

Stress and Coping Experienced by Older Adults  
Challenged by Dental Implant Self-Care

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in

THE FACULTY OF GRADUATE STUDIES

(Dental Science)

THE UNIVERSITY OF BRITISH COLUMBIA  
(Vancouver)

APRIL 2009

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## Abstract

**Objective:** The provision of dental implants to replace missing teeth for older adults is increasing and we know dental implant prostheses involve substantial challenges with long-term maintenance. This study aimed to explore older adult perceptions of such challenges in the light of literature on stress and coping and the common disabilities associated with aging.

**Methods:** Semi-structured interviews were conducted with six elderly adults over the age of 70 to explore the long-term challenges they experienced with dental implant maintenance. Each participant presented with an oral prosthesis supported by a minimum of five dental implants placed more than 5 years prior. Emerging themes were identified in verbatim transcripts of the audio-taped interviews, and theoretical constructs were used to develop a classification of the physical challenges, emotional responses and coping strategies used by older adults in the self-care of dental implants.

**Findings:** Overall functional and psychosocial experiences with the prosthetic rehabilitation were positive. Initially participants also perceived challenges on a physical level such as difficulty in accessing compromised areas to clean their dental implant prostheses or accessing professional care to manage urgent problems with the prostheses while traveling abroad. However, further scrutiny of these challenges identified psychological and social responses that sometimes included feelings of embarrassment, frustration, disappointment and disillusionment. In response, the participant's appeared to utilize various management or coping strategies, including avoidance, disengagement, intellectualization and rationalization.

**Conclusion:** This investigation suggests that psychosocial responses of patients to the long-term challenges posed by oral prostheses can evoke variable coping strategies that have been observed in response to other chronic health conditions, and that recognition of the emotional responses and associated coping strategies may inform both the clinical practice of dentistry and researchers interested in further understanding the response of older adults to prosthetic biotechnology. Further exploration of management or coping strategies may reveal new insights for patients, practitioners and researchers to better understand the subjective challenges experienced by the aging elderly dental implant patient.

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## **List of Abbreviations**

BREB	Behavioural Research Ethics Board
CCHS	Canadian Community Health Survey
GAS	General Adaptation Syndrome
HBM	Health Belief Model
IADR	International Association of Dental Research
NID	National Institute of Dental Research
NIH	National Institutes of Health (oral health)
OHIP	Oral Health Impact Profile
TMSC	Transactional Model of Stress and Coping
TTM	Theory of Change or Transtheoretical Theory
UBC	University of British Columbia
WHO	World Health Organization

## **Definitions of Terms**

### **Dental Terms**

The following terms are used commonly throughout my thesis by both the participants and myself. For the purpose of general clarification I have provided definitions here that are in keeping with those widely used in dentistry.\*

#### **Dental Implant**

A biocompatible device placed within, or on, the bone of the upper or lower arch of the mouth to provide support for a prosthetic reconstruction.

It is a tooth root substitute made of biological compatible material (i.e. Titanium)

It acts as an anchor to support an artificially designed tooth crown.

#### **Denture**

Synonym: prosthesis. An artificial replacement of a missing part of the body.

#### **Prosthesis**

Synonym: denture. An artificial replacement of a missing part of the body.

#### **Fixed Prosthesis**

A restoration that is not removable by the patient. The restoration may be partial arch (FPD: Fixed partial denture), or complete arch (FCD: Fixed complete denture).

Only removable by the dentist.

#### **Removable bar overdenture**

Removable partial or complete denture, which is implant-supported. Implants in this type of reconstruction are connected together with a bar incorporating attachment mechanisms for retention and/or support of the prosthesis.

#### **O-ring**

A doughnut shaped, resilient overdenture attachment that possesses the elastic ability to bend with resistance and return to its approximate original shape. It attaches to a post with a groove or undercut area.

\* International Congress of Oral Implantology, Glossary of Implant Dentistry II, 2008

## **Psychological Terms**

The following terms are used commonly in my thesis. For the purpose of clarification I have provided definitions here in keeping with those widely used in psychology.\*

### **Acceptance**

The mental attitude that something is believable and should be accepted as true. It not only involves giving credence to one's experience including what others tell you, but also in coming to terms with the experience.

### **Intellectualization**

In psychological terms it is defined as a defense mechanism involving excessive abstract thinking designed to block out disturbing emotions or conflicts, usually a device for evading an unfavorable task. Intellectualization allows for the conscious analysis of an event in a way that does not provoke anxiety. Intellectualization is often accomplished through rationalization.

### **Rationalization**

In psychology and logic, rationalization is the process of constructing a logical justification for a belief, decision, action or lack thereof that was originally arrived at through a different mental process. It is a defense mechanism in which unacceptable behaviors or feelings are explained in a rational or logical manner.

### **Resignation**

To submit or become reconciled (to); accept (something) passively, acquiesce, or resign oneself.

### **Avoidance**

The act of refraining from doing something or not doing something.

### **Disengagement**

The disconnection or detachment of oneself from a physical or mental task and/or undertaking.

### **Internalization**

The adoption of the beliefs, values, and attitudes of others, either consciously or unconsciously.

\*[http://psychology.about.com/od/theoriesofpersonality/ss/defensemech\\_\\_6.htm](http://psychology.about.com/od/theoriesofpersonality/ss/defensemech__6.htm).

"Defenses". [www.psychpage.com](http://www.psychpage.com).

<http://www.psychpage.com/learning/library/counseling/defenses.html>

<http://changingminds.org/explanations/behaviors/coping/intellectualization.htm>

## **Acknowledgements**

I would like to express my deepest gratitude to my supervisor, Dr. Ross Bryant. Your prevailing encouragement and understanding of life experiences and its many convoluted and intricate twists gave me the strength that was so needed when all appeared dismal. You are a kind, generous and passionate family man who exhibits integrity, respect and dignity to all those around him. I am so thankful for your mentorship in life and academia.

Also, my sincere gratitude to my advisory committee members:

Dr. Michael MacEntee you always made me think deeper as to attaining “saturation” in a qualitative mindset.

Dr. Shafik Dharamsi you understand the importance of “social responsibility” in the context of life and oral health providers. I admire your tenacity in wanting to make a difference.

My heartfelt gratitude to Viki Koulouris. You always supported me and “made things happen”! You assisted me in areas that no one else could. I thank you for your professionalism, your relentless hard work for making things happen and most importantly, your friendship.

I also extend my gratitude to my friends and colleagues (Matana, Mario and Shiva) who never wavered or dismissed me when I asked them “What do you think this means?” or “How do I do this?” Your patience and guidance was beyond my expectations.

I thank Drs. Doug Waterfield, Clive Roberts, Don Brunette and Ed Putnins for their understanding and assistance when it was so critically needed.

To all my research participants, I thank-you and respect your time and involvement in my study. Without you there would not have been a study.

My thanks to the department of Diversity and Access, in particular Dave Symington. Your support was steady and true to my needs.

I would be remiss if I did not thank my friend Jim for his quiet but enduring support. Greatly appreciated Bud!

Last but definitely not least enormous appreciation goes out to my friend and editor and second “pair of eyes” Doug. Your unyielding energy and endorsement of my efforts strengthened my ability to keep moving forward.

## **Dedication**

To all mothers who have lost a child...

I love you Jodi

## **CHAPTER 1 Introduction**

### **1.1 Purpose**

This study explored the challenges and problems that the aging older population experiences in their self-care of dental implants. Substantial scientific evidence exists to support the use of bone anchored dental prostheses in humans, led by Brånemark's study on managing loss of all the teeth (complete edentulism) with titanium dental implants in either or both the upper (maxillary) and lower (mandibular) jaws (Brånemark, Hansson, Adell, Breine, Lindstrom, Hallen, & Ohman, 1977). Several subsequent studies have verified the long-term efficacy of fixed and removable dental prostheses in patients who had problems adapting to conventional dentures (Adell, Eriksson, Lekholm, Brånemark, & Jemt, 1990; Zarb & Schmitt, 1996; Naert, Alsaadi, & Quirynen, 2004). In addition, prosthetic options for the management of partially edentulous patients (those with some missing teeth) have been improved dramatically with implant prostheses (Zarb & Schmitt, 1993; Avivi-Arber & Zarb, 1996; Wyatt & Zarb, 1998). The functional and esthetic impact of dental implant prostheses has generally been favorable from the perspectives of both the dentist and patient, at least in the short-term (Kiyak, Beach, Worthington, Taylor, Bolender, & Evans, 1990; Geertman, van Waas, van 't Hof, & Kalk, 1995). However, relatively little is known about the long-term subjective challenges that maintaining dental implants may pose for adults as they age and as the prosthetic materials wear or fail.

#### **1.1.1 Research Questions**

My original research questions were as follows:

- 1) "Do older adults experience challenges or problems in their self-care of dental implants as they age?; and,
- 2) If so, what are these challenges?"

As a result of the preliminary data collection and analysis (Chapter 4.2.1 Preliminary Findings), my focus evolved to include the management or coping strategies used

by older adults in response to challenges in their self-care of dental implants. To address this, I developed an additional research question as follows:

3) “How do older adults manage or cope with their perceived challenges in the self-care of dental implants?”

## **1.2 Preliminary Research to Explore Self-Care Challenges**

Dental implant research to date has focused primarily on optimizing biomechanical aspects of this technology, including tissue response, surgical techniques and the science of biomaterials, to the relative neglect of subjective (patient-based) outcomes. More specifically, although we know a modest amount about the rate at which prosthetic implant materials wear and fail clinically (Taylor, 1998; Berglundh & Klinge, 2003), much less emphasis has been put on investigating the subjective experience with self-care and maintenance of oral implant prostheses in the long-term. As the biotechnology of dental implants has become more successful, now tending to exceed 90% of individual implants functioning over 10 yrs (Bryant, MacDonald-Jankowski, & Kim, 2007; Weber & Sukotjo, 2007), and the provision of dental implants for older adults has likely increased because the prevalence of missing teeth increases with age (Bryant & Zarb, 1998), the self-care management issues need to be investigated.

Therefore, I initiated a qualitative study involving three participants with the purpose of beginning to understand the challenges or problems experienced by aging adults in the care of their dental implants. According to the method described in Chapter 3, data collection was achieved by means of a review of their dental history documentation, single semi-structured interviews, and follow-up telephone interviews discussing a written narrative summary that was constructed from each set of interviews and given to each participant to review for clarity and accuracy to confirm the accuracy of the interpretation of the individual interview.

From this preliminary study, six key challenges were identified related to:

- 1) Cleaning strategies
- 2) Access to products (retail)
- 3) Access to dental professionals
- 4) Prosthetic failure
- 5) Pain
- 6) Future care

Detailed evidence on these findings is given under Preliminary Findings (Chapter 4.2.1). Further analysis of these findings suggested various management and coping strategies were utilized by the participants in response to these challenges including both positive (e.g. a proactive problem focused approach) and negative (e.g. an emotion focused avoidant approach) strategies. Consequently, the purpose of my research evolved to also explore how aging adults managed/coped with challenges identified in the care of their dental implants.

In summary, the preliminary findings of this study offered unique insight into the perceived challenges and problems experienced by the older adult, as they age, in the care of their dental implants. The investigation into these challenges yielded findings that were both anticipated and unexpected. As anticipated, the study added to the growing evidence of the long-term biological and prosthetic maintenance required for dental implants. It was also evident that challenges were perceived by dental implant patients in the self-care of dental implants.

It was also interesting to note unexpected perceptions and attitudes of perceived challenges compared to what was originally anticipated. For example, the participants in this study did not perceive the amount of time and effort in self-care a challenge but rather a necessity. No participant felt that vision and dexterity were major problems but qualified this by expressing that it could be in the future if disabled by medical complications such as a stroke or arthritic joint pain. Finally, it appeared that to manage their challenges the participants utilized coping strategies

that they seemed to be unaware of, in that they did not interpret their management efforts as 'coping strategies'.

Since the participants were largely unaware of their own management or coping strategies, and also since some differences between individual's management strategies were found, the study was extended to include additional exploration to see if more information could be gained about coping. In particular, I believed further exploration on patient experiences and management or coping strategies of these experiences could reveal new insights that might lead dental practitioners and researchers to better prepare for the subjective challenges experienced by the aging adult with dental implants.

My overall assertion was that as the elderly population with dental implants increases and present with functional limitations due to physical and mental changes, their oral self-care can become more difficult with aging (de Baat, 1993), and so they may experience substantial challenges and problems in the maintenance of their dental implants. Consequently it was important to investigate the self-care challenges or problems that may occur. My preliminary findings also revealed how aging older adults manage or cope with these challenges from their perspectives. Consequently, my research plan evolved to describe the nature of the coping strategies reported by my participants as the basis for conducting additional interviews using the proposed method to identify possible additional challenges posed by long-term use of implant prostheses, and to further characterize the scope of management strategies reported by older adults in response to these challenges.

### **1.3 Rationale**

A 1991 national survey conducted by the American National Institutes of Health (NIH) (oral health) and the National Institute of Dental Research (NIDR), revealed the greatest transition from an intact dental arch (all teeth) to a partially edentulous (more than 5 teeth missing) condition occurred in the 35-54 year old group. (Bloom, Gaft, & Jack, 1992). This national survey data supports the likelihood that the

provision of dental implants for replacing teeth will continue to increase. Stillman and Douglas, (1993) conducted a retrospective study which demonstrated that dental implant use by American dentists had increased by 73% between 1986 to 1990, and during this same time period the number of practitioners who performed implant therapy had increased tenfold. Furthermore, Hallmon (1996) suggested, “with progressively increasing numbers of dental implants being placed as an integral part of comprehensive patient management, the need and demand for supportive implant care will also continue to escalate”. As a practicing dental hygienist that focuses on long term maintenance and management of dental implants, I believe that an important component of this supportive care will involve identifying the subjective and perceived challenges and problems that the older adult may experience, and assisting the older adult with manageable modifications in their implant maintenance protocols. I also believe, based both on my own professional experiences of 15 years and a review of the dental literature, that we can expect a substantial number of older adults presenting with dental implants in the next 10 to 20 years. Furthermore, it is reasonable to assume (based on the effects of age and individual health) that older adults with dental implants can also expect challenges and problems in the self management and maintenance care of dental implants as they age.

Relatively little is known about the subjective challenges perceived by older adults with dental implants and little has been written on the self-care problems faced by the aging adults with dental implants. We also know little about the psychological impact of these challenges and more particularly how older adults manage with these perceived challenges. In effect, the primary rationale for my study was that the challenges in the self-care of dental implants as older adults age were not adequately described or analyzed. Furthermore, as a result of my initial interviews and my literature review into the conceptual frameworks for health beliefs and behaviours, I also observed that the fluid dynamics of stress and coping were likely at play in how individuals responded to the stressors presented by ongoing implant self-care and the need for professional maintenance. The need to cope among aging

dental implant patients appeared to take the form of a response at the level of daily hassles (Chapter 2.2.4 Literature Review) or perhaps at a more profound level if expectations were not realized over time. Changes in the circumstances of living including infirmities related to the aging process itself also seemed to impact the stresses in which people coped (Kohn, Hay, & Legere, 1994). The Transactional Model of Stress and Coping (described in detail in Chapter 2.2.2) suits my research topic because it encompasses cognitive, affective and adaptive (coping) responses that arise out of person and environment transactions and is described as a mediating process of cognitive, motivational and relational expression. With this as a theoretical basis, I felt I was able to effectively investigate how an older person with dental implants experienced and coped with their challenges.

## **CHAPTER 2 Literature Review**

### **2.1 The Experience of Aging and its Impact on the Mouth**

Consistent with most developed and developing countries, the Canadian population is aging (Statistics Canada, 2004; WHO, 2000). This is due in part to both our large baby-boomer population and the fact that people are living longer. In Canada, 14.5 million “baby-boomers” account for 44% of the total population and control more than 77% of all Canadian wealth (Statistics Canada Census Data, 2007). The prevalence of missing teeth rises with age due to the increased age-related risk of tooth loss stemming mainly from the accumulated effects of dental caries, periodontal disease and trauma. The result is a rise in the number and percentage of older adults that are missing teeth and have the financial ability to afford dental implants to replace them. As these “baby-boomers” age, the number of seniors is expected to reach 6.7 million (approaching 20% of the population) by 2021, likely further increasing the demand for dental implants.

Notwithstanding that every person ages differently, there are some changes that frequently occur as the body gets older. Unfortunately, several of these aging conditions may impair our independent ability to provide oral self-care. Some of the more common conditions in aging adults include the loss of vision or hearing, and other chronic disorders such as arthritis or rheumatism which were the most common chronic health problems reported by Canadian seniors, (Statistics Canada, 2002). Other chronic health problems include memory loss, dementia and Alzheimer disease. These changes can lead to impairment, functional limitation, psychological and physical disabilities and handicap, the impact of which can be socially mediated (Locker, 1989). In other words, their impact can be determined, at least in part, at a social level regardless of the physical condition. Remarkably, even though more than four out of five seniors living at home suffer from a chronic health condition, these seniors for the most part, report good health (Statistics Canada, 2002), are satisfied with life, and appear to cope considerably well with their changing landscape of health (CCHS, 2003).

Wenzel, Glanz and Lerman, (2002) consider coping to be the psychological or social process of managing a disruptive condition, whereas adaptation is the outcome of such coping efforts. Optimal coping and adaptation are responses to help us live with our circumstances. The tendency for positive coping and adaptation to the common conditions of aging led me to ponder what coping and adaptation methods were practiced by older adult implant patients to reduce the apparent stress of the perceived challenges identified by the participants in this study. Thus, I felt it was important to examine the theories of stress and coping. This information provided me with a framework to understand how the participants in my study responded to the challenges identified as each individual coped with the maintenance of their dental implants.

## **2.2 Stress and Coping**

### **2.2.1 Historical Theories**

Biological stress has been viewed in three ways; stimulus, response, and process (Brantley & Thomason, 1995). Stimulus is focused on potential stressors and classified as catastrophic, major life events, and chronic circumstances. (Holmes & Rahe, 1967; Elliott & Eisendorfer, 1982). Response is categorized as physiological (flight or fight) or psychological (Cannon, 1929; Selye, 1956). Process is defined as an interaction, adjustment and transactional development. (Lazarus, 1966; Antonovsky, 1979).

Cannon (1929) described a biological response to danger which initiates a physiological response characterized by a “flight or fight” reaction. However, Selye (1956) found that this “flight or fight” response was only the first in a series of reactions. Selye was also the first to introduce the term “stress” in a biological context and developed a model of the body's stress reactions, which he named the General Adaptation Syndrome (GAS). He characterized a physiological stress reaction in three stages: the alarm stage, the resistance stage, and the exhaustion stage. The alarm stage is essentially the “fight or flight” response triggered by a

threatening event or situation. The resistance stage occurs if the threat continues. If the threat becomes chronic or repeats itself the body reaction moves into the exhaustion stage. This now weakened state can then lead to physiological damage, disease and may even end in death. However, two problems were identified with GAS theory. It did not take account of psychosocial processes including cognitive appraisal of the stressor, and it assumed that the physiological responses were the same no matter what the stressor.

### 2.2.2 Transactional Model of Stress and Coping (TMSC)

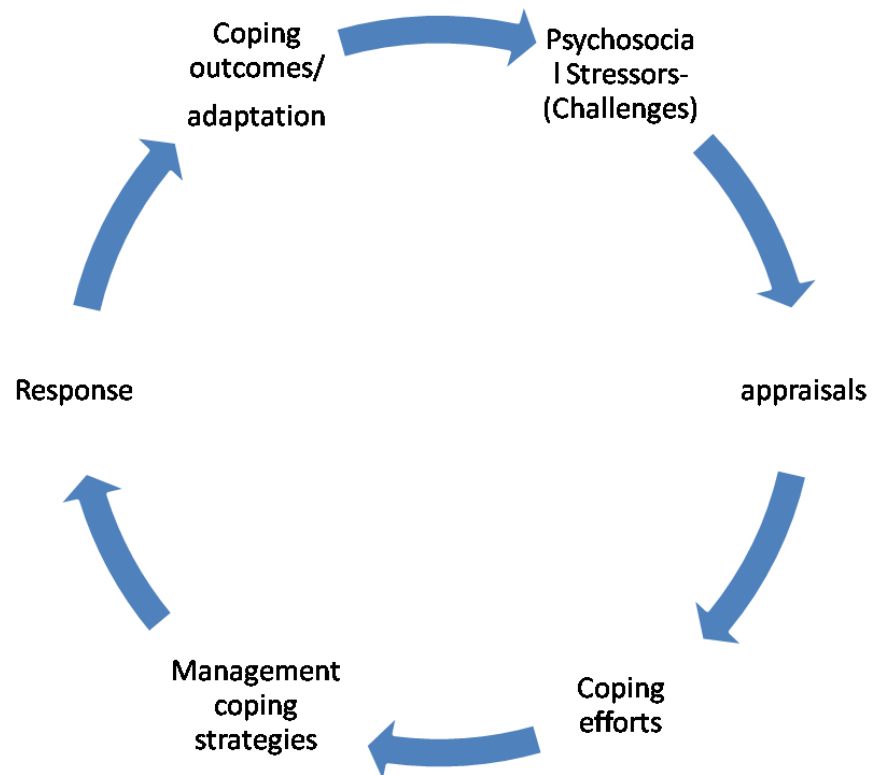
Lazarus (1966) argued that the human experience of stress was subjective and that the levels of stress were influenced by the way in which people view their situation. This theory became known as the Transactional Model of Stress and Coping (TMSC) (Lazarus, 1984). The transactional model deems stress as a two way process; the external/environment produces stress and the individual finds ways to deal with this. The transactional model suggests that an individual's perception of capability interacts with cognitive appraisal of the threat.

Others have focused more on small daily stressors or “hassles”. Findings have elicited daily hindrances are often more problematic than major life events (Kohn et al., 1994; Brantley & Jones, 1993; Lazarus, 1984; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). Lazarus suggested that daily hassles cause more stress than do more significant life problems and in some cases small daily problems can accumulate until we feel we cannot cope.

It has also been determined that the response to stress, whether a major life event or a daily hassle, may be dependent upon the individual's dispositional characteristics, social support, beliefs and general experience (Lazarus & Folkman, 1984). Based on this, I felt that it would be beneficial for me to investigate other frameworks that dealt with health beliefs and their potential impact on behaviours or coping efforts. Two of the most influential models of health belief and behaviour are the Health Belief Model (HBM) and the more recent Stages of Change Model which

is also known as the Transtheoretical Model (TTM) since it was an attempt to integrate the influences of multiple health belief and behaviour theories into one framework.

Figure 1 Stress and Coping



Adapted from Transactional Model of Stress and Coping, Lazarus and Folkman (1984)

### 2.2.3 Health Belief Model (HBM)

The Health Belief Model (HBM) is a psychological model that attempts to explain and predict health behaviors. Its premise focuses on the attitudes and beliefs of individuals. The HBM was first developed in the 1950s by social psychologists Hochbaum (1958) and Rosenstock (1990). To date, the HBM has evolved gradually and extended to involve people's responses to symptoms (Kirscht, 1974) and has been adapted to explore and predict a variety of long and short term health behaviors (Ogden, 2007). The model consists of four constructs; perceived

susceptibility, perceived severity, barriers and benefits, representing the individual's assessment and/or appraisal of risk, seriousness, and negative and/or positive consequences respectively. The HBM has been one of the most widely used conceptual frameworks to guide health behaviour interventions, explain change, and account for maintenance of health-related behaviour.

#### 2.2.4 Transtheoretical Model (TTM)

The Theory of Change or Transtheoretical Theory (TTM) is a psychological model that attempts to explain or predict an individual's success or failure in achieving an anticipated health behavior change occurring over time. This conceptual model infers that change is a process involving progress through a series of changes which integrate cognitive and behavioral processes and principles of change (Prochaska, 1979,1997). Six constructs are identified within this model, including pre-contemplation, contemplation, preparation, action, maintenance, and termination.

TABLE 1 Comparative Analysis of Transactional Model of Stress and Coping, Health Belief Model, and Transtheoretical Model

Transactional Model of Stress and Coping (TMSC)	Health Belief Model (HBM)	Transtheoretical Model TTM (Stages of Change Model)
Primary appraisal - What does this mean to me?	Value/expectancy	Self re-evaluation: - contemplation to preparation of the change of behavior process
Secondary appraisal (re-appraisal) Adjustment (psychological/behavior)	Value/expectancy  Adjustment (psychological/behavior)	Self-re-evaluation  Adjustment (psychological/behavior)

## Comparative Analysis of Health Belief and Behaviour Models

Like the TMSC, both the Health Belief Model (HBM) and Transactional Model (Stages of Change Model) are based on an individual's perception or appraisal of at least a potentially disruptive condition, and the possibility of responding to, or coping with, this circumstance through a change in perspective or behaviour. In the Transactional Model change takes the form of psychological adjustment identified as coping strategies that can be either behavioural or emotion-based. Psychological adjustment is also central to both the HBM and TTM frameworks, but mainly as the basis for considering health related actions (HBM) or behaviour change processes (TTM) (Figure 1).

It appears that all three models (HBM, TMSC, TMM) are based on a value-expectancy theory where the value is essentially an appraisal or assessment to answer the question "What is the meaning of this?", and the expectancy is the answer to the question "What is the likely outcome of my response?"

## Cognitive Appraisal of Stressors

Understandably, there are many concepts with respect to "coping" responses and as many controversies. However, early models fail to explain why some individuals experience stress in specific situations, while others do not. Later models take more account of other factors, such as individual differences and localized environmental factors. Ultimately both the HBM and the TTM deal primarily with the influence of a threat appraisal on an individual's behaviour (potential or actual). In contrast, the Transactional Model deals with the influence of an external threat on either an emotional and/or behavioural coping response. This level of stress is construed as a person-environment transaction and is based on how the individual appraises the situation cognitively.

This cognitive appraisal is a two factor assessment which consists of a primary and secondary appraisal. A primary appraisal involves evaluating the situation and/or event and determining if and what level of threat or personal risk it poses. Primary

appraisals include determining the susceptibility and severity of the threat as perceived by the person. Secondary appraisal involves the person evaluating the perceived control of the stressor/challenge/threat, and ascertaining if they have options and/or the personal resources (physical-health, social-support, psychological-self-esteem and economic-money) to meet or confront the perceived demands.

TSCM encompasses cognitive, affective and adaptive (coping) responses that arise out of person-environment transactions and is described as a mediating process of cognitive, motivational and relational expression (Lazarus, 1984). In scenarios of stress, the response is fluid – constantly shifting re-appraisals based on new information. These re-appraisals both primary and secondary are mediated by coping strategies (Lazarus & Folkman, 1984; Lazarus, 1990) which are comprised contextually of coping efforts, namely having the nature of a problem management focus and/or an emotion regulation focus.

#### Coping Responses – Problem and Emotion Focused Coping

The cognitive or problem solving coping effort involves thinking through the situation (stressor) that is causing stress and taking specific steps to arrive at a solution, to re-structure, manipulate or arrange the stressor (in your mind) so as to alter the stressor to a non-stressor event or at least so it becomes manageable. Whereas emotion focused coping efforts are directed at changing the meaning of a stressor, thus attempting to reduce the emotional distress perceived by the individual.

#### Coping Outcomes – Adaptation

These coping efforts are then transcended into coping outcomes (emotional well-being, functional health status and health behaviour) which in effect represent a person's adaptation and/or adaptive response to the particular stressor. In addition, within the TMS model, moderators identified as a person's dispositional (characteristic) coping style and his or her perceptions of social support affect the cognitive appraisals, coping efforts and outcomes. In effect, these moderators

influence all of the components and/or constructs of the TMSC by placing personal meaning to the stressful event (meaning based coping) such as positive re-appraisals and/or events, goal revisions and spiritual beliefs.

The TMSC model embodies cognitive appraisals of stress or what is perceived as a threat, what is perceived as within our control, what is the adaptive response and/or outcome and how the moderating effects of personal dispositional characteristics contribute to the process of coping with perceived stress.

In studies where stress is conceptualized as hassles, it is described as encompassing a larger spectrum of possible sources of stress (Kanner, Coyne, Schaefer, & Lazarus, 1981). Hassles are defined as irritating, frustrating and distressing demands placed on the individual. These hassles can range from everyday transactions that are repeated, consistent and predictable (for example, a daily commute) and/or unexpected situational minor annoyances (for example, a road closure) to fairly major pressures, problems, or difficulties (for example, a traffic accident without injuries). Kanner and colleagues suggest that many hassles have their origin in the dispositional (characteristic) style, or routine environment or their interaction (relational). Hassles have been described as affecting an individual's physical and psychological health adversely to the point in some cases exceeding that of major life events (Weinberger, Hiner, & Tierney, 1987). In two separate studies, Kohn et al. (1994) found that the adverse impact of hassles on perceived stress was diminished when problem focused coping was utilized and that emotion focused coping exacerbated the adverse impact. However, other studies have shown that coping usually includes both functions (Lazarus & Folkman, 1984) regardless of the stressor.

## **2.3 Tooth Loss and Dental Implants**

### **2.3.1 Tooth Loss and its Impact**

In 1993, one-third of non-institutionalized adults 65 years of age and older reported having lost all their natural teeth (National Center for Health Statistics, 1994).

Removable prostheses continue to be used commonly to replace missing teeth, particularly as the number of remaining teeth is reduced. The subjective experience of using a removable prosthesis for tooth replacement can be profoundly disabling, leaving some individuals to seek dental implants in an attempt to stabilize the artificial teeth. Davis, Fiske, Scott and Radford (2000) examined the association between edentulousness and psychological health and the social well-being of patients. Using qualitative methods they were able to show people equated the loss of their teeth with changes in their lifestyles, feelings of bereavement, loss of self-confidence, concerns about their appearance, and being less able to accept the inevitable change in facial shape which occurs following the loss of teeth. It was also noted that their quality of life, in terms of psychological health and social well-being, had been affected by the loss of their teeth. Most participants felt that they had been ill prepared for the loss of their teeth and would have appreciated the 'opportunity to talk to someone who had experienced tooth loss' as a possible way of coping with losing teeth (Davis et al., 2000).

### 2.3.2 Dental Implants to Stabilize Artificial Teeth

Dental implants offer the attachment of artificial teeth directly to jawbone, and some suggest that oral implant prostheses can improve the quality of life of older adults compared with traditional dentures without implants. (Zarb & Schmitt, 1994). Initial studies of oral implant outcomes in older adults have focused on implant longevity and other physiological outcomes rather than on psychosocial concerns (Bryant & Zarb, 2003). There is good evidence of the safety of 5 or 6 oral implants to support a rigidly fixed prostheses to replace all the teeth (Adell et al., 1990; Bryant et al., 2007). Completely edentulous jaws can also be managed with potentially more cost-effective removable overdenture prostheses using fewer implants (Zarb & Schmitt, 1996). These studies found implant longevity of 80-95% over 15 years.

As with any prosthetic intervention, it is also known that ongoing adjustment and hygiene are usually required to maintain utility of a dental implant prosthesis. Although highly variable across studies (Bryant et al., 2007), the evidence generally

indicates that aging adults with dental implants will experience a substantial frequency of prosthetic and component fractures or other maintenance, complications or replacement that could require costly professional intervention.

## **2.4 The Psychosocial Impact of Dental Implants**

From the psychosocial perspective, preliminary studies have suggested that the benefits of oral implant prostheses stem from improved prosthesis stability leading to perceptions of satisfactory comfort and function, and of psychological and social well-being (Kiyak et al., 1990; Kent & Johns, 1994). Economic analyses found significantly greater time and costs associated with fabrication and maintenance of oral implant prostheses compared to prostheses without implants (MacEntee & Walton, 1998).

More recent prospective studies among completely edentulous adults using standardized questionnaires for example the Oral Health Impact Profile (OHIP) reported statistically better quality of life from mandibular (lower) implant prostheses compared to complete lower dentures without implants (Allen, McMillan, & Walshaw, 2001), although there remains some question that the OHIP can provide a valid assessment of quality of life in the context of oral health (Brondani & MacEntee, 2007). In this study it substantiated perhaps an improved aspect of quality of life with respect to physical functionality such as chewing and smiling.

Participants in this study exhibited a number of emotional and psychological responses in their answers to questions during the various interviews. At first, I anticipated rather unsurprising descriptions of physical problems encountered by the participants with respect to the cleaning and care of their dental implants. However, the responses included many unexpected concerns which were evidence of a larger number of concerns which were psychological in scope. These were concepts/themes of acceptance, rationalization, resignation, avoidance and disengagement developed on theoretical constructs of emotions such as dissatisfaction, helplessness, disappointment, disillusionment and other feelings.

These are listed and described in detail in Chapter 4.3 and 4.4, and in the Definition of Terms listed at the outset of this thesis.

## **2.5 Literature Review Summary**

In summary, the experience of aging and its impact on the mouth can be determined both on a physical and psychological/social level. The psychological or social process of managing a disruptive condition is considered “coping”, and “adaptation” is the outcome of these coping efforts (Wenzel, Glanz, & Lerman, 2002). Preliminary studies have suggested that benefits of oral implant prostheses include prosthesis stability and functionality (e.g. chewing, smiling). The three models examined in the literature review provided a basis to understand how the participants in this study interpreted and responded to the challenges identified and how each individual coped or managed with these challenges. However, not one of these models was “designed with dentistry in mind” (Marshall, 1993). Hence, there is little in the way of dental literature to address the theoretical basis for these subjective concerns/issues. Although several questionnaires have been developed to address “stress and coping” (e.g. “Ways of Coping”, (Lazarus & Folkman, 1984); COPE, (Carver, Scheier, & Weintraub, 1989)) “more needs to be done in order to have an effective survey instrument for dentistry” (Marshall, *ibid*).

## **CHAPTER 3    Methods**

### **3.1    Methodology**

I conducted a qualitative, multiple case research study based on personal interviews with the purpose of attempting to understand the challenges or problems experienced by aging adults in the care of their dental implants. The case study method is identified by Yin (1994) as a useful method to investigate a contemporary phenomenon in its real-life context. My research suggests that aspects of dental implant maintenance are experienced as a contemporary phenomenon of daily hassles. I will elaborate on this in the findings and discussion chapters. Yin also asserts that the case study method is useful in refocusing on a neglected area of research, such as in my case to investigate the relatively poorly understood subject of long-term challenges among aging implant patients. The design allowed me to consider contextual factors that made each “case” unique while also allowing me to look for themes that repeated across several cases. The utilization of a multiple case design allowed my study to be considered robust and rigorous as it permitted me to achieve a comprehensive overview of this specific area of concern in my study, develop more general theoretical statements, and provide a rich context for understanding this phenomena (Fidel, 1984; Zach, 2006).

In 1996 a symposium held by the International Association of Dental Research (IADR) addressed the application of qualitative research in oral health. According to researchers presenting at this forum, social and psychological disciplines were being examined from a predominantly numeric (quantitative) measurement strategy despite the fact that many of the underlying issues of these disciplines were “superficially quantitative” and could not be simply and totally reflected by this methodology (Gift, 1996). It has been acknowledged by several researchers that much of the challenge of health care is social but the irony is that the primary research of socio-medical/dental problems is nonetheless focused on technological aspects and clearly reduces the analysis of data to mechanical observations and results. (Gift, *ibid*). Yet, more qualitative methods such as interviews can provide

more social/psychological information. Subjective information as perceived by individuals can assist us in determining factors that lead to (or cause) the outcomes of quantitative results. Results of a search of dental literature qualitative research conducted by Kathryn Atchison (1996) yielded 6 qualitative research studies out of 1,518 dental research publications. Although the search was conducted 13 years ago, it demonstrates the predominant focus on quantitative research.

### **3.2 Participant Selection**

Participants were selected purposefully to include adults 60 years of age or older who presented with a minimum of three dental implants placed more than 5 years prior, and were fluent in English conversation, thus allowing us to talk with one another effectively during the interview. Participants were also selected with the general purpose of including different perspectives such as both male and female individuals, and upper and lower and fixed and removable prosthesis types.

I used purposive sampling which allowed me maximum variation in guiding me in my sampling decisions (Sandelowski, Davis, & Harris, 1989). In this study, purposeful sampling implies the deliberate attempt to different perspectives on the perceived challenges/ problems/ events of participants (Troost, 1986; Crestwell, 1998), thus providing the information needed to answer my research question.

To accomplish this, a participant recruitment poster (APPENDIX A) was placed in several dental offices that maintained implant patients. This poster described my study, the requirements of interested participants, and included my contact information. I contacted any potential participants and determined if they met my selection criteria and were willing to be interviewed. Consent Forms (APPENDIX B) were sent out two weeks prior to the interview. Immediately before the interview, the completed consent form was reviewed with each participant to ascertain that the conditions set out in the consent form were understood, agreed to, and signed by the individual. Any questions by participants were addressed at that time. A brief

written overview “Interview Protocol” (APPENDIX C) and the “Unstructured Interview Guide” (APPENDIX D) was shared and verbally reviewed with each participant.

The protocol was approved by the Behavioural Research Ethics Board (BREB) at the University of British Columbia (UBC).

### **3.3 Data Collection**

Data collection included a review of dental history documentation and semi-structured interviews.

#### **3.3.1 Dental History Documentation**

Dental records of individual participants were reviewed. This process confirmed that the participant met the criteria as set out in the advertisement flyer. This is also described in Participant Selection 3.2. This information also augmented the validity of the initial processing of participant selection in that the basic oral condition was confirmed. This review of dental history documentation was carried out with the permission of the practicing dentist and participant.

#### **3.3.2 Interview Protocol**

In preparation for this research I designed a guided interview protocol (APPENDIX C) for use in conducting my interviews. In this study, a “guided interview” was defined as a semi-structured interview guide with open-ended questions. The initial interviews included questions that attempted to explore long-term subjective experiences of perceived challenge/stressors/ concerns/issues as it related to the self-care of their dental implants. The guided interview was meant to encourage participants to discuss their opinions and experiences, provide a focus for the interview and at the same time allow for the conversational style described by Patton (1990) (APPENDIX D – Unstructured Interview Guide). One-on-one interviews were conducted with individual participants in the privacy of a dental office meeting room or at a non-public location of the participant’s choice. In either case, the setting was convenient and familiar so as to provide a comfortable and trusting environment for

them to give meaningful and relevant responses to the research questions. To enhance rigor of the data collection process, all interviews were recorded and transcribed verbatim (Willms, Best, Taylor, Gilbert, Wilson, Lindsay et al., 1990). The tape-recordings and transcripts of each interview were reviewed by myself several times to become familiar with their content and to identify the key issues, challenges, or problems described.

### **3.4 Validity**

Validity was enhanced by the triangulation of data types including:

- a) Member checking
- b) Interview/re-interview data
- c) Analytic memo-ing
- d) Reflexive journal

These techniques of “triangulation” of information from diverse sources and varied times co-validated the interview data and thus confirmed the reliability/credibility of my findings and interpretations. (Maxwell, 1996)

#### **3.4.1 Member Checking**

As a form of member checking (Guba & Lincoln, 1989) a written summary of each interview was constructed and given to each participant to review for clarity and accuracy. One week afterward, as previously discussed with the participants, a short follow-up telephone interview was carried out to confirm the accuracy of the interpretation of the interview summary. All feedback was noted and included in the data analysis in the form of written notes. This feedback assisted me in ruling out the possibility of misinterpretation of the meaning of what they said and the perspective that the participant had on their unique experience. This technique involved the participants in the interpretive process and thus demonstrated validity.

### 3.4.2 Re-interview Data

As necessary, follow-up interviews were also conducted in person for elaboration or clarification of terms and/or descriptions of challenges not originally understood by me, as well as elaboration of themes that arose from the initial interviews but not fully explored. (APPENDIX E - Unstructured Re-Interview ~ General Overview). All re-interviews were conducted with a revised interview guide to address clarification of terms and explore themes that were not fully apparent during the first interviews. (APPENDIX F - Unstructured Re-Interview Guide) New participants were added into the study as themes needed to be further investigated. For these interviews, I revised the interview guide. (APPENDIX G - Unstructured New Interviewee Guide (#2)).

### 3.4.3 Analytic Memo-ing

I also utilized the technique of “memo-ing” (Maxwell, 1996). This method refers to any writing that related to my research other than transcription or coding notes in an attempt to facilitate reflection and analytic insight. Memos were written in the margins of each individual’s transcript and included taking notes throughout the interview process on my thoughts/ideas and documentation of non-verbal behavior by the participant in an effort to further examine, develop and incorporate the information into the data analysis. This technique is described by Maxwell as a very “versatile tool” and assisted me to flag areas that needed further elaboration and/or more in-depth questioning as the interview proceeded, as well as developing ideas throughout the transcription process and thus assisted me to generate new questions for follow up interviews.

### 3.4.4 Reflexive Journal

A reflexive journal was used to allow me to identify and report my role in the process. This allowed me to keep track of my thoughts and report on the validity threat of becoming too close to separate my own views from those of the participant. In my interpretation of each participant’s words/dialogue contained in the interviews and the development of themes, I acknowledged my position and influence and thus

included my presence as the researcher in my interpretation. This assisted me in determining or identifying what I brought into the process that influenced the answers provided by the participants.

I am a dental hygienist with a focus in implant dentistry. With this professional background, my inclination is to teach patients about their oral care. Furthermore, the participants in this study knew my professional role, and so their inclination was to ask me about their oral care. Indeed, on more than one occasion the participants asked me for my professional advice about a concern, for example, wanting my help with how to clean part of their mouth with difficult access, or where to buy implant self-care products. However, my role as a researcher was to explore in as open a fashion as possible the participant's experiences without stepping into my professional role as a health care provider. The reflexive journal permitted me to document and understand my experiences with interviewing, and to better prepare to keep as open a perspective as possible as a researcher.

### **3.5 Steps in Data Analysis**

Data analysis included making the transcript manageable by organizing and coding the text of the transcripts, and discovering categories/themes and potential relationships within the text that formed the basis of results reported in the context of existing theory and knowledge on psychosocial response to the management of chronic conditions.

#### **a) Thematic Analysis**

Coding steps and Themes/Categories (Auerbach & Silverstein, 2003) included the following steps:

- i) Meaning condensation
- ii) Meaning categorization
- iii) Narrative structuring
- iv) Generating meaning through ad hoc methods

i) Meaning condensation:

Long statements from the transcripts and the memo-ing and reflexive journal notes were compressed into briefer statements in which the main sense of what was said was re-phrased in fewer words. These were referenced to the original text.

ii) Meaning categorization:

Quotes from the transcripts and from the meaning condensation statements were re-organized into several categories of information. This technique allowed me to reorganize quotes into several categories of information and identify many of the significant comments representing common subjective challenges related to the line of inquiry. Significant statements representing recurring and/or unique themes were identified.

iii) Narrative structuring:

In addition, I focused on the stories told during the interview and summarized their structures or plots. When there were no stories told spontaneously, this narrative analysis attempted to create a coherent story out of any life events and experiences described throughout the interview. This is presented as Research Participant Case Studies in APPENDIX H.

iv) Generating meaning through ad hoc methods

In utilizing ad-hoc techniques, I was able to respond to each particular situation and/or observation. This was in addition to the previous analysis process of categorization wherein more detailed recurring issues were within a larger/broader category. Noting such detailed patterns and clustering of the information helped me to see “what went with what”. Also, this technique allowed me to make contrasts/comparisons in an effort to improve my understanding of the challenges encountered by older adults in the self-care of their dental implants.

All the concerns by the participants were reported and then summarized on the basis of commonality between all of the participants’ concerns. Some of the

concerns, which I referred to as “challenges” were less recurring but were more suitable to report in terms of importance or passion of the participant(s). I had anticipated there would be several themes which would form the basis of the research findings. Thus, by using multiple sources of data and multiple perspectives to corroborate findings (triangulation), the validity of the findings was increased and the credibility of the research was improved. My proposed method was a dynamic one, and one that anticipated revisions of the interview approach originally planned.

## **CHAPTER 4 Findings**

### **4.1 Participants**

Based on six individual interviews and three re-interviews as well as six telephone confirmatory follow-up interviews, the findings described here constitute the results of the research undertaken. All themes were extrapolated and evolved from the individual and collective transcriptions of the interviews.

#### **4.1.1 Participants - Overview**

Six individuals participated in the research study; 3 women and 3 men. All were retired with the exception of one man who owned his own business. All six of the participants were Canadian Caucasians. Three were former teachers, two were homemakers, and one was a business man. The women's age range was 74 to 91 and the men's age range was 73 to 77. All participants claimed to be in good health despite many aging somatic changes. All lived independently and were financially comfortable. Four participants were co-habiting with their spouse and two (female) were widows. All had been married over 35 years. Five participants felt a strong sense of emotional (family), social (friends) and financial support.

However, one woman participant stated she had little emotional support from her husband. He was quite negative and often reminded her that "he told her not to have dental implants". Also, she indicated that she did not discuss much about her dental implants with her children due to embarrassment. She acknowledged that her children knew about the financial and time commitment but not the emotional aspect of her endeavour. They were only at liberty to discuss her immediate feelings and pain as expressed by their mother at her discretion. A brief summary of the participants' comments are presented in TABLE 3 for ease of comparison during the analysis phase of this study.

All of the participants lived in Vancouver, British Columbia. Most were physically active with various hobbies including golf, bridge, writing, playing team sports and

travelling abroad. Participants presented with a variety of implant retained prosthesis including: maxillary fixed, maxillary removable bar/overdenture, mandibular removable bar/overdenture and fixed individual implant prosthesis. All participants who were involved in the study had their implants for 16 to 23 years. All participants were involved in a three to four month implant re-care hygiene maintenance program. This in part was either the arbitrary choice of the participant or the recommendation of the dental practitioner.

## **4.2 Challenges to Oral Implant Self-Care**

### **4.2.1 Preliminary Findings**

Preliminary findings of the pilot study indicated that initially participants perceived their challenges mainly on a physical level such as difficulty in accessing compromised areas, and accessing retail dental aids used to clean/care for their dental implant prostheses effectively (Chapter 1.2 Preliminary Research to Explore Self-care Challenges). In addition, accessing professional care to manage urgent problems with dental implant prostheses such as replacement of worn components or restoration of prosthetic failures while traveling abroad, also posed unexpected challenges. Pain was also identified as a persistent and chronic challenge by one of the three participants. Another major concern expressed by some participants and their spouses was anxiety over who would assist in maintaining the dental implants should they be unable to due to a loss of their independence.

### Description of the Challenges

#### Cleaning difficulties

The participants initially indicated that an unexpected outcome was the physical maintenance of their dental implants. They indicated that physical access, and time commitment to self cleaning and professional maintenance was much more challenging and demanding than the maintenance of natural teeth. All presented with areas of compromised access which made it difficult to clean around the implants. For example, both the woman (Golf) with a removable lower over-denture

and the man (Gardener) with a fixed upper prosthesis described difficulty with cleaning their implants because, “I can’t see in there”. Another participant, Baseball, exclaimed, “You have to do this highly complex flossing that’s awkward and difficult to do!”

Also, Gardener described, “This one here ... I really have to poke it [specialized floss] up in there”. One other female participant expressed that her hands did not function as well as they use to due to joint pain, so she also had difficulty getting access to clean. It was initially very challenging for participants to learn how to care for their dental implant prostheses. All participants who presented with removable prostheses stated that learning how to care for their dental implants was a challenge. For example, “... learning how to take them in and out was a challenge”. However, it was expressed that “it is easier now [to take care of them] than in the beginning”.

#### Access to specialized products

Another challenge that surfaced was that specialized dental implant care products were difficult to find in stores in the city. This frustration was shared by others, as more than one participant stated, “... a major concern is finding the [product] ... [it is] not available here”. Another participant went as far as stating, “... if you would invent an instrument that I could use at home, ... that would solve a lot of problems”, and “... none of them [dental aids] works like yours”. Several participants complained that specialized dental implant care products were difficult to find in retail stores. Golf expressed that there is a lack of effective dental implant cleaning aids. She admitted to having “different things [dental aids]” but continued to say that “none of them work”. Gardener expressed “[his] major concern [was getting] the heavy duty red floss”. He continued to say that he was unable to find it in Vancouver and had to go to the USA in order to get it.

### Access to dental professionals abroad and at home

Two participants, one male and one female, felt that "... travelling abroad can be a challenge and also upsetting ... as there is great difficulty in finding the dental expertise that is required... [to replace and/or repair worn or fractured components]". One participant who presented with a removable lower over-denture, while travelling experienced having an "O-ring" failure and was unable to wear her denture. After many attempts in describing her dilemma to various dental offices not one could assist her in providing this small but critical component, nor could they refer her to an office that could assist her. In another instance, Gardener had a front tooth fall off his fixed prosthesis while in London, England. He was able to find a dental office that could "re-glue" this tooth but was quoted an exorbitant fee for this service. Therefore, he opted to wait until he returned home to Vancouver only to find that his dentist was on vacation for two weeks.

### Prosthetic failure

The above two incidents were reflective of two separately identifiable problems. Firstly, the prosthetic failures themselves, which required the search for the suitable dental professional and secondly, the difficulty in locating dental professionals who could be contacted for implant care. Prosthetic failures are at this time, not uncommon but the failure of such items while out of contact with one's regular dental care provider make the difficulty much more intense and frustrating.

### Pain

One participant who presented with lower implants and bar/overdenture complained her "gums ached" for no apparent reason. For example, "... sometimes my gums start aching and I just have to get them [overdenture] out of my mouth". Golf said that her mouth ached all the time.

### Future care

Preliminary findings also indicated that the female participants, including the spouse of the male participant, were more concerned about who will assist them or

their spouse in taking care of their dental implants should they be unable. As stated by the male participant, Gardener, "... my wife says ... how am I going to get in there and clean those damn teeth [should anything happen to you]?" A female participant is quoted as saying, "The thing that worries me the most about having them ... is if ever I had a stroke or something and go in a hospital and these things (she points to her lower overdenture) are not easy to get in and out ... [that is] my biggest worry." Another participant stated, "Could you imagine being in a home, where someone is cleaning my teeth?" All participants believed their children would assist them in their daily care.

### Positive Outcomes of Implants Despite Challenges

Despite all of the physical challenges identified by the participants in the preliminary/pilot study all three participants felt fortunate and thankful that they had dental implants. All compared them to what they had previously. All had previous experience with partial dentures that "didn't fit" or "was causing trauma to their remaining teeth and gums". In their opinion, their partials had not been as functional as the implants. Also, the partials had caused many embarrassing moments, such as, "...anytime prior to this [dental implants] any attempt to eat an apple was doomed, my partial would flip out [embarrassing], which made it impossible to eat an apple" [non-functional].

All participants expressed that they had a higher level of awareness as to the importance of their oral-care. For example, "... because of the dental implants, yes, that spurred me on ... I realized I had to do it far more effectively than perhaps I would have if I didn't have them". All participants agreed that taking care of dental implants had to be a "priority", and therefore much time and effort both on a daily basis and a professional level with minimum quarterly implant hygiene appointments were deemed by the participants to be important. For example, "... they are number one on the list ... first thing in the morning, every time I eat, last thing at night", "I do more than I would have normally because I am concerned with them".

Most participants presented with good dexterity when it came to their self-care, and all agreed that good dexterity is a must. As one participant stated, "... practice makes perfect". Another said, "...I have pretty darn good dexterity". However, one participant did say, "... hands do not function as well as they use to due to joint pain but [it] does not effect [the] care of my implants that much at this time". All participants followed recommended implant therapy protocol and were professionally monitored and supervised every 3-4 months.

Also, based on the initial interviews all participants enthusiastically endorsed dental implants. For example, "Yes, I would have it done again". All would recommend dental implant therapy to others. Participants are quoted as saying, "... the pluses outweigh the minuses", "... my first reaction to getting these implants was wow", " I try and impress upon [others] they have a choice to get dental implants", and "... you are no longer thinking of any inconvenience or difficulty [experienced with dentures].

### Preliminary Conclusions

In summary, I determined that further research was warranted in identifying patient perceptions of the challenges posed by care of oral implants, and how they coped or managed with these challenges. Therefore, re-interviews were conducted with three of the original participants (APPENDIX E) and with three new participants utilizing a revised interview guide (APPENDIX G) addressing their perceived challenges and management or coping strategies.

Essentially, on further reading of the transcripts, I was able to better characterize participant comments which described a more emotional response and were much more encompassing than merely describing the physical challenges encountered during their ongoing care. These and additional themes were deduced and explored in the subsequent interviews and re-interviews. The themes of a more emotional response/involvement were unexpected at the outset of the research. In addition, emotion focused and problem focused coping and management strategies were

found to be utilized by all participants. Therefore, I combined the challenges identified in my preliminary study and placed them under general overarching themes and developed these into theoretical constructs. These themes and constructs are described in the following sections.

Overall, after further scrutiny of the initial challenges described above, and the challenges that were further identified in the re-interviews and new interviews, various psychological, social, and coping themes emerged. Most individuals in this study appeared to have some level of emotional (secondary) response to their primary appraisal of their perceived challenge. These included (but were not limited to) emotions/responses such as frustration, embarrassment and disappointment. These responses appeared to lead to a cognitive dissatisfaction based not only on inaccessibility, prosthetic failures, and pain, but on other aspects as well.

#### 4.2.2 Psychological Stressors (Challenges)

##### Emotional Responses to Physical Challenges

The challenges that were encountered were discussed above mainly as physical challenges. On balance, their positive appraisals lead to feelings of overall satisfaction with their prosthetic results despite the physical challenges. However, as noted it became evident that the physical challenges were further appraised and interpreted negatively by the participants revealing various aspects of emotional dissatisfaction. In this context, these challenges were more specifically defined and were described as:

1. Difficulty with Cleaning Strategies
2. Barriers to self-care
3. Difficulty in accessing professional care
4. Prosthetic failures
5. Pain
6. Concerns for future care

In this process the challenges were further appraised and interpreted by the participants as psychological stressors elucidating a more emotional, psychological and social response/level and are described as:

Frustration

Embarrassment

Disappointment

Apprehension

The core categories of the participants' emotional responses were identified as frustration, embarrassment, disappointment and apprehension. Definitions from the psychology literature are referenced in the Definition of Terms listed at the outset of this thesis. Difficulty with cleaning strategies, barriers to self-care, barriers to professional care, prosthetic failures and pain were described variously as frustrating, embarrassing and disappointing. Concerns for future care appeared to cause a sense of apprehension. Detailed evidence of the positive and negative appraisals of stressors is given in the next section.

TABLE 2 Participants' Comments Tabular Comparison of Physical Challenges

	<b>GOLF woman 79</b>	<b>BRIDGE woman 84</b>	<b>GARDNER man 74</b>	<b>BASEBALL man 72</b>	<b>BW woman 91</b>	<b>OPERA man 73</b>
<b>Physical Challenges</b>  - can't see - can't reach - difficulty to get dental repairs when travelling - prosthetic Failure - pain	Difficult access Can't see Gums ache daily O-rings tight - pain Difficulty locating dentist while on vacation Can't locate cleaning aids	Joint pain, goiter, neck pains, cramps, dizziness Care is tedious & time consuming	Access is hard Orders special floss	Complex flossing – awkward & difficult Can't see Difficult access	Hand & joint discomfort	

TABLE 3 Participants' Comments Tabular Comparison of Emotional Challenges

	<b>GOLF woman 79</b>	<b>BRIDGE woman 84</b>	<b>GARDNER man 74</b>	<b>BASEBALL man 72</b>	<b>BW woman 91</b>	<b>OPERA man 73</b>
<b>Emotional Challenges</b>	Mouth not as comfortable as it used to be		Frustrated - teeth fell off when in Europe	Access, cleaning – is frustrating & boring		Constant repairs of o-rings; conflict between dentist and o-ring technician
- Dissatisfaction	Constant repair of o-rings		Ongoing repairs. Re-glue teeth	Impatient		Unhappy with poor communications
- Frustrations	Mouth is sore all the time		Embarrassing to get food stuck in teeth at dinners with friends/family	Cleaning up is a huge disposition		Always cleaning is frustrating
	Chronic nuisance of trapped food		Dentist poor communication re problems	Guilt at not doing better		(Worried that people will see food debris)
	Spouse lack of support		Embarrassed to smile			What you get is not what you expected
-Embarrassment	Dentist not listening		Concerned when wife might just yank his implants out if he becomes unable to clean them			Very expensive, and not happy with the final implants., and did not get what he expected. Plus costs of o-rings
- Apprehension	Uncertain how to clean		Bone loss around implants			
- Disappointment	Stayed inside for entire 3 weeks of vacation when lost o-ring					
	Afraid to smile, afraid to kiss her husband					

TABLE 4 Participants' Comments Tabular Comparison of Psychological Challenges

	<b>GOLF woman 79</b>	<b>BRIDGE woman 84</b>	<b>GARDNER man 74</b>	<b>BASEBALL man 72</b>	<b>BW woman 91</b>	<b>OPERA man 73</b>
<b>Psychological challenges</b>	Mouth not as comfortable as it used to be		Dental trauma as teenager			One implant extracted due to infection
- Satisfaction and Dissatisfaction	Constant repair of o-rings	Not concerned about this now	Embarrassed to smile	Access, cleaning –is frustrating & boring		Constant repairs of o-rings; conflict between dentist and o-ring technician.
- Frustrations	Spouse lack of support	(Not worried for future care)	Travel- teeth fell off when in Europe	Impatient		Unhappy with poor communications
- Helplessness	Not been forewarned by dentist of pain & cracking		Painful bone loss	Cleaning up is a huge disposition		Always cleaning is frustrating - (Worried that people will see food debris)
- Powerlessness	Dentist not listening. Uncertain how to clean		Ongoing repairs. Re-glue teeth	Guilt at not doing better		Had requested something different but the dentist declined
- Disillusionment	Distrust dentist –he is learning as he goes along, using [me] as a Guinea pig		Lack of dentist's communication of breakdowns, before starting	Problems with dentures		Implants were 'experimentation personified'
- Depersonalization	Not advised by dentist of the large commitment for after surgery care and attention		Embarrassing to get food stuck in teeth at dinners with friends/family			What you get is not what you expected
- Financial distress	Afraid to smile, afraid to kiss her husband		Financial -expensive.	Cost was "frighteningly expensive."		New invention to cost \$20,000 (wrong device used before?)  Very expensive- and did not get what he expected. Plus costs of o-rings

TABLE 5 Participants' Comments Tabular Comparison of Coping and Adaptation

	<b>GOLF woman 79</b>	<b>BRIDGE woman 84</b>	<b>GARDNER man 74</b>	<b>BASEBALL man 72</b>	<b>BW woman 91</b>	<b>OPERA man 73</b>
<b>Coping and Adaptation</b>  - Acceptance  - Rationalization  - Resignation  - Avoidance  - Intellectualization  - Positive mental attitude	Leave in at night, feel a part of me  Removal for an hour for pain relief  Carries spare o-rings  Make the best of what we have  Positive mental attitude	Routine cleaning  Masher – removes at night as needed	Orders red floss in bulk  Maintains a joy of being able to eat <anything>	Rationalizes – makes deals with himself	Huge family gives support  Spiritual support  Does exercises to distract herself	Resigned –no other choice  Just get on with it – cleaning routine

TABLE 6 Participants' Comments Tabular Comparison of Overall Assessment

	<b>GOLF woman 79</b>	<b>BRIDGE woman 84</b>	<b>GARDNER man 74</b>	<b>BASEBALL man 72</b>	<b>BW woman 91</b>	<b>OPERA man 73</b>
<b>Overall Assessment</b>	Not happy about the whole implant experience	Pleased but would not want to go through it again	Advocate for implants, yet disappointed <contradictory>  Different outcome than expected			Overall dissatisfaction & disappointment

### **4.3 Appraisals of Stressors**

#### **4.3.1 Primary Appraisal - Positive Emotional Response**

##### **Satisfaction**

As a result of the generally positive prosthetic outcomes experienced by the participants, the participants generally reported a high degree of satisfaction with their implants yet complained of certain issues during the interviews. For example, one participant commented that “on the whole [he] has been more than satisfied with the 15 years of use...[however] you are not thinking what they are going to be like [functionally and financially] in 10 or 15 years”.

It is important to note that, overall the participants discussed that they had positive feelings in that they were pleased with the final result of having implants. They were happy to have more attractive teeth, very pleased with the ability to chew most foods in spite of being cautious with some foods, and generally enjoyed a feeling of greater confidence in social situations. On the other hand, the focus of this research was more negative in that it was initially to ask, were there any difficulties/challenges in the self-care of their dental implants, and the answers not so much as reflected but answered the question. So despite that a number of distinctive negative challenges were discussed, one must keep in mind that as an overview, most of the participants were pleased with their implants.

#### **4.3.2 Secondary Appraisal - Negative emotional response**

As noted, secondary appraisals elucidated an emotional response and further defined how the participants interpreted their physical challenges. This, in turn gave a more psychosocial theoretical construct that gave rise to an overarching theme, the theme of negative emotional response which included aspects of dissatisfaction, de-personalization, and financial distress.

## Dissatisfaction with aspects of dental implants

### 1) Inaccessibility

#### Cleaning Strategies

As identified in the preliminary findings, the participants initially indicated that an unexpected outcome was the physical maintenance of their dental implants. They indicated that physical access, and time commitment to self cleaning and professional maintenance was much more challenging and demanding than the maintenance of natural teeth. Upon re-interviews and additional interviews, further exploration of challenges indicated that in addition to the physical challenges such as areas of compromised access for cleaning (e.g. for flossing), and difficulty removing and inserting their removable prosthesis, psychological and social challenges were also identified such as the embarrassment in public to rid food stuck under the fixed/removable prostheses. I've generally included these under the theme of dissatisfaction, although the scope of negative emotion arising from the various challenges were somewhat more varied as will be discussed. Several participants expressed how awkward and "embarrassing" it was to go to the public restroom to remove food as it was both "painful" and upsetting. Opera explained that it is difficult to remove "this thing". He continued to say, "It's a trick getting it out...even the dentist has to work at it...so, [he pondered] would my wife be able to do it?" He expressed reservation in this thought but did say, "I just don't know if she'll be able to extricate it [if she had to do it]."

Under this same theme of dissatisfaction, another challenge identified by a participant, Baseball, was "to overcome the boring aspect of the necessary routine implant maintenance". Several other instances likewise gave rise to negative emotional responses. In her first interview, Golf said that the build up of plaque was one of her biggest problems in self-care. Golf, in her second interview is emphatic when she described the frustration she felt not knowing how to clean the implants thoroughly because she said she was not getting the information from the dentist. Likewise, Baseball expressed frustration and some anger that it was difficult to floss

so he avoided this task: “I can’t figure out how to do it, I can’t figure out how to hold it, I can’t see [in there] to do it right, it takes too much goddamn trouble...” He also had other medical care to attend to, so was angry that so much of these activities took up so much of his time and energy. Dealing with this frustration, he avoided doing the full range of his oral self-care procedures such as brushing and flossing. However, he did not entirely stop doing self-care because of his overall positive satisfaction of being able to eat almost normally with the implant prosthesis, which is something he had been unable to do almost all of his life. It appeared that on balance the positive benefit of implants was enough to motivate him to care at some level for his implants despite the frustration with doing so. Another participant, Golf, avoided smiling and was afraid to kiss her husband. In this case, her fear was identified as the negative emotion.

#### Access to specialized products

As noted, several participants complained that specialized dental implant care products were difficult to find in retail stores, and they also expressed negative emotions surrounding this challenge. For example, Golf expressed that there is a lack of effective dental implant cleaning aids. On questioning, she admitted to having various “different [of these] things [for cleaning her mouth]” but continued to say that “none of them work”. For these participants, the resulting frustration and discontent was moderately annoying. Golf also said the “only thing” she knows to clean them with is a “toothpick” but knows that this is not effective as she states the “plaque builds up easily”. This in itself “drives [her] crazy” and thus she finds herself using the toothpick as a “pastime when alone “. Gardener expressed “[his] major concern [was getting] the heavy duty red floss” (a thick floss designed specifically for implant prostheses). He continued to say that he was unable to find it in Vancouver and had to go to the USA in order to get it. On one hand, he can be considered an unusually motivated person to make this effort, but on the other hand, he would likely consider himself as “put out” by having to track down a simple product that should have been easier to locate and purchase.

### Access to dental professionals abroad and at home

The two participants, one man and one woman, who found it difficult to access urgent professional care while traveling, said further that essentially "... travelling abroad can be a challenge and also upsetting ... as there is great difficulty in finding the dental expertise that is required... [necessary for replacing and/or repairing components]". The participant who presented with a removable lower over-denture experienced having an "o-ring" failure while travelling and was unable to wear her denture. After many attempts in describing her dilemma to various dental offices not one could assist her in providing this small but critical component, nor could they refer her to an office that could assist her. This situation caused her much distress as she had no choice but to accept the fact that she would have to endure the discomfort and embarrassment of not being able to wear her overdenture. Literally, she would have to accept not having any lower teeth. Thus, not being able to wear her overdenture, she was unable to talk properly, eat properly or even smile. This certainly was not an expected or anticipated outcome of the very expensive implant treatment. The other participant, Gardener, had a front tooth fall off his fixed prosthesis while in London, England. He was able to find a dental office that could "re-glue" this tooth but was quoted an exorbitant fee for the service. Therefore, he opted to wait until he returned home to Vancouver only to find that his dentist was on vacation for two weeks. This situation caused much "disappointment and embarrassment" as he had to "wander around with a gaping hole in [his] mouth and smile".

### Prosthetic failure

Overall, four of six participants experienced on-going wear and fracture problems with their prostheses. Two of these (Golf/Opera) encountered and struggled with a chronic nuisance of o-ring difficulties and/or deterioration. As noted, Golf stated this loss rendered her unable to wear her overdenture, and so she was unable to eat or speak. She completely withdrew into herself and she said she hid away during her entire three weeks of vacation. This decision to withdraw and avoid any contact with

people was strongly influenced by her husband, who had not given her much in the way of emotional support for her decision to obtain implants in the first place.

Furthermore, because of this she was so distraught, frustrated and embarrassed that she hid away from any social engagements and activities and purposely avoided her husband whether it was on a more intimate level such as kissing, or just to talk to him. Because of this experience she now makes a point of always having a supply of o-rings and takes these with her while travelling in the hopes that she will be able to find a dental office that can assist her in the event she has a similar situation. This demonstrated that psychologically she was uncomfortable and unprepared to be seen “without her teeth”.

Golf further described that when the o-rings were worn she was unable to wear her overdenture, and yet when the o-rings were replaced her mouth ached even moreso, and found herself unable to take her overdenture out or put it back in. She stated this problem caused her extreme distress. She described this situation as a chronic annoyance. Similarly, Opera expressed his dissatisfaction with the constant wearing of his o-rings. He felt that he could chew anything until the o-rings “quit”. He described himself as having to put up with “starting fresh”, replacing them, and having the overdenture re-sanded. He was quite dismayed at not having any other choice but to endure this chronic annoyance.

Opera experienced numerous problems with the o-rings used to retain the upper overdenture. They kept wearing down due to friction and needed ongoing replacement. A laboratory technician explained to him that the o-rings were not designed to cope with his upper removable prosthesis. He struggled with this information as this was not his understanding of what he was told by his dentist. Because of this conflicting information, between the dentist and technician, he found himself in a quandary and state of confusion and dissatisfaction. He also dealt with the chronic nuisance, “[food] stuff gets stuck all over the place”. He felt that with his overdenture, “the creases of the teeth [act] like a magnet for debris”. He continued to

say that in his attempts to overcome any embarrassing moments, “I am always concerned that somebody that I’m talking to will see it [the debris]”. He continuously and obsessively cleans his implants and “keeps about 30 or 40 little hygiene brushes hidden” at his disposal so that “[he] can keep cleaning all day”.

As noted, another participant, Gardener, dealt with “teeth falling (fracturing) off the fixed prosthesis”. Gardener was in London England when he lost a front tooth while enjoying a bowl of “hard” porridge. He sarcastically made the point that he ensured to avoid chewing hard foods. However, that was only one of three times that he experienced having teeth break off his maxillary fixed implant prosthesis. He described these experiences as very disappointing and embarrassing.

### Pain

One participant experienced ongoing pain. As noted earlier, Golf remarked, “I find that my mouth is sore all the time...” and regrets, “Not having my mouth as comfortable as it used to be.” She continued to say “... I don't think the top and bottom are compatible” and expressed how this caused her great disappointment, distress and anguish. Gardener did not complain about ongoing pain, but he did convey having discomfort “to chew on one side”. He explains that his bite is off set and has “an imbalance in [his] bite”. He expressed how this caused him great discomfort and disappointment as he no longer could eat anything he wanted.

### Future care

Several participants also expressed a concern about who will assist them in taking care of their dental implants should they become disabled, and this was a great source of negative emotion expressed mainly as anxiety about the future. As noted earlier, Gardener reported that his wife expressed this concern about his mouth. She continued to say, “Let’s [just] yank them out”. This comment caused him much distress as he felt at this point his decision to go ahead with a much needed prosthesis replacement was not supported or understood by his wife. Furthermore, both Gardener and Golf expressed concern with the prospect of someone else

cleaning their teeth. Both were quite candid. Golf's concern was evident when she said "How many care givers would be in the position to know how to clean [the implants]?" Gardener categorically stated "Some how I can't imagine that there are that many Pilipino nannies or others that would be that knowledgeable or that skilful to do it. I really don't."

Although no participants felt their individual experience of aging created a challenge when it came to their oral self-care, at least at the present time, they did express a sentiment of concern and worry for the future similar to that of Gardener's wife. For example, Opera explained that it was difficult to remove "this thing" and doubts if others will have the ability to do it. On the other hand, Bridge said she will probably live with a daughter, who would be able to help her cope with cleaning her implants. Golf is another woman worried about who will clean her dentures if she becomes disabled. Initially, Baseball did not seem to consider this issue at all but did say that he wasn't sure how "that [the care] would work".

#### De-personalization

De-personalization is defined as an alteration in the perception or experience of the self so that one feels detached from their normal world and feels a vague sense that the world is less real. It is often described as being like an outside observer of, one's mental processes or body. It is a feeling of watching oneself act, while having no control over a situation and usually refers to the severe form found in anxiety and in the most intense cases, panic attacks ([depersonalization.net](http://depersonalization.net)). Participants described various aspects that I interpreted as elements that led to de-personalization. These are elaborated upon in the following three sections:

- i) Powerlessness (perceived lack of ability to influence any changes)
- ii) Disillusionment (Expectations versus Outcomes)  
(reality is different from perceived expectations)
- iii) Helplessness (perceived lack of control)

### Powerlessness

For this research study “powerlessness” is defined as the perceived lack of ability to influence any changes. This is caused by the feelings of frustration, disappointment, and disillusionment and helplessness due to the inability to express one’s concerns and at the same time feel safe in doing so.

When Golf expressed her concerns about her on-going pain and discomfort to the dentist, she felt dismissed and guilty for mentioning them resulting in a feeling of loss of self-worth. In discussing the situation further, she exclaimed “... so I think he has been learning as he goes along...using me like a guinea pig”.

Golf, in her second interview was emphatic when she described the frustration she felt not knowing how to clean the implants thoroughly because she said she was not getting the information from the dentist. She stated “then when [I] go to the [dentist], he never tells [me] anything about that”.

In another example discussed earlier in the context of dissatisfaction with prosthetic failures, Opera had to contend with a conflict between the dentist and the dental technician with regard to replacing o-rings (the mechanism used to stabilize the denture on the implants). According to the dental technician, the stress on the device was too great for the o-rings. However, when he discussed this belief with his dentist, the dentist shunned any such ‘conjecture’ and dismissed his concerns and/or any such attitude of the dental technician. This behaviour/reaction from his dentist made the patient believe that the device should have been different, and left Opera feeling powerless to seek an improvement to the prosthesis design if one were even possible.

Another participant, Gardener, implied that once a person has embarked on a program of implants, there’s no turning back despite unanticipated expenses. When there are unexpected costs, such as replacement components, these are not inexpensive. Replacement of the prosthesis and possibly implant replacement was

at least eight to ten thousand dollars depending on what would be found after the bridge was removed. Gardener reported further that he was unfortunately not prepared for this expense especially when the only reason he had implants in the first place was because he was offered discounted services as part of a dental implant study club.

Likewise Golf felt powerless and resentful because she remembered she had been told that the procedures were “going to be comfortable”. She recollected that both the dentist and the office manager had said to her, “there’s nothing to it”. However, she recalled encountering several frustrating issues - bruising and swelling, pain and discomfort following her surgery. She went on to further describe her experiences by saying “... the worst part of the whole [maintenance] process was those pictures that they take... they were awful. I mean they stretch your mouth to pieces...” Golf also indicated that she had major challenges to cope with the anger, frustration and resentment in not having been warned of the possible painful reality of the implant procedures.

#### Disillusionment (reality/outcomes vs expectations)

Notwithstanding the overall positive feelings that some of the participants expressed about their implant prosthesis, the statements made by other participants indicated that overall, their outcomes did not meet their expectations, at least in hindsight. I have classified this under the theme of disillusionment. Of course, from a prospective standpoint, patient expectations would need to be based on interviews prior to embarking on implant treatment. In this study, we are limited by having relied on participant perspectives and descriptions after the prosthetic work had been completed. Despite this limitation, it is evident for some of the participants that their subjective outcomes were less positive than retrospective recollection of the expectations.

For example, Golf was still not totally convinced that maxillary implants were the right decision for her. When asked, “Do you feel that it was the right decision for

you?” her answer was, “Probably [hesitates], yeah”. But she added, “If I could’ve kept my [upper] front teeth [2 central incisors] and gone with the dentures I would’ve taken that route rather than this”. She continues to say that the chronic nuisance of trapped food under her bar/overdenture causes her distress both physically, in that “it’s painful”, and psychologically, in that “It annoys me because I didn’t think that I would have to go through any of that”.

This theme of disillusionment is supported also by comments made by Opera; “First of all, it’s experimentation personified”. What the doctor envisions doesn’t necessarily give you what you’re going to get...” He explained, “I’ve spent about fifty five thousand dollars and I have this imperfect piece of equipment.” When asked how he feels about that, he replies, “Not good. I didn’t think it was going to be like this.” Later the same participant said, “...so here we are almost four or five years upstream since the first surgery and it ain’t (sic) exactly what it was supposed to be so I’m not too happy about that.” Later, he stated, “I thought it would be perfect.”

Along the same lines, Gardener claimed that dentists do not appear to be straight forward in discussing the longevity of their work – he is resentful that his dentist portrayed implants will last forever, but the reality is that “...things happen here and things break down.”

Another example of disillusionment is when Gardener said, “I had the implants done 15 years ago and a number of the teeth on this bridge have fallen off and had to be re-glued.” [The bridge has] “... been around a long time ” When the first implants were done, “there was no concern [discussed] for longevity” or wear and tear. Now, he is facing the challenge of dealing with a major repair and/or replacement of a major part of his implants.

The response of disillusionment resulting from outcomes not meeting expectations is also clear for Bridge when she said, “I just wouldn’t want to go through all this again.” She continued to elaborate and described her perception of implant

treatment. She expressed “when you wait to have this implant work done when you are older you really are not up to the task. The effort it takes is way too tedious, the time and commitment is all consuming and the treatment is years”.

As well, Golf remarked, “Well, I find that my mouth is sore all the time and I don’t think that should be.” Also she had experienced cracking noises in her jaws. In time this appeared to develop into a sense of unmet expectations resulting in disillusionment for the patient who struggled to understand why the dentist had not warned of different possible negative potential problems. She describes further disappointment by saying, “Well I guess it just bugs me that I have to go through this you know....not having my mouth as comfortable as it used to be.” She did not think that the dentist advised her that whatever expectations she may have had may not be met.

Golf summarized her overall discontent when she stated, “It’s not like you can go in and just go through this and two weeks later it’s finished. It’s like a two year process and you have to commit a lot of your time. The process was long and the financial part of it is high.” Basically, the financial commitment was a known commitment before the procedure; the amount of discomfort and after-procedure care was unexpected in this case. She said, “It’s not the same as having your own teeth that’s for sure”. A similar attitude and opinion seems to be shared by Opera who said, “...for the first three ... four months my brain kept saying get rid of this [implant denture]” . Later, his tendency to disillusionment was reinforced when he said, “...[it’s] not natural and my mouth doesn’t like it. I talk different, my smile’s different...”

Given the long time periods most participants had been using implant prostheses, it is perhaps not surprising that some also recognized that although their original view and expectations of dental implants were sufficient in their time, they had since changed such that the treatment outcome was viewed as insufficient now. For example, both Opera and Gardener identified that at that time in their life they

needed to believe that dental implants were better than what they had previously. However, disappointment and disillusionment are evident in comments such as “I still watch what and how I eat... [they are] not the same as having your own teeth”. Opera also commented on his disappointment that dental implants are “not impervious to day to day mouth care annoyances”. When asked “Are you satisfied with the final outcome”? He replied very quickly and succinctly, “No”! He carried on to say that dealing with them [overdenture] is an on-going problem and disappointing ...this [problem] isn’t going to go away unless I go away first”.

Overall, the participants expressed disappointment and disillusionment, by letting their feelings out during the interviews but they were also aware of, and able to discuss, their upset feelings. For example, when Golf described her ongoing pain and discomfort, she expressed being frustrated that the outcome of the implant process was not in accordance with her expectations. Resulting from the frustration, she expressed her disappointment, disillusionment and resentment numerous times. Essentially, she was not happy about the whole implant experience and indicated a “blend” of coping methods: resignation, acceptance. An example of resignation was when she stated, “Well I had the bottoms (the implant denture for her lower jaw) in for quite a few years now. So if I’m not used to them now, I’ll never be used to them”.

#### Helplessness (perceived lack of control)

For this research study “helplessness” is defined as the person’s feeling of perceived lack of control over their experience of not having their queries about chronic day to day challenges acknowledged let alone addressed. Several participants expressed such feelings of helplessness.

For example, Opera felt helpless when he developed anxiety and claustrophobia during surgeries and had to self-medicate himself with prescribed anti-anxiety medication to be able to withstand the stress of a long surgery. He went on to explain how he had to anticipate each surgery, estimate the amount of his medication and cope with these feelings of anxiety, all apparently without

acknowledgment from the dentist. In addition, as noted in the section on powerlessness, the dental technician later indicated that the stress on the prosthetic device was too great for the o-rings. However, the dentist shunned this idea as “conjecture”, leaving Opera feeling powerless to make any changes. This powerlessness appeared to have lead Opera to express feelings of helplessness.

Golf found that her situation was nearly intolerable as she described that in several instances, the dentist was condescending in speaking to her. Her ongoing challenge in this context was anytime she brought a distressing challenge, such as her experience of jaw cracking and chronic lower jaw pain, to the attention of the dentist, she found herself having it summarily dismissed as a non-issue. The result was a feeling of loss of self-worth. This appeared to give her a sense of helplessness as she described her perceived lack of control was due to the overbearing/domineering attitude of her dentist. Secondly, she felt that it demonstrated to her that the dentist was unwilling to even investigate or examine the problem and this created frustration and anxiety for her. The challenge for Golf was how to deal with the condescending attitude of the dentist as well as how to deal with understanding of what was really going on with the jaw cracking and the chronic mouth pain, and to find someone who would listen to this complaint.

Another statement by the same participant, Golf, demonstrated not only the feeling of helplessness but also the discrepancy between her expectations and her perceived outcomes when she said, “And so two years later you get the bone graft, I guess you call it, and then two years down the road you’re still going through it and every time you go in it’s poking and pulling and twist[ing]...” She concluded, “So I think he’s been learning as he goes along ...using me as a guinea pig”. In this was a third challenge for her to address – not to feel exploited or as an object for a training procedure.

### Financial distress

One of the themes that became evident among four of the six participants, (Golf, Gardener, Baseball and Opera) was financial concerns. These concerns resulted not only from maintaining implant prostheses and hygiene maintenance but also major replacement of prosthesis. For example, Gardener noted in an earlier section that he had a front tooth fracture off his maxillary prosthesis while traveling in England. However, due to the enormity of the cost quoted to repair this while abroad he chose to carry on with his “goofy smile”. As noted, Gardener had also experienced having teeth “fall off” his prosthesis on several other occasions, and he is now having to deal with having the entire prosthesis removed and replaced. He described that this treatment has created a big problem financially. He goes on to say “at our age [he and his wife] you’re thinking about cashing in some of our investments for your teeth and that is a serious consideration ... which was not one when [I] had the teeth done 15 years ago.” This gentleman was quite disconcerted with the prospect of the financial burden of replacing his prosthesis. He had not thought that the implants or prosthesis would need to be replaced. He is now retired and has diminished financial means. He regarded this unexpected cost quite daunting. He continued with “and that’s something [replacement] that no one was talking about 15 years ago but they should”.

Similarly, Golf remarked, “The process was long and the financial part of it is high and on-going”. She said she has spent approximately “eighty thousand dollars” and this does not include the on-going expenses incurred every time she goes in to the dental office for chronic pain concerns, adjustments, o-ring replacements, and general implant maintenance. Another participant, Baseball, however was much more emphatic in his remark, “[the cost] was frightening ... it was a huge amount of money”. In addition, Opera expressed not only did he spend “fifty-five thousand dollars,” he continues to have to pay for on-going costs of o-ring replacement at two hundred and fifty dollars per set and the increased cost of re-care maintenance appointments due to the increased number of visits per year.

#### **4.4 Coping or Management Strategies**

In response to these various challenges and emotional responses, there were a variety of methods the participants appeared to utilize for coping with the various circumstances, conditions and length of time experienced by the participants. As well, each participant coped with various aspects of their own experiences with different methods at different times. I have classified these responses under the two broad themes of problem focused management strategies and emotion focused management strategies.

##### **4.4.1 Problem Focused Coping (Active Coping)**

Problem-focused coping, also called Active Coping, is the process of taking active steps to try to remove or circumvent the stressor or to ameliorate its effects. Active coping includes initiating direct action, increasing one's efforts, and trying to execute a coping attempt in stepwise fashion (Lazarus and Folkman, 1984). Active coping, is evident when Golf said in reply to a question concerning the difficulty that she once experienced in taking out/putting in her lower overdenture, "That's no problem now. I'm used to that." Also, with respect to dealing with the constant problem of plaque, she took action to deal with it.

A more subtle aspect of active coping is taking direct action to get around the problem. For example, Golf explained that even though "they [dentists] say go home and eat a steak, it doesn't work that way". She continued to explain that she still takes precautions deciding what to eat and how she eats, "I just have to cut my steak or apple into thin slices".

The participants appeared to experience three types of problem focused (active) coping including planning, intellectualization and rationalization. The psychological definitions are referenced in the Definition of Terms listed at the outset of the thesis.

### Planning

In the context of problem focused coping, planning can be considered to be thinking about how to cope with a stressor. Planning involves coming up with action strategies, thinking about what steps to take and how best to handle the problem. This activity clearly is problem focused, but it differs conceptually from executing a problem-focused action. Moreover, planning occurs during secondary appraisal, whereas active coping occurs during the coping phase.

On a physical level and addressing immediate short term gratification, all participants who presented with a removable prosthesis expressed that the simplest thing to do was to remove them thus alleviating any mouth distress that were experiencing. Several participants provided examples of this behavior. Golf removed her removable dentures because of “pain”. However, she only did this at home and in solitary circumstances. Opera removed his dentures strictly for cleaning purposes. BW expressed, “If [they’re] not fitting well, [I] just take the partials out at night. Also, Bridge complained she was uncomfortable at night so removed her dentures.

Other participants shared that they equipped themselves with replaceable denture attachment components (such as o-rings for stabilizing removable implant prostheses on the implants) so as to eliminate any hardship and embarrassment in public and with loved ones if the components failed suddenly. Golf carried spare o-rings with her and Opera acquired his o-rings from a nephew who is a dental technician. He had even learned how to replace them on his own with the assistance of his nephew.

Another coping strategy was to “get on with it”. This was evident when BW said, “If there is pain, just take your mind off it... and do some exercises. I just don’t sit and mope about it. It’s not going to help anyways.” Similarly, Bridge goes about her cleaning routine automatically so as to reduce the psychological nuisance involved in self-care.

### Intellectualization

Intellectualization is a 'flight into reason', where the person avoids uncomfortable emotions by focusing on facts and logic. The situation is treated as an interesting problem that engages the person on a rational basis, whilst the emotional aspects are completely ignored as being irrelevant.

Baseball felt he needed to plan all his various medical and dental care regimes. He had a hard time to do all his dental care, but planned to do only so much at a time rather than total avoidance. He planned his routines, both medical and dental, and selected which of the particular procedures he needed to perform and which he felt he could delay. This point was clear when he stated, "...what I try to do is like okay I did that yesterday, I'll do regular brushing today and I'll do the other guy tomorrow".

Baseball also had a hard time to keep up with his daily dental care, so planned to do only so much at a time rather than total avoidance. He planned his care routine intellectually to accommodate other important activities. Basically he would complete the essential cleaning tasks only a bit at a time so he could enjoy his other interests such as reading a book or writing poetry. Trying not to do too much at once, and otherwise tackling only one thing at a time, can also be perceived as a tactic of avoidance rather than simply an intellectual way to manage his perception of the stressor, in this case the nuisance of dental implant self-care. This participant further explained that he is "sort of fooling himself into a routine" with his tactics, but felt that this helps him in assuaging his "guilt" of not doing what he is supposed to be doing.

### Rationalization

When something happens that we find difficult to accept, then we may make up an apparently logical reason why it has happened. We can use various management strategies that include: functional management (active/problem focused coping), emotional management (emotion focused coping), disengagement and internalization.

For example, Baseball used rationalization when deciding whether to incur the financial costs. In reply to the question, “Was cost ever a factor”? Baseball commented, “It was just like more debt piled up on top of the mortgage and everything else right? So that time it was just ridiculous to worry about that. Thousands and thousands of dollars when I already got hundreds of thousands of dollars [of debt] you know.” He further rationalized this cost when he said, “Ah, the hell with it...most of the expenses were incurred by my wife... so why not go ahead with it [implants]”.

Opera said, “I’ve been improved by a lot and it’s cost me a fortune but it’s not perfect. I thought it would be perfect. So there you go. You think everything is going... and then you find out it’s not perfect.” He continued to say “but then again nothing is perfect...is it? ...a lot of things in life are disappointing”.

#### 4.4.2 Emotion Focused Management Strategies

Emotion focused management strategies can be defined as coping by managing the feelings that a stressful event provokes rather than trying to solve the cause of the stress as in the case of problem focused management strategies. Some of the various emotional management strategies are to seek peace within oneself by acceptance and/or resignation and seeking emotional support from external means such as religion and adaptation. Generally, over the course of time, emotional focused strategies are less effective in reducing overall stress compared to problem solving management methods. (Felton, Revenson, & Hinrichsen, 1984; French & Sim, 2004; Pakenham, 1999)

Emotion focused strategies can be instrumental in the initial stages of dealing with stress and provide an emotional stability to then engage in problem-solving focused stress management. For example, the tendency to seek out social support appears to be functional, in many ways. That is, a person who is made insecure by a stressful transaction can be reassured by obtaining positive emotional social

support. This strategy can thereby foster a return to problem-focused coping, which is generally thought to be the optimal strategy for managing challenges that can be alleviated. (Carver et al, 1989).

### Internalization

Internalization encompasses the use of emotion based strategies to accept and internalize a stressful situation. There are a number of different strategies that people use to accomplish this, including accepting the stressor, using humor or turning to religion (Meissner, 1981).

### Acceptance

Acceptance is defined as a mental attitude that something is believable and should be accepted as true. It not only involves giving credence to one's experience including what others tell you, but also in coming to terms with the experience. Acceptance is arguably a functional coping response, in that a person who accepts the reality of a stressful situation would seem to be a person who is engaged in the attempt to deal with the situation. Acceptance is particularly important in circumstances in which the stressor is something that must be accommodated to, as opposed to circumstances in which the stressor can easily be changed.

For example, Golf coped by just surrendering to the situation of no longer having her own teeth. This appears to be a combination of acceptance and resignation. She expressed coping as "Just accepting I have to have them [the implants] ... so I have to cope with them whether I like it or not." She described that "Coping is making the best with what I have". Surrendering in this case also came in the form of resignation and was evident when she stated, "Oh, it's better now..." when referring to being afraid to smile and kiss her husband. Furthermore, she summed up her own attitude and coping method by saying, "It's just accepting the way having them [the implants] and that I haven't got my own teeth so it's just making the best with what I have".

### Avoidance - Disengagement

Avoidance is a simple way of coping by not having to psychologically acknowledge the experience. When feelings of discomfort appear, we can find ways of not feeling them. Procrastination is another form of avoidance where we put off to tomorrow those things that we can avoid today. Mental disengagement is a variation on behavioral disengagement, postulated to occur when conditions prevent behavioral disengagement. Mental disengagement occurs via a wide variety of activities that serve to distract the person from thinking about the behavioral dimension or goal with which the stressor is interfering. Tactics that reflect mental disengagement include using alternative activities to take one's mind off a problem. As stated by Baseball, "I'll do other things to waste time...read a book...watch the news".

The challenge for Baseball was to cope with the guilt of not properly caring for the implants. His current method of coping at this stage was mental and behavioural disengagement. For example, he has given up trying to reach the goal of optimal self-care. At one part of the interview, he even self analyzed his feelings of guilt and made a very logical argument to mollify his guilt.

### Resignation

Bridge expressed that she is "absolutely" satisfied with the final outcome of her dental implants but continued to say, "Let me put it this way, I have no choice... I have what I got and get along with it...I never think about my teeth". However, at a second interview she acknowledged her memory had diminished even more than before and claimed, "I just wouldn't want to go through all this again". Also, she didn't seem to feel that she was particularly concerned about her implants as she stated, "I can't think back to be concerned about it because I can't recall it". Golf simply said, "What else can I do? ...he is the dentist...he doesn't listen to me...he is always in a hurry... and for the most part he tells me that my "pain" is all in my head".

### Humour

Humor is the use of 'joking around' or finding a situation funny in order to alleviate stressful feelings. For example, when Baseball related to the "frightening" cost of dental implant treatment he interjected that his "only conclusion would be to become a dentist...because if you are a dentist, man, you're just rolling in the dough"! Humor is also a method which can be useful to convey meaning and/or criticism in a way that reduces overall stress. For example, as noted earlier, in the instance of having his front tooth fall off into a bowl of "hard" porridge, Gardener sarcastically quipped that he ensured "to avoid these hard foods".

### Religion

Religious coping is turning to a religion as a coping response. One might turn to religion when under stress for widely varying reasons: religion might serve as a source of emotional support, as a vehicle for positive reinterpretation and growth, or as a tactic of active coping with a stressor. This was BW's experience when she said, "...and so I'll say, God help me and I go do what I have to do...". then she said, "I thank God for my blessings all the time".

### Positive Mental Attitude

A positive mental attitude is also a method of coping. A positive mental attitude is the belief that one can increase achievement through optimistic thought processes. A positive attitude comes from observational learning in the environment and is partially achieved when a vision of good natured change in the mind is applied toward people, circumstances, events, or behaviors (Wikipedia, 2009). This was evident among the participants, for example, when Golf said, "It seems day after day there's something wrong... But, hopefully things will get better... [I] have to have a positive outlook".

Bridge also displayed a positive mental attitude, or at least, "attitude" when, with food trapped under her prosthesis and she was in a public setting, she excused herself to the washroom, took her overdenture out and said, "I don't know them and

they don't know me and I could care less.” She continued to say, “... there might be a time many years ago it would've bothered me but nothing like that bothers me right now”. She was 88 years old when she made this statement.

Positive reinterpretation and growth is aimed at managing distress emotions rather than at dealing with the stressor per se. Clearly, however, the value of this tendency is not limited to the reduction of distress alone, but may also encourage active coping. That is, construing a stressful transaction in positive terms may intrinsically lead a person to continue (or to resume) active, problem-focused coping actions.

#### 4.4.3 Adaptation

Adaptation is defined as a term referring to the ability to adjust to new information and experiences. Learning is essentially adapting to our constantly changing environment. Through adaptation, we are able to adopt new behaviors that allow us to cope with change (Van Wagner, 2004). Essentially, adaptation refers to the adoption of new behaviours to permit a person to more effectively cope with change. Adaptation occurs when certain strategies have been implemented to allow for either problem focused or emotion focused resolutions of the stressor.

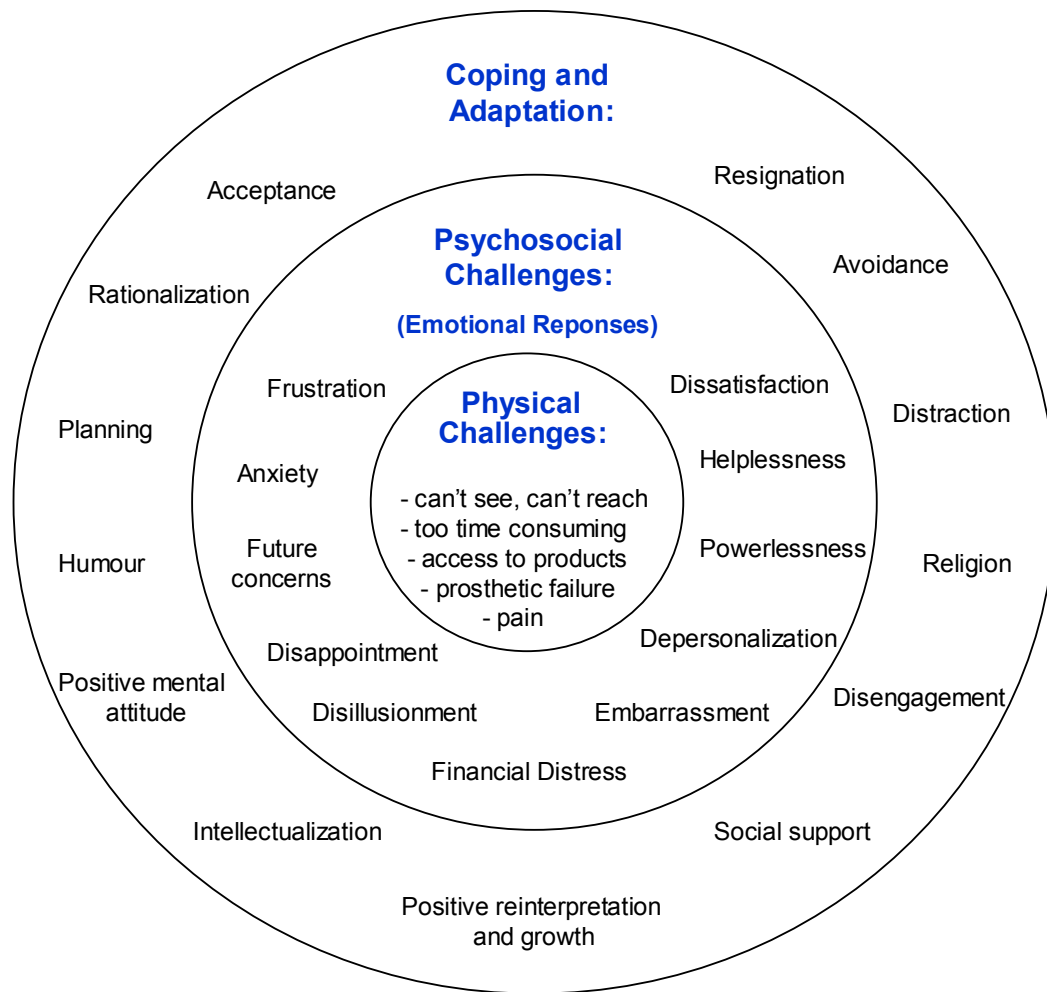
#### 4.4.4 Summary

As anticipated, the participants were generally satisfied with their implants, when considering the overall balance of positive and negative aspects of the experience. Initially, I was looking for the negative challenges as perceived by the research participants in their self-care of dental implants, and they were indeed able to identify such negative challenges, which on my initial assessment appeared mainly to be fairly straight forward physical challenges. However, upon further analysis of the data and more consideration paid to a broader range of comments made during the interviews, the participants' remarks yielded negative impacts at a more psychological and social level. Also, additional challenges and more in-depth complex management strategies relating to the individual's coping with the negative long-term challenges and psychosocial impact of dental implant self-care were

exposed. For example, despite the overall satisfaction expressed by several of the participants, I was able to identify elements of dissatisfaction, disillusionment and hopelessness with aspects of their treatment and long-term maintenance. These were broadly based on unexpected prosthetic and self-care maintenance problems, attitudes of the dentists providing implant treatment and professional maintenance, and the participant's subjective perception of their expectations versus their outcomes particularly when compared to the expectations of their dentist.

A pictorial summary is provided in Figure 2 to show the range of physical challenges and the related psychosocial challenges experienced by the participants along with the coping strategies employed in response. This is based on the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984).

Figure 2. Challenges Experienced by Older Adults in their Self-care of Dental Implants



In identifying the additional challenges it became apparent that to deal with or manage these challenges, the participants had used and/or implemented elements that corresponded and were consistent with The Transactional Model of Stress and Coping (TMSC) as described in the Literature review section. This discovery produced much more thought provoking material for consideration and analysis. This will be discussed further and elaborated on in the Discussion section.

## **CHAPTER 5 Discussion**

### **5.1 Discussion**

As a dental hygienist with a focus in implant dentistry, I am aware that for the patient, the maintenance of dental implants can be more challenging and demanding than the maintenance of natural teeth – particularly compared to healthy unrestored teeth. Self-maintenance of dental implants can require a level of fine motor skills not normally needed in self-care of a healthy natural dentition. For example, specific manual oral hygiene techniques to clean around the neck of the implant posts which lie below the prosthetic crown/s and slightly above the gum, can be very difficult to access. This can be due to the design of both the implant and prosthesis, often with significant design constraints imposed to permit an optimal appearance.

#### **5.1.1 Overall observations**

The participants initially indicated that most struggled with the physical maintenance of their dental implants. Most complained that physical access to cleaning their dental implants was difficult and more demanding of time and commitment. Many found themselves searching numerous local retail stores for specialized dental implant self-care products but to no avail. Others found that it was difficult and upsetting to track down professional care to manage urgent problems with dental implant prostheses while traveling abroad. In addition, a major concern expressed by some participants and their spouses was regarding who would assist in physically maintaining the dental implants should they be unable due to a loss of their independence. Overall, some of the participants enthusiastically endorsed dental implants despite finding the above challenges upsetting. It appeared that on a physical level the satisfaction of having a more secure and functional prosthesis kept them well motivated and thereby they seemed to be positively influenced and encouraged in their efforts to cope with unsettling physical stressors. However, further scrutiny of the participants' physical challenges unveiled more emotional responses that were not initially identified. As a result, I was able to determine that

they expressed a sense of disappointment, embarrassment, frustration and apprehension with these aspects of their implant experience.

Consequently, when re-interviews and new interviews were conducted to further explore management strategies in the context of coping with their challenges, the participants expressed more deeply their challenges and experiences at a psychological and social level. The interpretation of challenges may also have changed for some participants through re-appraisals and a recognition that the challenges were not only physical but psychological as well. With this more insightful level of questioning and analysis, it became evident that most of the participants were disappointed to some degree in that the implants did not meet all of their expectations. Although in retrospect most participants were glad it was all over once the surgery and prosthesis were finished, there were ongoing maintenance challenges and prosthetic failures that were unexpected. Also, unexpected were some ongoing experiences with pain and distress and an inability to resolve these issues by seeking care from the dentist. On further discussion, the participants were unexpected and in some cases, substantial.

In reviewing the negative aspects of the findings it is essential to realize that the focus of the interview questioning was initially to identify the challenges and areas of concern. Not surprisingly then, the resulting answers and discussion revolved around negatively oriented concerns. The study did not ask the participants how the implants have made a positive impact on their lives. Consequently, the results should be interpreted in light of this focus towards the more negative aspects of dental implant self-care. Still, there were instances where the participant stated that they would not do it again if they had the choice again, but having gone through the process were in the most part, pleased. Another was “not one hundred percent satisfied” and another commented on how “the end result was not as expected”.

Despite the fact that the participants found aspects of the treatment and maintenance process to be a negative experience it is important to note that most of

the participants spontaneously expressed being pleased on an overall basis with the decision to have dental implants. They were no longer embarrassed to smile, felt more able to eat regular foods and interact with people without feeling self-conscious. Therefore, the negative emotion responses were partially counterbalanced by their overall appreciation of the end results. For most of the participants with more positive overall outcomes, their opinion reinforced their motivation to keep maintaining their implants. This is similar to what has been reported many times previously (Adell et al., 1990; Kapur, 1991; Geertman et al., 1995; Zarb & Schmitt, 1996; Naert et al., 2004; MacEntee, Walton & Glick, 2005). For example, Kapur and colleagues (1991) identified in their study that individuals with fixed partial dentures supported by implants experienced improvements in social life and eating enjoyment compared to individuals with removable partial dentures. MacEntee and Walton (2005) also found that overall satisfaction, measured with a visual analogue scale (VAS) was improved dramatically on average using removable dentures retained by implants. Similarly, the current study showed that with a dental implant supported prosthesis, most individuals enjoyed a better sense of eating and felt more comfortable in smiling and carrying on a conversation “as normal people do”. However, and on the other hand, it was indicated by the majority of participants in this study that “food particle retention and consequent discomfort and pain” was noted as a common element of dissatisfaction. In addition, the immediate attention needed for ridding the mouth of these “food particles” while in a social setting was disturbing and embarrassing.

It is also reasonably well established in previous studies that patients can perceive an improvement in their perception of masticatory (chewing) function when most of the natural teeth were missing in the jaw, although chewing function tests have not easily corroborated these perceptions (Carlsson & Lindquist, 1994; Geertman, van Waas, van 't Hof, & Kalk, 1995). Some participants in the current study also described “chewing” as improved. However, some were still fearful and careful not to “go ahead and eat whatever” as prescribed by their dentist.

Previous research on disabling conditions, such as cancer, has focused on the influence of coping on emotional and behavioural outcomes (Lazarus & Folkman, 1984; Carver, Scheier, & Weintraub 1989). However, less is known about why people cope in the way they do (Carver, Scheier, & Weintraub 1989), particularly in the field of dentistry. Drawing on the theory described in the Transactional Model of Stress and Coping (TMSC) (Lazarus & Folkman, 1984), where primary and secondary appraisal components are related to coping and adaptation outcomes, I observed in my study that participant responses to the stressors of ongoing implant self-care and the need for professional maintenance reflected this dynamic and complex process. The dynamics of coping and adaptation among these participants were indeed very fluid and did not occur linearly (Figure 1). Reappraisals by the participants sometimes appeared to shift their perspective on how they were managing and how satisfied they were based on their perceptions of new information (Lazarus, 1984). In this case, the need to cope among aging implant patients appeared usually to take the form of a response at the level of daily hassles, sometimes with a profound psychological response. This became particularly evident when participants described how their expectations of the implants had not been realized over time. More broadly, the study found that dental implant patients do appraise and reappraise their challenges on an ongoing basis, and this process yields both positive and negative coping strategies including, for example, problem-focused coping (generally a positive strategy) and emotion-focused avoidance (generally a negative strategy). This is very much in keeping with the findings of MacEntee and colleagues who have observed the tremendous potential for older adults to interpret age-related impairments in a positive light (MacEntee, 1997; MacEntee, 2006; Brondani, Bryant, & MacEntee, 2007).

#### 5.1.2 Influence of personal and environmental circumstances

The way we deal with such stressors generally has to do with our mental, emotional and physical health in managing stress in our lives (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). During times of stress and uncertainty, we can anticipate some predictable issues, problems, and possibly some opportunities. For

instance, any stressful event can have an influence on how a person feels emotionally. After a stressful event it is normal to feel some stress, anxiety, sadness or to be afraid and it can take time for a person to adjust and be comfortable. In theory, people also may become better at managing stress and change with age and experience. Also, in this study, concurrent with their implant experiences, the participants reported varying levels of stress and change occurring in other areas of their lives and health. For instance, one participant was experiencing eye problems, another was experiencing eye, ear and hip problems, and a third experienced the death of her spouse not long after her first interview and before her second interview.

Alternatively, perhaps the participants experienced different amounts of impact from the stress-producing situations described by them because of their psychological or social dispositions. In some cases, they also clearly experienced different amounts and types of social support (or neglect) from their spouse, family and friends. Their responses to the challenges (stressors) may have been influenced by their individual social/familial support or lack of support. For example, BW who had expressed when she experienced problems with her overdenture not fitting and causing pain to her mouth (or anywhere else for that matter) she would simply say a prayer, go do something else and arrange with a family member to get her to the dental office for whatever needed to be done as determined by her dentist. This woman had a very intact familial and social support as well as a belief in the power of God and prayer. In contrast, Golf did not have the support of her husband in her decision of dental implant treatment. She avoided talking about any problems she was experiencing with her dental implants in his presence for fear of the dreaded “I told you so” and disapproving attitude her husband was so generous in reminding her. Overall, it appeared that the participants in this study tended to cope better with their challenges when they perceived support from family and friends. This seemed to give them a sense of control and healthy acceptance despite other lingering challenges.

As described in the introduction, there is reason to suggest that as the provision of dental implants for older adults increases, so will the potential challenges or problems in the self-care of dental implants, perhaps especially among those becoming frail with age. However, this study did not offer evidence that the frailties of aging were at play in this way, except that some of the participants and their spouses expressed worry about the potential impact of their future frailties. Interestingly, this suggests that younger patients may also experience similar challenges and coping strategies in the long-term care of dental implants.

Overall, these elderly participants expressed that they were satisfied with their life in general and that they appeared to cope considerably well with these general health concerns as well as with their dental implant concerns. Unlike what was anticipated originally, they did not feel that their various personal health conditions affected their ability to manage the physical challenges of their dental implants self-care. Despite this most presented with age-related health problems, for example, deteriorating eyesight and arthritis, although none could be considered to be particularly frail. However, there were examples of where environmental influences did appear to impact their coping experience. For example, a lack of professional and spousal support in some circumstances prompted negative avoidance strategies for coping with challenges, even to the extent of one participant opting not to discuss her problems further anyone close to her.

#### 5.1.3 Coping with the daily hassles of implant care

Stress, for a human being, is described as a normal reaction to events that threaten us. Such threats can come from life threatening situations such as accidents, chronic or re-occurring problems and non-life threatening situations such as daily hassles. These smaller, daily hassle events are often not as apparent to us, but the constant and cumulative impact of the small stressors may add up to big impact.

My findings indicate that many of the stressors arising from oral implant self-care and maintenance appear to operate on a level of daily hassles in that they are not

usually a major life event or life-threatening situation. Rather, instead they may be repeated and sometimes predictable (for example, flossing challenges) and/or unexpected, either situational minor annoyances (for example, food catching under a denture), or fairly major pressures, problems or difficulties (for example, a broken denture attachment or tooth when professional assistance is not accessible). In an effort to manage these daily challenges, the idea of some participants was to “just get on with it”. This response appears to express a form of dispositional optimism whereby one’s view is that good things rather than bad things are likely to happen.

The participants also indicated that dealing with their challenges wasn’t as easy as it sounds. The sources of their stress weren’t always obvious. It appeared that the participants may have known that they were constantly worried about taking care of their dental implants and maybe in some instances, their procrastination, resignation and avoidance rather than the actual self-care demands, led to frustration as a stressor. This level of stressor may very well be secondary, as opposed to the primary stressor of the initial challenges. Kohn and colleagues (1994) suggested that people are constantly reacting to small stressful situations (daily hassles) requiring psychological and emotional adjustments to counter their negative effect on health and well-being. Whether or not one’s physical health can be impaired by daily hassles, it becomes clear that we as professional oral health care providers should be prepared to recognize, identify and understand both external and internal stress-causing events for patients, no matter how we may assess those events from an objective point of view.

It appears that in spite of their on-going physical and psychological challenges, most participants utilized effective coping strategies. The main evidence for this is that none of them felt that the demands of their challenges exceeded their capacities. They generally reported having a good life experience and remained engaged in life. Despite challenges that were frustrating, even to the point of avoidance and mental disengagement at times, all participants preferred implants over their previous

experience without implants; some were even advocates for the technology, and all of them perceived an improvement in life resulting from their implant experience.

Similarly, MacEntee and Walton (2005) also found substantial experience with prosthetic fractures among 68 older dental implant patients, and indeed statistically many more fractures among those with a particular prosthetic attachment design (a ball versus a bar attachment). Remarkably, the VAS patient satisfaction scores remained high even among those with the higher rates of prosthetic fractures over a three-year period. This may, of course, reflect the great capacity among older adults for coping positively with daily hassles including dental implant maintenance challenges. However, unlike the current study, the patients in the 2005 study received their implant treatment in a university setting at substantially reduced costs, approximately \$2000 (Canadian) compared to the fees for typically charged in private practice settings in the community. This will be discussed further in the section on The financial implications of dental implants.

Overall, I found that my participants utilized many ways to manage their subjective challenges. My interpretation of their approach/decision process was that you can either change the situation (problem solving) if possible, or change your reaction (emotion-focused). This follows consistently with the appraisal mediating process in the TMSC model.

In the mediating process of coping efforts, the participants in this study utilized both problem solving and emotion focused management strategies. For example, strategies such as avoidance, alteration (intellectualization), adaptation, and acceptance were utilized. It is important to remember and be cognizant that everyone has a unique response to such stressors and that there is no “one size fits all” solution to managing stress. Simply stated, there is no evidence in this study or elsewhere that a single method works for everyone or in every situation. As identified when reviewing the results of the data analysis, it is also evident that this process of identifying perceived stressors, appraisals of stressors and

coping/adaptation is very fluid and dynamic in that it evolves with ongoing reappraisals. We must also take into account that re-appraisals and coping strategies may evolve and change with on-going experience of the event.

#### 5.1.4 The emotional impact of dismissive dental advice

A common complaint by some participants in the study indicated that their dentist was not focused on after-care and/or maintenance procedures. Several participants who expressed helplessness and hopelessness complained that the dentist did not listen to them, and when they did express such concerns they were readily dismissed and made to feel that whatever they felt was irrelevant. As other studies have shown, (Marshall, 1993) this sense of powerlessness related to the dentist 'knowing better' and the dentist not listening to their concerns or complaints. In her study, the patients felt they had no other options to have their concerns heard, perhaps because they assumed that other dentists would take a similar approach. Unlike the current study, the participant's in Marshall's study were unusually avoidant of health care, and particularly avoidant of dental care. Whereas in this study the participants were highly engaged in dental care. Nonetheless, I found that some the participants also felt powerless under similar circumstances to those in Marshall's study by having their concerns dismissed by the dentist. This study also found that a sense of powerlessness can be perceived by dental implant patients at various times through their experience related not only to initial surgical and prosthetic procedures, but also many years afterward in dealing with their ongoing maintenance. Furthermore, the central source of this experience was the perception that the dentist would appear condescending and would not listen to their concerns. This was very evident when Golf expressed her concerns with on-going jaw pain to the dentist, and after his reply she felt dismissed and guilty for speaking up for herself, resulting in a feeling of loss of self-worth. This attitude seemed more extreme than "paternalism" which is the practice of treating or governing people in a fatherly manner, especially by providing for their needs without giving them rights or responsibilities (Merriam-Webster Dictionary, 2009).

#### 5.1.5 The financial implications of dental implants

The participants in this study reported substantial time and costs associated with fabrication and maintenance of their oral implant prostheses. The initial implant treatment costs ranged from \$10,000 to \$80,000 Canadian (CAD) depending upon the amount of jaw reconstruction, number of implants and types of prostheses that were used. Similarly, MacEntee and Walton (1998) found that implant prostheses were relatively expensive in a private practice community - 5 to 12 time more expensive initially compared to removable dentures not retained by implants. However, the highest initial implant treatment costs in their study were only \$13,000 (CAD), which were substantially less than the costs reported by participants in the current study. Regardless of the reasons for the difference in costs, implant treatment can clearly be a major financial undertaking. In the current study initial and ongoing expenses caused substantial stress for most of the participants. One participant was now also very concerned years later about replacement costs, particularly given that he was now on a fixed income in retirement. In MacEntee and Walton's 1998 study, the assumed costs over twelve years amounted to approximately double the initial costs including the initial costs and the cost of checkups, hygiene/maintenance visits, component replacements and implant prosthesis replacement.

It is worth noting in the previous discussion on Coping with the daily hassle of implant care that VAS patient satisfaction among dental implant patients may not be reduced by relatively frequent experiences with prosthetic fractures (MacEntee and Walton 2005). In contrast, participants in the current study appeared to be profoundly dissatisfied by such hassles. A potential explanation for this difference is that such daily hassles had a greater impact over time; the participants in the current study had at least 20 years experience with their implants, whereas the patients in the 2005 study had only 3 years of experience. However, potentially a more profound reason for the difference is that the participants in the current study paid far greater fees for treatment (\$10 to \$80 thousand CAD noted above for initial costs more than 20 years ago in addition to ongoing fees for maintenance) compared to

relatively very much reduced fees paid by patients in MacEntee and Walton's 2005 study (approximately \$2000 CAD for initial costs and no charge for maintenance over 3 years).

#### 5.1.6 Expectations versus outcomes

Most of the participant's disappointments in this study were a result of expectations that appeared to be higher than the outcomes achieved. This may have been due to a lack of information by the dental professional, who essentially may have effectively implied a concept of perfection to the patients. Conversely, the patients may have been overwhelmed with information and not able to retain the idiosyncrasies of the impending treatment nor ask more probing questions that could have given them a better sense of what to expect. In retrospect the participants' views in this regard included comments that suggested they were lead to believe implants were "the answer" and therefore would solve all of their dental grief, but much to their dismay this was not the case.

Unrealistic patient expectations may have been caused by the dentist not adequately communicating about the initial process, the expected outcomes and the anticipated on-going daily care as well as professional maintenance needed for dental implants. In this regard, it may help to openly discuss in advance the common short and long-term problems encountered, such as discomfort, cleaning issues and demands and prosthetic failures. Although the dentist will not know exactly how the procedures will evolve in each case, depending on what technical problems are discovered, the dentist has a responsibility to communicate that such issues are a common expectation of any implant therapy and not to imply (directly or indirectly) that "perfection" is achievable. The adaptive nature of this process should be communicated to patients before their decision to have implants. In summary, the expectation of the participants may have been based on an unattainable concept of perfection, and in some cases, the participants recollected that their prosthetic outcomes were clearly much different than the original outcomes presented by the dentist.

### 5.1.7 Saturation

Based on the findings of this study, it is my assertion that additional interviews would only serve to support that which I have already uncovered. Although saturation is difficult to obtain in a complex and subjective environment that attempts to probe participant experiences, this study has demonstrated saturation of the subject matter because recurring themes answered the research questions.

To determine that this study was obtaining data adequacy by reaching saturation I conducted ongoing assessments during the project for repeated themes and I expanded my research sample until saturation had been attained. Specifically, the themes identified in this study, such as dissatisfaction, disillusionment, intellectualization and disengagement, were consistent between most of the participants, and all of the themes I discovered and reported were based on experiences of at least three of the six participants. For example, four of the participants were disappointed that the outcomes did not match their expectations, four were distressed at the financial aspect of their implant treatments, and all participants struggled with physical challenges in the self-care maintenance of their dental implants.

Overall, throughout the study there were consistencies among the participants and this led me to conclude that I was able to achieve a level of saturation suitable for the observations and conclusions drawn there from. In an interview study with purposeful participant selection, it cannot be determined with absolute certainty whether interviews with additional participants could increase the number of challenges and management strategies. However, given my consistent experience of saturation related to the research questions I am confident that further interviews would not yield a substantial contribution to the challenges discovered nor to the coping and management concepts which have been identified.

## 5.2 Limitations

This group of participants may not be particularly representative of implant patients today, in that they were relatively early adopters of a technology that continues to evolve. For example, a fairly standard treatment strategy today is the use of one or two implants to stabilize lower removable complete dentures, whereas the participants with lower dentures in this study had at least five implants to stabilize their lower removable dentures. This may have amplified the self-care challenges of my participants compared to a more typical implant overdenture patient today. Nonetheless, many of the essential challenges of dental implant self-care will not have differed over time including the general experiences of cleaning challenges and prosthetic fractures, so it is logical that similar emotional impacts and coping strategies would be expected among more recent implant patients.

Another unusual way that my participant experiences may have differed from a more typical implant patient is that one was a woman who completely deferred her own decision to have implants to her husband and son, who were both experienced dentists. Also in this circumstance, she was unusually assured of ongoing and constant attention as and when needed, and with minimal financial burden. Her experience with the process was certainly not common in this regard and so her expectations may have been more likely to be met than for the other participants. Indeed, this was the case in that although she reported several physical challenges with self-care and maintenance, she did not report much psychological impact compared to the other participants, and unlike other participants she tended to utilize problem-focused coping strategies to solve maintenance challenges perhaps mainly because she had ready access to dental care by her son.

In addition, all but one of the participants were my own professional patients, and ironically some of the responses to questions that I asked in the interviews were different from the responses to questions I had also happened to ask them previously in my professional role at routine maintenance appointments. For example, one participant during the re-care appointment was noted as saying, "I am finding my hands are getting weaker and these [overdentures] are becoming more

difficult to take in and out”. Yet, during the interview she stated that “learning how to take them in and out was [initially] a challenge, but it is okay now”. In this case, a challenge alluded to during the professional re-care appointment was no longer expressed or described as a challenge in the interview. I have yet to discover the reason for the difference, however, time had passed, so it is possible that what was once a challenge was either no longer a challenge or was no longer readily recalled as a particular concern.

As noted earlier in the discussion, this study did not provide evidence that the physical frailties of aging were a concern for the participants in their dental implant self-care, except that they expressed worry about the potential impact of their future frailties on this. However, it is my assertion had I extended this study among implant patients with more extensive age-related disabilities, the original question on “What are the perceived challenges by older adults in their self-care of dental implants?” may very well have given the data more breadth. Then again, we may never find such a report among the type of relatively well (independent) elders that I interviewed.

### **5.3 Implications**

This study indicates that not only the physical but also the emotional and cognitive (psychological) consequences, including coping and adaptation to perceived challenges, is an area that has largely been overlooked in the context of older adults’ care of their dental implants. Indeed most outcomes studies in implant dentistry dwell rather heavily on the profound patient satisfaction that dental implants typically yield. This information has potential to benefit oral health care providers and patients including the interactions between them if nothing else than by stimulating the need for as open as possible a discussion in advance of treatment, regarding patient expectations relative to the potential benefits and pitfalls of treatment.

This study was intended to explore emerging information that has many potentials for future clinical implications and applications. The findings of this study suggest

that the evaluation to the challenges or problems of a dental implant patient is a complex process involving not only the patients' perceptions but also their expectations. The general comments of participants clearly established that challenges on the physical, psychological (emotional) and social levels exist. It follows that the dental implant experience may benefit from increased time and effort spent on communication between providers and patients, increased awareness of self-care issues, improved acknowledgement of patients' opinions, improved access to dental implant self-care products, and improved self-care assistance for patients whose level of dexterity may be compromised.

The information from this study suggests that we still need to make some progress to bridge the knowledge gap between the perceptions of clinicians and patients in dentistry. This study is, in a sense, a beginning to help the clinician and patient understand the differences between the expectations and outcomes of dental implant therapy. Hopefully, this research will also serve to more effectively educate oral health providers and help them recognize that as people age, the perceived self-care of dental implants can involve not only physical challenges, but also psychological and social challenges that cause much stress. In addition, I would hope that this research gives the dental professional insight and a better understanding to various coping strategies used by the older dental implant patient to lessen the impact of day to day challenges.

Additional research may yield hypotheses about the nature of challenges and coping strategies that can be tested quantitatively either to reduce or eliminate the challenges, or at least to help improve understanding of pitfalls of treatment. For example, it may be possible to develop informed consent or other forms of education that could improve patient and dentist communication about expectations and outcomes of implant treatment, and diminish negative emotional impacts. This information could then assist dental professionals in determining what the implications will be for caregivers (professional and non-professional) as their

patients age including the possibility of oral health education components within the curriculum of care-provider training programs within and outside the field of dentistry.

Also, in general, the findings of this and future studies can be of interest to persons who are entrusted to administer the health regimes and care of older people in our society. Public Health administrators can be made aware of the self-care concerns of those older persons with dental implants. Likely, many administrators may not be aware of the special cleaning and maintenance regimes and thus not plan for the ongoing care and attention of patients in hospitals and extended care facilities. In addition, administrators may be cognizant of the psychosocial (psychological and social) aspects of situations that affect the causes and consequences of health behaviors. However, they may be unaware of the psychosocial aspects of situations that affect the causes and consequences of dental health behaviors.

#### **5.4 Conclusion**

1. The comments of participants clearly establish that challenges on the physical, psychological (emotional) and social levels exist.
2. The evaluation to the challenges or problems of an older dental implant patient is a complex process involving not only the patients' perceptions but also their expectations.
3. Psychosocial responses of patients to the long-term challenges posed by oral prostheses can evoke variable coping strategies.

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## **APPENDIX A Recruitment Poster**

### **DO YOU HAVE DENTAL IMPLANTS?** **ARE YOU 60 OR OLDER?**

I am a Master's student in the Faculty of Dentistry at the University of British Columbia. As part of my master's thesis, I am studying the challenges experienced by older adults in the care of dental implants. The title of my study is "Exploring the challenges experienced by aging adults with dental implants."

Specifically, I am interested in:

- The challenges faced by older adults when they take care of their dental implants

You are eligible to participate in the study if:

- You are 60 years old or older
- You have had your dental implants for at least 5 years
- You have at least 3 dental implants
- You speak fluent English
- You are willing to participate in one or two interviews over the space of 2-4 weeks (total time not to exceed 4 hours)

This study is being supervised by Dr. Ross Bryant (telephone: 604-822-2350)

Interested? Please contact:

**Jessica E. Dubé RDH, BDS, MSc (candidate)**  
**Telephone: (B) 604-XXX-XXXX**  
**Fax: 604-879-5822**  
**E-mail: db\_jss@yahoo.ca**

## APPENDIX B Consent Form



**Faculty of Dentistry**  
The University of British Columbia  
www.dentistry.ubc.ca

**Department of Oral Health  
Sciences**  
2199 Wesbrook Mall  
Vancouver, B.C., Canada V6T 1Z3  
Fax: (604) 822-3562

### Consent Form

Principal Investigator

Dr. Ross Bryant  
Professor, Faculty of Dentistry  
Telephone: 604-822-2350

Student Co-investigator

Miss Jessica E. Dubé  
Master of Science,  
Program of Dental Sciences' Student,  
Faculty of Dentistry  
Telephone 604-822-4486

Title of Study

Challenges and problems that the older adult with dental implants experience as they age.

This study is being undertaken for Jessica Dubé's master's thesis and dissertation. Results of the study will appear in the dissertation and may also appear in an article published in an academic journal.

The purpose of the study is to explore the challenges or problems that aging adults with dental implants may be experiencing. Participants are asked to participate in maximum two interviews. In the interviews, you will be asked to tell what you feel are or have experienced as challenges in caring for your dental implants as you have aged. You will be asked to tell stories of stress and coping. Estimated total time for your participation in this study, is 1- 4 hours.

No monetary compensation is offered for participation in this study.

Your participation in this study is entirely voluntary. You have the right to refuse to participate, and may withdraw from the study at any time.

Information provided by you will be kept confidential. Your name and identifying details will be changed in written documents in order to protect your confidentiality, unless you explicitly state that you want your identity to be known. Audiotapes of interviews, written transcripts of the interviews, and diaries will be kept in a locked

filing cabinet to which only the investigators and course instructor have access. Transcripts may be shared with class SOWK 554-c for sharing of learning experiences only. They will be destroyed five years following completion of the study.

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1 of 2

Any inquiries about the study or its procedures may be directed to the investigators named above. Any concerns about participant rights or treatment may be directed to the Research Subject Information Line in the UBC Office of Research Services, at the University of British Columbia, at (604) 822-8598.

I have read this form and received a copy for my records. I hereby consent to participate in this study.

Signature:

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Print Name

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Written Signature

Date:

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## **APPENDIX C Interview Protocol**

Project: Exploring the challenges experienced by aging adults with dental implants.

Time of interview:

Date:

Place:

Interviewer: Jessica E. Dubé

Interviewee:

Position of Interviewee:

(briefly describe the project)

Questions:

1. Have you experienced any physical changes lately? Are you more fatigued these days?  
Do you find that your hands are not working as well as they used to?
2. Do you find that you need to wear your glasses when you are doing your oral self-care of your dental implants?
3. What would you say impedes your daily oral self-care when it comes to your dental implants?
4. Have you noticed any changes in how you feel when taking care of your dental implants?
5. What would you say is the most difficult task you face when dealing with your dental implants on a day-to-day basis?

(Thank individual for participating in this interview. Assure him or her of confidentiality of responses and potential future interviews).

## **APPENDIX D   Unstructured Interview Guide (# 1)**

My interests are basically focused on what the challenges or problems are experienced as older adults with dental implants. Specifically, I want to explore and discover what those challenges or problems might be and how can these be dealt with.

Initially my goal is to learn about your experiences. I will try to ask questions that encourage your thoughts. Essentially I want you to think out loud as much as you can and try to teach me about the challenges, problems, and frustrations that you experience in the self maintenance and management involved in taking care of your dental implants and how you cope with these.

1. I would like to know when you had your implants placed?
2. Why have you taken this interest?
3. How did you decide to accept dental implants therapy? What factors were involved?
4. Can you give me a brief thought as to why you chose dental implants?
5. I want you to think about the most difficult dilemma that you have experienced since having dental implants. Can you identify these?
6. Do you recall any good or bad experiences with how you have coped with these difficulties?

## **APPENDIX E   Unstructured Re-Interview ~ General Overview**

Initially, if you recall, my goal was to have a conversation and learn the challenges (if any) that you may have experienced as an older adult with dental implants.

Essentially, I want you to think out loud as much as you can and try to teach me what your experiences have been in the self maintenance and management (hygiene, prosthetics, function, esthetics) involved in taking care of your dental implants.

Also, I would like to further explore if your experience has changed since the first interview. If so, I would ask that you identify these as best as you can.

In identifying these experiences, I would also like you to consider how you managed & dealt with these experiences at the time, as well as over time.

### Questions: (physical)

Before I get to your dental implants:

Since our last interview:

1. Have you experienced any physical changes related to aging lately? (eyes, physical dexterity Hands-joints, hearing, dry mouth, energy level has decreased—more tired)
2. Have you noticed any change in how you feel when taking care of your dental implants compared to when you first had them?
3. Do you have any difficulties in your oral self-care? (i.e. taking care of them on your own) (access, location, being able to see?)
4. Is there anything that impedes /hinders you in your self-care of your dental implants?

### Questions: (historical)

1. I want you to think about your experiences since our last interview – good and/or not so good (happy/unhappy?). Can you identify these? (First, the good. Second, the not so good).
2. Do you have any other concerns/issues in caring for your dental implants that you can think of at this time?
3. Do you recall how you managed these experiences/events? In other words, what do you or did you do to address/take care of these concerns?

## **APPENDIX E - continued**

### Questions: (psychological)

1. In your experience with having dental implants do you consider/feel that they are part of you? If so, could you elaborate on this.

If not, could you elaborate on this?

2. In the decision of removable or fixed implant prosthesis was the choice important to you?
3. Are you satisfied with the final outcome of the choice made for you personally?

Now I would like to ask you a few questions THAT WILL CLARIFY some points that you made in our first interview. This is merely to help me in my understanding so as I do not misinterpret what you meant and put my own slant on it.

## **APPENDIX F   Unstructured Re-Interview Guide**

### General Overview

My interests are basically focused on what the challenges or concerns might be as experienced as older adults with dental implants. Specifically, I want to explore and discover what those concerns/challenges or problems might be and how you personally have managed those concerns.

Initially my goal is to learn about your experiences. Also, my goal is to identify those concerns/issues about those experiences. I will try to ask questions that encourage your thoughts. Essentially, I want you to think out loud as much as you can and try to teach me about the challenges, problems, and/or frustrations that you might have experienced in the self maintenance and management involved in taking care of your dental implants and how you manage with these.

1. Do you recall when you had your dental implants placed?
2. Can you give me a brief thought as to why you chose dental implants?
3. I want you to think about your experiences good and /or bad that you have experienced since having dental implants. Can you identify these?
4. First, the good.
5. Second, the not so good.
6. Do you recall how you have managed and/or coped with these difficulties?
7. What strategies do you think you employed when dealing with concerns and/or issues in caring for your implants.

## **APPENDIX G Unstructured New Interviewee Guide (# 2)**

Briefing:

My interests are basically focused on what the challenges or concerns might be as experienced by older adults with dental implants. Specifically, I want to explore and discover what those concerns/challenges or problems might be and how you personally have managed those concerns.

My goal is to learn about your experiences and to identify any concerns/issues about those experiences. I will try to ask questions that encourage your thoughts and stimulate your recollections. Essentially, I want you to think out loud as much as you can, and try to help me understand any challenges, problems, and/or frustrations that you might have experienced in the self maintenance and management involved in taking care of your dental implants, and how you manage/managed with these issues.

Before I get to you dental implants I would like to ask you .....

Questions (on Aging/ physical):

1. Have you experienced any physical changed related to aging lately?
  - A) If yes, has this affected your daily activity schedule?
  - B) And how has this affected your daily activity schedule?
  - C) How does this make you feel?
2. Do you wear glasses?
3. Do you have any joint discomfort?

Now let's discuss your dental implants.....

Questions (on choosing to have implants):

1. I would like to know when you had your implants placed?
2. Briefly, why did you choose dental implants?

Central questions (on challenges and management strategies):

1. I want you to think about your experiences/challenges – good and/or not so good.

Can you identify these? (First, the good. Second, the not so good).

*NOTE: Keep returning to MANAGEMENT (whenever a participant identifies a challenge (e.g. chewing, prosthetic fractures, hygiene issues or other worries).*

- A) Do you recall how you have managed and/or coped with these difficulties?
- B) What strategies do you think you employed when dealing with concerns and/or issues in caring for your implants?

Focused /Probing questions (on challenges and management strategies):

i) Oral Self-Care and Aging

1. Do you find that you need to wear your glasses when you are doing your oral self-care of your dental implants?
2. Do you have any difficulties/challenges in your daily oral self-care?
3. Is there anything that hinders you or gets in the way in your self -care of your dental implants?

*REFER TO MANAGEMENT QUESTIONS*

ii) Fractures or Wear of Artificial teeth

1. Do you recall any experiences with fracture or wear of the artificial teeth?

*REFER TO MANAGEMENT QUESTIONS*

1. Do you have any other concerns/issues in caring for your dental implants that you can think of at this time?
2. Do you recall how you managed these experiences/challenges/events?  
In other words, what do you or did you do to address/take care of these concerns?

iii) Psychological impact

1. Have you noticed any changes in how you feel when taking care of your dental implants?
2. What would you say is the most difficult task you face when dealing with your dental implants on a day-to-day basis?
3. In your experience with having dental implants do you consider/feel that they are part of you?
  - i. If so, could you elaborate on this?
  - ii. If not, could you elaborate on this?
4. How would you compare your dental implants with your natural dentition or other dental work (i.e. Crown & Bridge)?
5. In the decision of removable or fixed implant prosthesis was this choice important to you?

Other issues (chewing, smiling, overall appearance, expectations etc.)

1. Are you satisfied with the final outcome of the choice made for you personally? OR "Are you personally satisfied with the final outcome of your choice?]
2. Do you feel that the final outcome of your dental implants met your expectations?

## **APPENDIX H Research Participant Case Studies**

### Golf

Golf is a 79 year old woman who has always lived in Vancouver. When I first interviewed her she was 74. She has been married to the same man for 50 years and has 5 children; three sons and 2 daughters. The family business started by her husband who is now retired is run by all the children in the family, including a much loved son-in-law. She had always been the mother and homemaker. As a young woman she lost most of her teeth due to neglect that elaborated itself in the form of decay and periodontal disease. She was much too busy taking care of a young family to worry about herself in general let alone her teeth.

Something that she constantly re-iterated to her children to make sure they did not experience “tooth loss” the way she had. For many years she wore a partial mandibular (lower) denture replacing 6 mandibular (lower) anterior teeth. However, she reported being told by her dentist that the partial was “rubbing” on her teeth and were “wearing down the gums”. Her dentist was “adamant that this was not a good idea” and that “implants were the right route” for her to take. Although she herself thought “those teeth could have been kept longer” she did add “They were sort of worrisome”. She went as far to say, “If bone structure is gone, then you’re in deep trouble ...” After much thought and agony of her perception of losing her remaining lower teeth, and after considering her past experience of traumatic tooth extractions as well as the prospect of unknown dental implant surgery, she agreed to the recommended implant therapy.

Seventeen years after having her dental implants she still experiences problems with oral self-care in the form of “difficult access...as I can’t see in behind these to clean them”. She has five mandibular implants with a removable bar/overdenture. She also expressed that “plaque builds up so easily” on the implants. “You can feel it and it drives me crazy - that’s the biggest problem”. Golf’s definition of “drives me crazy” was “it bugs me that I have to go through not having my mouth as comfortable as it

used to be". She also expressed difficulty in finding effective dental aids recommended for cleaning her implant posts - "I wish I had one of those picky things that you have (referring to my role as a dental hygienist) ...but because I can't see [in there] I'd have my gums bleed". She continues to say, "I use a toothpick and I keep it sort of like a pastime when I am alone".

She also notes that her "gums ache" on a daily basis. She attempts to alleviate this by removing her overdenture for "about an hour" but feels "very uncomfortable if I have to have them out". "I can't sleep without them - I have to have them in - it's just part of me". She also notes that "learning how to get them in and out was a challenge", "the thing that worries me the most about having them is if I ever had a stroke or something and go in a hospital...these things are not easy to get in and out". She added another "biggest" concern [with being hospitalized] was "somebody fiddling around with my teeth ... they wouldn't know how to get them out or put them back in... it's very embarrassing... [There is] nothing you can do to help yourself... I have to depend on them". She goes on to say "people who have arthritis or something - I don't know how they cope with it [taking them in and out]". She reiterated throughout the interview, "practice makes perfect".

A recurrent challenge stated by this participant was the constant wear and replacement of o-rings. The rubber o-rings are used in this case for stabilizing the overdenture on metal posts attached to her oral implants. She described, "When o-rings wear a bit you suffer from the pain of food getting underneath [the overdenture]" and the embarrassment of having [to remove the denture] to get rid of it "because it is so uncomfortable". On the other hand, the participant expressed how difficult it was again to remove her overdenture when the new o-ring(s) were placed; "my mouth aches from the 'tight-tight' feeling". Also she exclaimed, "I am unable to get them out or place them back in. It is extremely distressing..."

This lady had also experienced an extremely traumatizing event related to her implant denture. While away on vacation, an "o-ring" had deteriorated/broken

down... "I lost this o-ring". The overdenture would not fit properly and therefore she was unable to wear it. She suffered great agony as she could not talk properly nor chew any food. After many telephone calls to dental offices in the area, "I kept phoning around to different dentists," she was unable to find anyone that could accommodate her and rectify her dilemma. She then resigned herself to the reality of the situation. As a result, she elected to stay indoors the entire 3 weeks of her vacation. In addition, she was "so embarrassed that she would not even attempt to speak with her husband".

Normally, she and her husband had a very active social life which included golfing, playing bridge and going to restaurants. Needless to say her husband was quite upset with her and reminded her of the fact that he had not wanted her to have the implants but rather a denture. This in turn caused her added grief.

At this time, she was also feeling stress about whether to have her only two upper front teeth removed and further implant therapy. Speaking about her dentist she said, "You know he's probably there listening". Every time he sees me, "he is telling me I should have the top done ...it's a big decision...I don't want to go through all that again...and my age...and it's expensive ...and it's painful too".

Despite the many challenges identified, this participant felt that the "plusses outweigh[ed] the minuses", that she was "really pleased with his work - he does a good job", I "would do it [lowers] again", I "feel lucky to have them...they are a part of me ... I feel confident when I laugh my teeth aren't going to move".

At a later date I re-interviewed this participant in an attempt to further explore and identify management or coping strategies that she had used when dealing with the many challenges she identified in our first interview. At that time several new challenges were expressed by the participant. She had accepted implant therapy for her upper jaw. However, she felt that she had not been forewarned of several annoying consequences that had been occurring. For example, "... and he didn't

forewarn me ... when I go to eat, my jaw's cracking", "my mouth is sore all of the time" ... I don't think the top and bottom are compatible". Furthermore, when she expresses her concerns to the dentist she feels dismissed and guilty for mentioning them resulting in a feeling of loss of self-worth. This is due to his responses such as: "Oh, that's normal", or "I don't know what your problem is, everything is fine". She also notes that he is "always in a hurry".

She expressed to me that if in the event her "o-rings are too tight—that's no problem now - I am used to that... I just leave them in". In an attempt to ward off any unexpected "loss of o-rings" she now carries four spares with her whenever she travels. She states that she now has a fixed implant prosthesis for her upper jaw that is retained with 8 individual implants. However, she acknowledges that she only has "one" access point for cleaning her mouth and "there is really not that much care". "I just brush them and I don't know what more is involved as the dentist never tells me anything about that". She continues to say "I don't know how I am supposed to clean these compared to the bottom ones".

It has been four years since the upper prosthesis was completed and she still feels that every time she goes in for her quarterly implant re-care appointment, "it's poking and pulling and twisting". She also feels "[I] am at the mercy what they do and [I] have no choice."

In this re-interview I also addressed comments that I felt needed further clarification. For example, she had mentioned that the implants were "part of her" so I asked her to further explain what she meant by this term. Her answer to me was "probably just accepting I have to have them... so I have to cope with them whether I like it or not". She further explained what coping meant to her. "Coping is making the best with what I have". She explains that dental implants are a "big commitment of time, [self-care], being uncomfortable, long process, and financial part is high and on-going". She expresses emphatically that even though she prefers the top fixed implant retained prostheses to her lower removable type "I still watch what and how I eat...

[they are] not the same as having your own teeth". She goes on to say that the top "feel a lot more permanent and part of me than the bottom ones... there's room for them to move ... more friction (rubbing against the gums). So now she says that the dentist "is trying to talk me into doing it [a fixed prosthesis also with more implants for the lower jaw]... so I think he has been learning as he goes along... using me like a guinea pig". She finds that the chronic nuisance of trapped food under her bar/overdenture causes her distress both physically "it's painful" and psychologically "It annoys me because I didn't think that I would have to go through any of that". Referring to the fact that when she is dining out she needs to seek a public washroom and sometimes the cubicle within the washroom "to take them out and get rid of it [food]"...it's embarrassing". She also expresses that "I knew that I was going to go through a lot ...but had I known how bad it was I wouldn't have done it but now that it's behind me, I'm glad I did". However, her last imparting words to me were "If I could've kept my [upper] front teeth [2 central incisors] and gone with the dentures I would've taken that route rather than this". She is not totally convinced that the upper implants were the right decision for her. My question to her was "Do you feel that that it was the right decision for you"? Her answer to me was "Probably [hesitates], yeah".

Unfortunately, and as chance would have it, the interview with this participant who did not have spousal support for implants was interrupted when her husband subtly and unexpectedly entered an area that was close to our interview space. This participant then demonstrated a remarkable change in her demeanour. She took note, hesitated and was more distant from that moment on when answering the next few questions remaining in the interview. However, this nonverbal communication during the interview appeared to further elucidate the participant's concerns with respect to her husband's disapproval of her decision to go ahead with dental implants. In an attempt to reclaim her candidness in our interview, when her husband left their home on an errand, we discussed this and she agreed and continued to be more candid in our off audio conversation.

Upon further discussion of this change in demeanour and hesitation of answers she disclosed that she did not want to give her husband any more ammunition to remind her once again that he had advised her not to go forward with dental implants.

### Bridge

Bridge was 84 years old at our first Interview. She has been married to the same man for 54 years and they have 2 sons and 2 daughters. She is extremely proud of her family. Her husband is a dentist as are a daughter and son. Her other two children are successful entrepreneurs. She was also proud of the fact that she worked and paid for her husband's dental education. She had always played an important role in his dental practice. She is an avid golfer and bridge player.

Somatically, she notices that "she is beginning to feel [her] joints," but "not that bad". She feels that "[she] is in good health...I come from good stock... my mother was 96 when she passed away... that may have a lot to do with it". However, she does admit to having a poor memory; "I do not have a good memory... it was never good, it's deteriorating".

She feels that she had genetically poor teeth. As an older adult, both her husband and son determined that she was a candidate for dental implants. They placed an anterior maxillary removable prosthesis retained with five implants at no monetary cost. She stresses, "My husband and son knew best and that's what I was doing". She does note however that "If I didn't have it in the family I might have been more concerned". She expresses that she has no problems in her oral care per se but does say "I am now more aware and do more than I would have normally, because I am concerned about them". She continues to say "I have an advantage...[her husband, son and daughter are dentists] ...consequently, if I had any problem I just voiced whatever it was and it was taken care of". She adds, "I don't recall any problems because I didn't expect anything [to go wrong]".

She explains her mainstay to a clean mouth is the daily Peridex (an antimicrobial rinse) that she uses to clean her mouth and says "it is easier now than in the beginning" to care for her implants.

When she considers if she suffered from a stroke or developed rheumatoid arthritis it would not be a concern as she "feels [she] has the family behind [her]... I am very fortunate that way". She further expresses "I know I would be taken care of by one in the family". She also believes that because the prosthesis is removable she has "a better chance of having care of [her] teeth... It would be more work if the implants were right in". She explains that definitely she would both recommend and discuss her implant experience with anyone considering dental implants. She is very pleased with the results and would do it again. However, when asked if it were necessary to go ahead and place implants in the lower jaw would she do it. She says yes but qualifies that if it were done today "I wouldn't have them until I was 88... that's the trouble". She goes on to say "if you leave it too long, it's too tedious, time consuming... it's a few years". She conveys that at times she finds that "I am a masher [grinds her teeth] at night... so when I do that I have an irritation... then I have a night or two that I remove them (prosthesis)". When we discussed whether she would have had dental implant therapy had it actually cost her financially, (her implant treatment was provided to her at no financial cost) she hesitates but answered, "Yes, I would still have it done... my husband would have insisted".

This lady communicates that she "can't be bothered" with beauty enhancing elective procedures and only had her cataracts removed because "they told me I might not ...get my driver's license". She confides that her husband has had a stroke two years ago and is currently "having implants". She feels that he is "going through this" because he is a dentist. However, she articulates quite clearly that "if I had a stroke, and was feeling like that... I wouldn't bother".

On re-interviewing this lady, her husband had died and she was not enjoying her solitary life as a widow. As far her health is concerned, she claimed that the "joint

discomfort" was no worse off but rather "about the same". She did say that the discomfort now elaborated itself as "cramps". She has also suffered from "goiter" problems, neck problems and dizziness to the point she falls and most recently had seriously injured her forehead and cheek bone. She is also experiencing more frequent bouts with "the flu" and feels that her poor memory has deteriorated moreso since our last interview. She is now actively involved in acupressure, acupuncture and massage therapy (something her daughter set up for her) and feels that it is helping diminish her "dizzy spells" and neck pain.

She recently experienced a fracture problem with her implant prosthesis. However, she explains that being the mother of the dentist, it took one phone call and she was in the lab and all was taken care of within an hour. She coyly adds "as his mother I got beautiful service". Outside of this isolated incident, she is not experiencing any problems with her dental implant self-care and practices "the routine that I've been automatically going through the last four, five, six years... not much change at all". Moreover, she finds that she has "been taking them out at night [moreso] because I'm biting too hard".

When asked If she feels the dental implants are a part of her, she responds by saying "I can't remember anything ... I can't compare it to anything... it's been like that so long". She also affirms that she cannot remember if she has implants in the lower jaw: "I really don't know... I'm not sure...my memory has gone to hell", but she does say "I can chew anything I want... I'm not restricted".

If this lady finds herself with food trapped under her prosthesis now and she is in a public setting, she takes herself to the washroom, takes her overdenture out and says "I don't know them and they don't know me and I couldn't care less.... there might be a time many years ago it would've bothered me but nothing like that bothers me right now".

She expresses that she is "absolutely" satisfied with the final outcome of her dental implants but continues to say "let me put it this way, I have no choice... I have what I got and get along with, I never think about my teeth". She also claims that "I just wouldn't want to go through all this again". She doesn't feel that she is concerned about her implants as she states "I can't think back to be concerned about it because I can't recall it".

At the end of our interview she confides that in order to keep herself busy these days she "looks after the petty cash for her [strata] building as well as the rental room".

### Gardener

This gentleman was 74 years old when I first interviewed him and was 77 when I re-interviewed him. He was a high school teacher for many years before retiring. He is married to his long time sweetheart and has one daughter and one son. He keeps himself constantly busy with gardening, playing tennis and golf and describes himself as a "worker" and "neat freak".

For many years he "suffered" with a most intolerable upper partial denture. It "never fit...it wobbled, [it] fell out when speaking," and "I was not able to eat any food of substance". He had teeth spanning from his right central incisor to his right second premolar extracted when he was 17 by a "not so likable, aggressive and a noted alcoholic" dentist. Apparently, this had not been discussed with either the participant or his parents. And only after the fact did he and his parents become aware of what had occurred as he states "my dad was absolutely furious, just furious!" He described this as a serious disservice to him at such a young age and described the "after effects [as] traumatic" saying "I remember being in school, and trying not to smile".

Many years later (1992) he read about dental implants in a newspaper advertisement and decided to make a telephone call and investigate this new dental procedure. After a lengthy interview with the advertising dentist he had been told that

he was an “ideal candidate” for dental implants. However, “when he gave me the price I was shocked... at that time I couldn’t afford it...so I let it go”.

Six months later he received a call from that very dentist asking him “if [he] would be interested in taking part in a [dental implant] study club”. The “cost for the dental implants would be free” and all he had to pay for was the prosthesis. He jumped at the chance and was supported by both his daughter (who was getting married within two days after his implant surgery) and his wife. He had 5 implants placed and now has had his completed maxillary fixed implant retained prosthesis since 1993. He has experienced “three problems [with] teeth falling off [central and premolar]”. The first time this happened he was on a European tour and whilst in London England “the [central] tooth had fallen off”. To have it repaired in England was “exorbitant” so he waited until he returned to Vancouver, only to find “[the dentist] was on two weeks holiday”. The participant expresses to me “so here I am walking around with this goofy smile for two weeks... luckily I have a large upper lip, so you can’t actually see my teeth”. “Sometime later another one fell off, and about 2 or 3 years ago in Victoria, I swallowed [the] tooth” that had fallen off. He has since been told that the fixed prosthesis needs to be replaced and will cost “thousands of dollars”. “Consequently [he] has neglected to do so”.

He goes on to elaborate that he experiences difficulty with mouth access when flossing: “I really have to poke it up in there” .He also has difficulty finding a retailer with the specialty implant floss, “The major concern is finding the heavy duty red floss... I had to get it from the states”. At this point, he discloses to me that he orders it in bulk.

He also expressed that he had not thought of the consequences of not being able to take care of his implants if he had a stroke or a mental or physical disability but stated that his wife did. She had said to him on several occasions, “How am I going to get in there and clean those damn teeth?” should anything happen to him. Then, he alluded to having expectations of family help should something happen to him.

He stated “Could you imagine being in a home where someone is cleaning my teeth... but I know my kids would care for them”. After having said this he admitted that he not yet spoken to them about it.

He recalls some embarrassing moments when “you’ve got food stuck up in your implant denture... you try with your tongue very subtly to remove it” and a family member tells you “for heaven’s sake go to the bathroom and clean your teeth”. Then, alluding to the broken front tooth again, there was the time when “for two weeks I wandered around with a gaping hole in my mouth and smile... it was a front tooth which was really embarrassing”.

This gentleman gives great accolades to dental implants and feels that the “problems” that he speaks of are of no major concern because “the joy of being able to eat all types of food,” and “you [can] carry on a normal conversation, as normal people do” outweighs any of the minor annoyances. He is an advocate for dental implants and makes sure he shares his story with others who are seeking dental implant therapy.

Things changed considerably for this person by the time of our second interview. In a matter of three years he now explains that “words escape [him]” more often than not and describes it as “a scourge with age”. He has had “some kind of eye surgery” on one eye and needs to have the other eye done at a later date. At this time he cannot recall exactly what the name of the surgery was. He is also concerned that for the “first time” following his physical there is “suggestion of the possibility of prostate cancer” and describes it as “a little scary”. He is also suffering from extreme “Sahara like conditions” dry mouth caused by medication that he has been taking for three years now for Glossopharyngeal neuralgia.

He goes on to describe several significant changes that have occurred in how he feels about his self-care of his dental implants. He is finding that plaque is accumulating more so around his implants, he has developed painful Lichen Planus (an inflammatory lesion of the soft-tissues in his mouth), bone loss around his

implants has been identified and “that is of concern”, the teeth on the bridge of the implants seem to have worn” and has been told by his new dentist (chosen so both he and his wife saw someone closer to home) that “your bridge looks tired”. He is also experiencing “an imbalance in [his] bite” and is “now only biting on the [opposite] side” to his dental implants.

He also expresses “More teeth on this bridge have fallen off and had to be re-glued” and now he is “faced where the bridge should be taken off [and remade].” However, this presents itself as a big problem financially”. He goes on to say “at our age [he and his wife] you’re thinking about cashing in some of our investments for your teeth and that is a serious consideration ... which was not one when [I] had the teeth done 15 years ago”. He continues with “and that’s something that no one was talking about 15 years ago but they should”. At this point I had to temporarily discontinue the interview as this gentleman went into a frantic coughing episode. He explains that this is something that that occurs as a result of his neuralgia. (The very first time he experienced this frantic cough was at our initial interview. However, at that time it had not been diagnosed).

Upon resuming the interview he expresses how the fixed dental implant retained prosthesis is “a part of him” and continues to compare to his eye glasses which “you take them off and put them down”. However, he does admit that he is “very disappointed... you realize all you've got is a flat surface and the tooth is glued on [it]” and “they pop off when you bite”. He continues to say, “I guess I was naïve... you imagine the post as being rock solid but somehow the [teeth] aren’t”. He does feel that having to see the implant surgeon annually in the beginning and then on a 5 year basis for inspection was an “added bonus”. However, he does point out that these check -ups were at no cost to him. Also, he felt he “was well looked after” because he was on a four month hygiene maintenance for the last 15 years. He asserts “On the whole I've been more than satisfied with the 15 years of use,” but goes on to say, “do dentists ever look at the long term implications and say, look ma'am, 5 years down the road... or somewhere along the line says...this is all

wonderful but things happen here and things break down...I hate to rain on your parade but it's not going to be all wonderful". He feels this information should be clearly communicated to the patient either in a pamphlet or verbally prior to acceptance of dental implant therapy because he believes "I'm sure that others who have had implants for 5 or 10 or 20 years probably feel the same way".

### Baseball

This gentleman was 72 years old when I interviewed him. He writes poetry and had published books on philosophy. To support his love of writing, he was a university professor until he retired eight years ago.

When asked if he has experienced any physical changes related to aging lately he quickly expresses his disdain at no longer being able to run, due to difficulty with breathing, which has been diagnosed as emphysema. "It's very shocking not to be able to run...I [could] play ball at once a week, sometimes twice". He carries on to then say, "I broke my hip about three and a half years ago so ... I'm grateful and thankful that I can just walk". Consequently between the two health problems he no longer does what he loves to do, "play ball". He also appears to see himself as a young man as he says, "a few years ago... when I was a kid, I ran everywhere...but I'd never do that anymore" stating how regretful he feels with his current circumstances. However, "Fretting is useless... forget about it and do something else instead". He continues to say, "but every once in awhile you dream of doing the stuff... and I'm sure that's very common among people ... you dream thoughtlessly but there are compensations". He elaborates by saying, "I get to choose where I want to travel now," but "you're just that old fart just like the other old farts on the boat". He articulates that "I used to just wear [glasses] for driving... when doing a public reading of poetry I would take my glasses off but now I don't anymore". "I now have one artificial lens and glaucoma". He also explains "I get terrible headaches... terrible, terrible and it makes me nauseated ...I lose a whole day from them". When reflecting about his dental implants he carried on to say, "The thing I'm the worst at is remembering what year something big happened".

He admits he was quite neglectful when it came to his mouth “until I was middle-aged, not going to the dentist at all” because “I couldn’t breathe”. He continues to say, “I’d be walking along with great holes in my teeth full of pain and I would have cloves stuck in there for years and years.... that’s eventually why the implants happened... I figured it was my only chance to not have those clackers [dentures] which to me was the kind of image I really didn’t like having”. Initially, he had implants placed in his late fifties and about five years later he lost those implants and had to have bone augmentation and new implants placed. He goes on to say “it took a long time,” but he looked at it as though in his mind “I set up a program” with the dentist “maybe helping each other out... like I could use the teeth and he could use the experience”. Besides, “the alternatives... a false thing, I didn’t like very much”. However, he does express, “There were times when I thought ‘ah let’s just forget about it,’ ... but I wanted to just be able to chew food... because most of my life I haven’t been able to”.

He also notes the financial cost “was frightening ... so I just turned my brain off to all that” and declares “I go to the dentist, I sit back, I endure all this stuff and then I see how I’m going to pay for it”.

He expresses that he dislikes and finds it “so annoying” to have to thread the floss and “yank [the floss] out underneath your bridges... I can’t see to do it right...it takes too much goddamn trouble... I’m supposed to be out reading philosophy...not messing with my teeth”. “You can’t do your regular flossing, you have to do this highly complex flossing that’s awkward and difficult”. He continues to say, “I sort of start wiggling it a bit and then throwing it away,” and “the water pick just didn’t become part of a routine”. More so, he explains, “Access is frustrating and boring,” and continues to elaborate “I’ve always sort of considered personal care time a waste of time. It’s like why do you have to spend time getting your hair cut, having a shower, and all those things? It’s just like time lost”. He continues by explaining how he manages these challenges. “I make deals with myself ... you flossed yesterday

so today you can do the other thing so as long as you do something every day it'll be okay". He further elaborates that he uses this rationalization when it comes to other chores relating to personal hygiene. "Well, I shaved yesterday so I don't have to shave today". When it comes to his personal care including his dental implants he states, "I'll do other things that waste time". However, he does say that trimming "my eyebrows are not hard to do, and my eyes are really the most important thing I've got... so I hardly ever forget that [my eye drops] two times a day". "I'm not as good at the puffer, [or] caring for my dental implants... doesn't seem as critical as my eyes". He says that he takes his eye glasses "when doing [his] oral self-care," and further describes that "I even have to take my glasses off to put my hearing aid on".

When asked if there is anything that hinders him in his self-care of his dental implants he quickly responds "impatience" and compares it to why he doesn't go swimming anymore. "You got to figure out what to do with [your] watch, keys, getting wet, getting the sand off me, etc". He continues to elaborate when it comes to his implants, "You've got to do all this tooth stuff then get your clothes on, and then you got to clean the bathroom, and... you know, it's annoying".

He continues to say that the most difficult task he faces when dealing with his dental implants on a day to day basis is "overcoming the guilt... I'm supposed to be doing that but I'm not... I feel I have this obligation that I'm not fulfilling". He describes this guilt as "existential" or "unnamed". He further explains "that the guilt works with the laziness or impatience or a combination of the two". He expresses that he does not experience a "fear of losing his implants" because he chooses to "not think about that". He ponders and says, "Quite often I think... but do not ask my dentist ... why should a person spend all of his money on their teeth when they're going to go into the grave with their perfect teeth? What's the point of that"?

He also addresses that his implants are "a part of me," and adds "They're not the only foreign metal I got on me... I've got four steel rods in my hip... a plastic lens in

one of my eyeballs” and finishes this thought by saying “I’m not aware of the non-me thing in there” but acknowledges, “I don’t feel like my hearing aids are part of me”. As far as decision making in his choice of a removable or fixed implant prosthesis, he responds with “Removable what? ... I don’t think I heard of that”.

In retrospect, he mutters “I think sometimes I feel that they’re going to be fine forever, right, which is not always true”. He continues to say “I didn’t know quite what to expect but I think they were as good as anything I would’ve expected. Certainly I can imagine way worse”. He goes on to say that “I have recommended them to other people... The only sad thing is that implant stuff is expensive and the people who have the worst teeth are the down and out homeless people. There’s a disconnect there somehow”. Wryly he says, “The only conclusion I come to is wouldn’t it be a great idea to be a dentist”.

We concluded the interview with him saying “This is pretty much all I have to say... besides tomorrow is March 30<sup>th</sup>. That means in two days, no tomorrow, the baseball season starts. Who can think about dentistry at the beginning of the baseball season?”

### BW

BW is a 91 year old woman, born and raised in Vancouver. She and her husband of 65 years had one daughter and three sons. She has seven grandchildren and 27 great grand children. Her husband passed away 10 years ago and she feels that “He left me too early”. They owned a very popular and lucrative bakery in Vancouver and lived quite comfortably. She is comforted by the fact that she has the support of her family, friends (one friend in particular of 50 years) and God. She also says that she socializes with her daughter’s friends... “We go to the casino... [and] dinner”. Since she was a child she goes to church every Sunday. She is very happy with her current living arrangements, “My son and daughter-in-law live upstairs... if I need anything, they’re right there”. She has had a full-time live-in care giver for the last five years.

She wears eye glasses but says “I take them off when I brush my teeth”. She further explains that she wears a removable partial denture to replace some of her upper teeth and a lower implant overdenture to replace all of her lower teeth. “I take both out overnight.”

She expresses that she suffers from hand/joint discomfort; “They [fingers] feel numb...and my shoulders”.

She remembers that her original implants were placed 15 years ago. However, when posed with the question, “Have you ever had a time when you couldn’t get them out or they floated in your mouth,” her answer was “no”. This is quite contradictory to the many times she saw her hygienist for implant hygiene and re-care. She also states that she is doing well because she uses “‘Sensodyne toothpaste’ to clean around the implants”. She goes on to say that she has never experienced having anything break off her prosthesis but has had “a defective implant”. However, at this point she realizes that she is no longer talking about her implant but rather her “pacemaker” and elaborates “I have no problem with my dentures”. Still she does admit to having her “dentures replaced... as far as [she] can remember”. She retracts this statement and stipulates “These are my original ones at least as far as I can remember,” and continues to say, “I have a poor memory”. She continues to explain, “I use my tongue to take it out and I use my hands [like this] to put it back in,”...but “I had to go several times to the [dental] office to get them readjusted”. She exclaims “They just didn’t fit right... yeah, I had problems with them”.

She feels that both the dental implants and eye glasses feel like a part of her. However, she chooses not to wear a hearing aid and adds, “If you turn your face to the side I can’t hear you”.

She explains that her “dental implants feel different than the natural ones,” and continues to say, “I can’t really explain it ... it feels like my mouth is closed and I can’t open it... sometimes they feel bulky”.

Also, she doesn’t remember if she had any part in the decision on either having a removable or fixed implant prosthesis but says that she is satisfied with [her] dental implants; “They feel fine”. She doesn’t recall what her expectations were and states that “My top partial that flips out ... is no different from my implants”. However, she goes on to say that she “bites her lower lip on and off”. She further expresses, “much like any other physical ailment, pain and/or discomfort on her body, at the time it’s there fine and when it’s [pain] gone it’s gone ...I don’t dwell on it”. She continues to say that whether it is the pain in her hands, shoulder or mouth she manages it by “searching for time out...” I do some exercises to get my mind off of it”. Quite often throughout the interview she repeats “Thank god for my health... and my children don’t let me be alone...I’m forgetfulish (sic)” but rationalizes by saying, “I’m not the only one who forgets”.

She prides herself with the fact that “I don’t sit around and mope about it ... It’s not going to help anyways so talking about it makes it worse... so I keep busy (I walk around the garden)... and I’ll say God help me... and I go do what I have to do”. She is adamant when she says “I can’t complain... I have a great family... I have everything that I want”. She re-iterates throughout the interview “I thank god for my blessings all the time”.

Recently, this lady was in the hospital for three to four days and comments that “No one took care of my mouth while I was there”. She doesn’t remember much more than that and in finishing our interview says, “This is for your studies ... I hope I helped”.

## Opera

Opera is a 73 year old gentleman. He has been married for 51 years and has one son and one daughter.

He explains he has been on medications for low blood pressure and cholesterol prior to his implant therapy “but the medications have caused a few anxiety problems, dizziness, muscle fatigue, Charlie horses and claustrophobia”. He notes that “The claustrophobia showed up when [he] started up with [his] dental implants”. He goes on to say “The implant surgeries... and I have had a few, really were my problem... when I’m laid back, my brain doesn’t like it... everything starts to close in on me and I have to stand up”. He continues to say, “However you can’t stand up in the middle of surgery, so prior to the surgery I learned to medicate myself thoroughly so that I’m just limp”.

He has eight implants on the upper jaw with a removable prosthesis and two implants to replace single missing lower teeth. He also has several other crowns and bridges crowns and bridges in his lower jaw. He wears eyeglasses “just for reading,” does not experience any joint discomfort but expresses that he has had “two heart attacks... one before his extensive dental implant therapy and one during the implant process”.

He describes his implant process as “experimentation personified”. He says the process itself was “over four years”. He continues to say “What the doctor envisions doesn’t necessarily give you what you are going to get... by that I mean I was surprised by several things... the denture would pop off a lot or come off its mounting on the front while I was chewing”. He elaborates, to adjust the fit and biting contact “He [the dentist] sanded, sanded and sanded and then another thing happened... the denture was sliding up and down”. At that time he was told “Oh, not to worry that’s the o-rings”. This response made him believe that it was a very trite and simple problem to deal with. He was then sent to a dental technician. Each time he went to the dental technician and had his o-rings replaced “[my] bite was off

again and had to return to the dentist for more sanding". He found himself going back and forth between the dentist and technician four times within one year. Finally, he was told by the technician that "the torque that has been created on the upper is too intense... this design was meant for the lowers". "The o-rings don't like it... so please don't come back". He continues to say, "The lab doesn't want to do it anymore because [they] don't get paid". "So am I happy about it? No I'm not, but what can I do?"

He then went back to his dentist and "told him all that". The dentist's response to him was "You know, we have to accept what we've got," and then the dentist continues to inform him that "since four years ago, there's a new invention... it's not a bar/overdenture". Opera says "He now wants me to go into this new upper invention... it's another twenty thousand dollars!" He continues to say, "I talked it over with my wife and she said "Forget it, we're seventy three... so I have to make do with what I've got". Ironically at this point he still equates this bar/overdenture to his prior removable partial denture.

Moreover, this gentleman remembers originally he had asked [the dentist]; "if [he] could have one tooth for every implant". When I queried him further about this statement it was determined that he wanted individual implants each with a fixed prosthesis. At that time he was told "No, that's a very expensive undertaking... they don't always work... one might go bad and then what do we do?" He was also informed that "[he] was looking at another fifty percent cost over and above the bar/overdenture". Furthermore, he was told "At your age you may not outlive the need for it". He and his wife thought about these comments posed to them and decided that "It was an age thing and I was betting all this money... I could've died the next year... so the end result I listened to him... this was his choice". Therefore, on the resolute advice of the dentist he "went along with the bar overdenture implantation".

He articulates that “I have to make do with what I’ve got...luckily my son in law is a dental mechanic so ... every six months I have to have the o-rings replaced”. “So the o-rings cost me about two hundred fifty dollars and I do it myself”. He expresses that after “spending fifty five thousand dollars [he] has this imperfect piece of equipment”. He goes on to say “[he] does not feel good about it...it ain’t (sic) exactly what it was supposed to be... so I’m not happy about that”. He does say when the o-rings have been replaced, “it [the denture] really stays in place and I can chew anything... until the o-rings quit... then I have to start fresh ... replace them ...and then the sanding again in order to make them fit... I have no other choice but to follow this”.

He expresses “For self cleaning, in the first three or four months I had trouble just getting it out... I phoned the dentist”. His advice was to “just keep working at it”. He goes on to say that although he has “learned to do it... the [overdenture] is [still] difficult to get out” and continues to say that he opts to “go to the [dental] hygienist...so she’s on the watch for anything that could be problematic”. He continues to explain that he had to have “one implant extracted due to infection and replaced immediately” as he remarks “the other teeth rely on all the tension to be spread evenly... so if you take one out, the others won’t work as well”.

He explains that his self-care “is routine and [he is] good at it”. He refers his constant flossing and proxabrushing as his “Japanese tooth ceremony” and elaborates, “I am always pushing the stuff out... it’s a collection system... I’m constantly cleaning all day long, every time I eat”. He discloses “...but I am used to it and I do it... it’s another chore”.

When discussing his heart attack that occurred at a point during the process of his dental implants he explains that he “was mobile and looked after all [his] hygiene”. He continues to say, “... but I can’t imagine not being able to get up out of bed... going to the washroom... and cleaning my teeth”. He ponders this and elaborates, “You know, honestly I don’t have a plan B... I may have to remove [the overdenture] for a period of time... and somehow clean it... I may have to fall back on the old

denture... keep it in reserve for an emergency... honestly I just don't know". He completes this thought by saying "If I was incapacitated how would I clean this?"

This gentleman refers to his implant system as "a foreign object... my brain doesn't like it". He explains that "getting over what my brain was telling me (get rid of this) was difficult... then the anxiety part became a factor... I still have to keep at it [knocking his anxiety down]". He further explains "It's an article that is not natural... I talk different, my smile's different". He points out that "I'm always concerned there's debris in the creases of the teeth and somebody that I'm talking to will see it ... it's like a magnet for debris".

He goes on to say, "So I keep these little hygiene brushes ready so that I can keep cleaning all day". He explains "the ongoing cost is evolving", for example, the need for extra dental aids, more frequent hygiene appointments, four o-ring replacements twice a year, and maintenance (sanding) of overdenture. He then goes on to say that "At this age level, I have to be thankful [to the dentist]... it's complementary to eating, chewing maybe to digestion... I have all that so I have to thank him for that". He continues to say "I've been improved by a lot and it's cost me a fortune but it's not perfect ... I thought it would be... then you find out it's not perfect". He also goes on to say that he is not satisfied with the final outcome of the choice made for him and says "the end result is not one hundred percent".

He explains that there is no comparison between his dental implants and his natural dentition "they are not the same". He elaborates by saying, "These things [bar/overdenture] are an infant invention and I think it's not been proven," but goes on to say, "the implants are proven". He then says, "I was lead to believe that it [bar/overdenture] would solve everything... I was not duped but... it's not right... he shouldn't be using this system". He goes on to say, "I'm thankful but I'm disappointed... so yeah, life goes on".

This gentleman is adamant when he expresses “I’m not going to change the hardware... that’s the way I’ll go... my mouth doesn’t like it... my brain doesn’t like it... but I’m forcing my mouth and my brain to accept it”. He elaborates, “Many times as I am laying in bed... this thing [brain] talks to me and says ‘you really should get rid of this’”. He continues to say, “I know these things I eat with are not mine... it’s a foreign intrusion... it feels right but it doesn’t”. He exclaims “After all these years, I still feel the same way”.

When our interview is coming to completion this gentleman becomes reflective and expresses that there is something that he would like to tell me. He says, “I’m very sorry that in my formative years, I didn’t look after the welfare of my teeth and mouth hygiene... I was a fool and should’ve looked after [them]”. He continues to say “I had teeth extracted from the top [jaw]... it was painful... hard on my feelings”.