we provide to older patients.

Procedures Involved in the Research (What will happen during the study?)

I will be approaching about 15-25 nurses from 3-5 different hospitals to participate in this study.

Participation in this study is voluntary. If you agree to participate, I will come to your unit one evening after supper (or if you work 12-hour shifts, at the beginning of your shift). I will ask you to sign the consent form and will give you a copy. I wish to go along with you as you carry out your evening care. I will ask you to have some conversations with me about how you provide oral hygiene care to your assigned patients. I would like to see what kinds of products and supplies are available to you for oral care, and what challenges you face while doing oral care. If your patients don't receive oral hygiene care in the evening, I will ask you to talk me through how oral hygiene care is done for your assigned patients (or

Appendix G

Letter of Information/Consent for Nurse Participants (page 2 of 4)

similar patients you have cared for) at another time of day, how you generally know what to do, and what seems to help or hinder your ability to do oral care. I would like to have these conversations using a “go-along” method so you can explain things to me much as you would to a nursing student, but if you prefer, or it seems better, we could sit down to have our conversation. Although these conversations will take a few minutes, I want to minimize interference with your work. With your permission, I would like to audio-tape our conversations so I don't miss the detail you share with me. I'll also take some notes. I will also ask you for some background information like how long you have been a nurse and whether you are an RN or RPN.

Are there any risks to participating in this study?

You may feel uncomfortable answering some questions or having me observe your practice. You can choose where we will have our conversations. You do not have to answer any questions that you do not want to answer or that make you feel uncomfortable. You can stop taking part at any time. I describe below the steps I am taking to protect your privacy.

Are there any benefits to doing this study?

The research will not benefit you directly. I hope to learn more about the actual oral hygiene care practices of nurses as most other studies have looked at practices of Personal Support Workers. I hope that as a result of this study we will come to better understand what nurses mean by “oral hygiene care” as it applies to the care provided to hospitalized older adults who rely on nurses for some or all elements of care. I also wish to learn more about what challenges nurses face when providing this type of care, and if there is anything that helps nurses' ability to provide oral hygiene care. Knowing this could help nurses to contribute their knowledge and experience to making clinical practice guidelines more realistic and feasible, thus improving the care we provide to older patients.

How will information be kept private?

I will not use your name or any information that would allow you to be identified. Some of your colleagues may know that you are participating because they will see you speaking with me, but I will not share the list of participants with your manager. I will be having conversations with several nurses on a number of different units at different hospitals, and no one will be able to connect you to your hospital. I will not be referring to the hospitals by name or to the nurses by name. I will change your name to a code in anything I write. The audiotaped information you provide will be typed by a transcriptionist (secretary) who is not associated with any of the units, and your name will not be associated with that tape recording. I will then be able to look for themes in the information everyone provides once it is typed. It will be kept in a locked cabinet where only I will have access to it. Typed information, without your name attached, will be kept on a computer and will be protected by a password. Before results are finalized, you will have the opportunity, if you are willing, to look at my interpretations of what I have seen and heard so you can tell me if they are accurate. This would require providing your e-mail address. However, I will delete the record of your e-mail address when you have replied to me about the accuracy of the information.

Appendix G (continued)**Letter of Information/Consent for Nurse Participants (page 3 of 4)****What if I change my mind about being in the study?**

It is your choice to be part of the study or not. If you decide to be part of the study, you can decide to stop at any time, even after signing the consent form or part-way through the study. If you decide to withdraw, there will be no consequences to you. If you stop part way through, you can decide whether or not I can keep the information I have already collected from you. If you do not want to answer some of my questions you do not have to, but you can still be in the study.

How do I find out what was learned in this study?

A summary of the results from all hospitals will be provided to your unit manager and posted. The results will be grouped for all study units, so your own unit results will not be reported. If you would like to receive the summary personally, please let me know how you would like me to send it to you.

Questions about the Study

If you have questions or need more information about the study itself, please contact me, Esther Coker, RN at 905.777.3837 x12227 or coker@hhsc.ca.

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HIREB). The HIREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Office of the Chair, HIREB at 905.521.2100 x 42013.

Appendix G

Letter of Information/Consent for Nurse Participants (page 4 of 4)

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

CONSENT

I have read the information presented in the information letter about a study being conducted by Esther Coker of McMaster University under the guidance of Dr. Jenny Ploeg. I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time. I have been given a signed copy of this form. I agree to participate in the study.

Name of Participant (Printed)

Signature

Date

Consent form explained in person by:

Name and Role (Printed)

Signature

Date



Appendix G

Letter of Information/Consent for Nurse Participants (S. Ireland LPI)



Inspiring Innovation and Discovery

LETTER OF INFORMATION / CONSENT For SJHH

Hamilton Integrated

JUL 09 2014

Research Ethics Board

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Investigators:

Local Principal Investigator:

Sandra Ireland, RN, PhD
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
Director of Nursing Practice
St. Joseph's Healthcare Hamilton
E-mail: sireland@stjoes.ca

Student Investigator:

Esther Coker
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
905-777-3837 x12227
E-mail: cokerme@mcmaster.ca

Purpose of the Study (What am I trying to discover?)

You are invited to take part in a research study on Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients because you care for older patients who are dependent on nurses for some elements of their oral care. This is a student research project supervised by Dr. Jenny Ploeg. Although oral hygiene care is a fundamental nursing practice, surprisingly little is known about what is included in such interventions because oral hygiene care varies from nurse to nurse. We do know that providing oral care can be challenging. I am hoping to learn as much as I can about the oral hygiene care provided by nurses, how nurses decide what oral hygiene measures to provide, and what nurses think supports or hinders their ability to provide oral hygiene care to older patients. If we learn more about what nurses are currently able to do and the challenges they face, we can provide input into the creation of clinical practice guidelines related to oral hygiene care to ensure that such guidelines are feasible for nurses. In this way, we may be able to improve the care we provide to older patients.

Procedures Involved in the Research (What will happen during the study?)

I will be approaching about 15-25 nurses from 3-5 different hospitals to participate in this study.

Participation in this study is voluntary. If you agree to participate, I will come to your unit one evening after supper (or if you work 12-hour shifts, at the beginning of your shift). I will ask you to sign the consent form and will give you a copy. I wish to go along with you as you carry out your evening care. I will ask you to have some conversations with me about how you provide oral hygiene care to your assigned patients. I would like to see what kinds of products and supplies are available to you for oral care, and what challenges you face

Appendix G

Letter of Information/Consent for Nurse Participants (page 2 of 4)

while doing oral care. If your patients don't receive oral hygiene care in the evening, I will ask you to talk me through how oral hygiene care is done for your assigned patients (or similar patients you have cared for) at another time of day, how you generally know what to do, and what seems to help or hinder your ability to do oral care. I would like to have these conversations using a "go-along" method so you can explain things to me much as you would to a nursing student, but if you prefer, or it seems better, we could sit down to have our conversation. Although these conversations will take a few minutes, I want to minimize interference with your work. With your permission, I would like to audio-tape our conversations so I don't miss the detail you share with me. I'll also take some notes. I will also ask you for some background information like how long you have been a nurse and whether you are an RN or RPN.

Are there any risks to participating in this study?

You may feel uncomfortable answering some questions or having me observe your practice. You can choose where we will have our conversations. You do not have to answer any questions that you do not want to answer or that make you feel uncomfortable. You can stop taking part at any time. I describe below the steps I am taking to protect your privacy.

Are there any benefits to doing this study?

The research will not benefit you directly. I hope to learn more about the actual oral hygiene care practices of nurses as most others studies have looked at practices of Personal Support Workers. I hope that as a result of this study we will come to better understand what nurses mean by "oral hygiene care" as it applies to the care provided to hospitalized older adults who rely on nurses for some or all elements of care. I also wish to learn more about what challenges nurses face when providing this type of care, and if there is anything that helps nurses' ability to provide oral hygiene care. Knowing this could help nurses to contribute their knowledge and experience to making clinical practice guidelines more realistic and feasible, thus improving the care we provide to older patients.

How will information be kept private?

I will not use your name or any information that would allow you to be identified. Some of your colleagues may know that you are participating because they will see you speaking with me, but I will not share the list of participants with your manager. I will be having conversations with several nurses on a number of different units at different hospitals, and no one will be able to connect you to your hospital. I will not be referring to the hospitals by name or to the nurses by name. I will change your name to a code in anything I write. The audiotaped information you provide will be typed by a transcriptionist (secretary) who is not associated with any of the units, and your name will not be associated with that tape recording. I will then be able to look for themes in the information everyone provides once it is typed. It will be kept in a locked cabinet where only I will have access to it. Typed information, without your name attached, will be kept on a computer and will be protected by a password. Before results are finalized, you will have the opportunity, if you are willing, to look at my interpretations of what I have seen and heard so you can tell me if they are accurate. This would require providing your e-mail address. However, I will delete the

Appendix G

Letter of Information/Consent for Nurse Participants (page 3 of 4)

record of your e-mail address when you have replied to me about the accuracy of the information.

What if I change my mind about being in the study?

It is your choice to be part of the study or not. If you decide to be part of the study, you can decide to stop at any time, even after signing the consent form or part-way through the study. If you decide to withdraw, there will be no consequences to you. If you stop part way through, you can decide whether or not I can keep the information I have already collected from you. If you do not want to answer some of my questions you do not have to, but you can still be in the study.

How do I find out what was learned in this study?

A summary of the results from all hospitals will be provided to your unit manager and posted. The results will be grouped for all study units, so your own unit results will not be reported. If you would like to receive the summary personally, please let me know how you would like me to send it to you.

Questions about the Study

If you have questions or need more information about the study itself, please contact me, Esther Coker, RN at 905.777.3837 x12227 or coker@hhsc.ca.

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HIREB). The HIREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Office of the Chair, HIREB at 905.521.2100 x 42013.

Appendix G

Letter of Information/Consent for Nurse Participants (page 4 of 4)

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

CONSENT

I have read the information presented in the information letter about a study being conducted by Esther Coker of McMaster University under the guidance of Dr. Jenny Ploeg. I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time. I have been given a signed copy of this form. I agree to participate in the study.

Name of Participant (Printed)

Signature

Date

Consent form explained in person by:

Name and Role (Printed)

Signature

Date



Appendix H

Letter of Information/Consent for Additional Participants (J. Ploeg LPI)



LETTER OF INFORMATION / CONSENT For Additional Participants

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Investigators:

Local Principal Investigator:

Dr. Jenny Ploeg
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
(905) 525-9140 ext. 22294
E-mail: ploegj@mcmaster.ca

Student Investigator:

Esther Coker
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
905-777-3837 x12227
E-mail: cokerme@mcmaster.ca

Purpose of the Study (What am I trying to discover?)

You are invited to take part in a research study on Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients because you have indicated you may have a perspective to add to the study, or because I have asked if you could share your insights. This is a student research project supervised by Dr. Jenny Ploeg. Although oral hygiene care is a fundamental nursing practice, surprisingly little is known about what is included in such interventions because oral hygiene care varies from nurse to nurse. We do know that providing oral care can be challenging. I am hoping to learn as much as I can about the oral hygiene care provided by nurses, how nurses decide what oral hygiene measures to provide, and what nurses think supports or hinders their ability to provide oral hygiene care to older patients. If we learn more about what nurses are currently able to do and the challenges they face, we can provide input into the creation of clinical practice guidelines related to oral hygiene care to ensure that such guidelines are feasible for nurses. In this way, we may be able to improve the care we provide to older patients.

Procedures Involved in the Research (What will happen during the study?)

In the course of my observing interviewing nurses for the study, you may have indicated that you have an opinion to share, or I may have asked if you would engage in conversation with me about some of the questions I have asked the nurses. These questions have to do with how nurses provide oral hygiene care to their assigned patients, the products and supplies available, and the any challenges or barriers to doing oral care. If you are agreeable, I would like to audiotape our discussion. Your participation in this study is voluntary. I will ask you to sign the consent form and will give you a copy.

Appendix H

Letter of Information/Consent for Additional Participants (page 2 of 4)

Are there any risks to participating in this study?

You do not have to answer any questions that you do not want to answer or that make you feel uncomfortable. You can stop taking part at any time. I describe below the steps I am taking to protect your privacy.

Are there any benefits to doing this study?

The research will not benefit you directly. I hope to learn more about the actual oral hygiene care practices of nurses as most others studies have looked at practices of Personal Support Workers. I hope that as a result of this study we will come to better understand what nurses mean by "oral hygiene care" as it applies to the care provided to hospitalized older adults who rely on nurses for some or all elements of care. I also wish to learn more about what challenges nurses face when providing this type of care, and if there is anything that helps nurses' ability to provide oral hygiene care. Knowing this could help nurses to contribute their knowledge and experience to making clinical practice guidelines more realistic and feasible, thus improving the care we provide to older patients.

How will information be kept private?

I will not use your name or any information that would allow you to be identified. Some of your colleagues may know that you are participating because they will see you speaking with me, but I will not share the list of participants with your manager. I will be having conversations with several nurses on a number of different units at different hospitals, and no one will be able to connect you to your hospital. I will not be referring to the hospitals by name or to participants by name. I will change your name to a code in anything I write. If you agree to have our conversation audiotaped, the audiotaped information you provide will be typed by a transcriptionist (secretary) who is not associated with any of the units, and your name will not be associated with that tape recording. I will then be able to look for themes in the information everyone provides once it is typed. It will be kept in a locked cabinet where only I will have access to it. Typed information, without your name attached, will be kept on a computer and will be protected by a password. Before results are finalized, you will have the opportunity, if you are willing, to look at my interpretations of what I have seen and heard so you can tell me if they are accurate. This would require providing your e-mail address. However, I will delete the record of your e-mail address when you have replied to me about the accuracy of the information.

What if I change my mind about being in the study?

It is your choice to be part of the study or not. If you decide to be part of the study, you can decide to stop at any time, even after signing the consent form or part-way through the study. If you decide to withdraw, there will be no consequences to you. If you stop part way through, you can decide whether or not I can keep the information I have already collected from you. If you do not want to answer some of my questions you do not have to, but you can still be in the study.

Appendix H

Letter of Information/Consent for Additional Participants (page 3 of 4)

How do I find out what was learned in this study?

A summary of the results from all hospitals will be provided to your unit manager and posted. The results will be grouped for all study units, so your own unit results will not be reported. If you would like to receive the summary personally, please let me know how you would like me to send it to you.

Questions about the Study

If you have questions or need more information about the study itself, please contact me, Esther Coker, RN at 905.777.3837 x12227 or coker@hhsc.ca.

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HIREB). The HIREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Office of the Chair, HIREB at 905.521.2100 x 42013.

Appendix H

Letter of Information/Consent for Additional Participants (page 4 of 4)

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

CONSENT

I have read the information presented in the information letter about a study being conducted by Esther Coker of McMaster University under the guidance of Dr. Jenny Ploeg. I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time. I have been given a signed copy of this form. I agree to participate in the study.

Name of Participant (Printed)

Signature

Date

Consent form explained in person by:

Name and Role (Printed)

Signature

Date

Appendix H

Letter of Information/Consent for Additional Participants (S. Ireland LPI)



**LETTER OF INFORMATION / CONSENT
For Additional Participants
SJHH**



Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

Investigators:

Local Principal Investigator:
Sandra Ireland, RN, PhD
Faculty of Health Sciences-School of Nursing
McMaster University
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Director of Nursing Practice
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Student Investigator:
Esther Coker
Faculty of Health Sciences-School of Nursing
McMaster University
Hamilton, Ontario, Canada
905-777-3837 x12227
E-mail: cokerme@mcmaster.ca

Purpose of the Study (What am I trying to discover?)

You are invited to take part in a research study on Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients because you have indicated you may have a perspective to add to the study, or because I have asked if you could share your insights. This is a student research project supervised by Dr. Jenny Ploeg. Although oral hygiene care is a fundamental nursing practice, surprisingly little is known about what is included in such interventions because oral hygiene care varies from nurse to nurse. We do know that providing oral care can be challenging. I am hoping to learn as much as I can about the oral hygiene care provided by nurses, how nurses decide what oral hygiene measures to provide, and what nurses think supports or hinders their ability to provide oral hygiene care to older patients. If we learn more about what nurses are currently able to do and the challenges they face, we can provide input into the creation of clinical practice guidelines related to oral hygiene care to ensure that such guidelines are feasible for nurses. In this way, we may be able to improve the care we provide to older patients.

Procedures Involved in the Research (What will happen during the study?)

In the course of my observing interviewing nurses for the study, you may have indicated that you have an opinion to share, or I may have asked if you would engage in conversation with me about some of the questions I have asked the nurses. These questions have to do with how nurses provide oral hygiene care to their assigned patients, the products and supplies available, and the any challenges or barriers to doing oral care. If you are agreeable, I would like to audiotape our discussion. Your participation in this study is voluntary. I will ask you to sign the consent form and will give you a copy.

Appendix H

Letter of Information/Consent for Additional Participants (page 2 of 4)

Are there any risks to participating in this study?

You do not have to answer any questions that you do not want to answer or that make you feel uncomfortable. You can stop taking part at any time. I describe below the steps I am taking to protect your privacy.

Are there any benefits to doing this study?

The research will not benefit you directly. I hope to learn more about the actual oral hygiene care practices of nurses as most others studies have looked at practices of Personal Support Workers. I hope that as a result of this study we will come to better understand what nurses mean by “oral hygiene care” as it applies to the care provided to hospitalized older adults who rely on nurses for some or all elements of care. I also wish to learn more about what challenges nurses face when providing this type of care, and if there is anything that helps nurses’ ability to provide oral hygiene care. Knowing this could help nurses to contribute their knowledge and experience to making clinical practice guidelines more realistic and feasible, thus improving the care we provide to older patients.

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Appendix H

Letter of Information/Consent for Additional Participants (page 4 of 4)

Oral Hygiene Care Practices of Nurses Caring for Hospitalized Older Patients

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Name of Participant (Printed)

Signature

Date

Consent form explained in person by:

Name and Role (Printed)

Signature

Date



Appendix I

Strategies to Ensure Rigour in Studies Using Observational Methods

Are the following criteria considered the study? Y= YES N=NO	
Observer	
A) Who is the observer? (i.e., discipline/qualifications)	Y
B) Observer's role in research described	Y
C) Disclosure	Y
D) Observer effect considered	Y
E) Degree and nature of collaboration with other researchers (in observation)	N
Observations	
G) Number and duration of observations and fieldwork indicated	Y
H) Focus of observations described (e.g., single element vs. holistic)	Y
I) Predetermined sensitizing concepts reported	N
Choice of Participants	
J) Purposive sampling strategy with rationale	Y
K) Basic features of participants described	Y
Data Sources	
L) Data Sources	Y
M) Real time observation of care	Y
Comprehensive Data Collection	
N) Data recording process	Y
O) Data collection and analysis conducted iteratively or concurrently	Y
P) An analysis driven stopping point determined the extent of data collection and analysis	Y
Q) Organization and interpretation of data described	Y
Data Analysis and Corroboration of Findings	
R) Analysis method is consistent with specific qualitative research approach	Y
S) Procedures used to corroborate findings are explicit	Y

Adapted from Coker, Ploeg, Kaasalainen, and Fisher (2013)