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Seniors and Boomers:

Living Longer, Living Healthier. Considerations for Dental Professionals

Course # 10-15

Disclosure Statement:

- The content for this self-study course was developed and written by Carol A. Jahn, RDH, MS; a Water Pik, Inc. employee
- This course was designed, developed, and produced by Water Pik, Inc.
- Water Pik, Inc. manufactures and distributes products addressed in this course

Course Objective:

To provide the dental team with research and information to understand and recognize the overall health needs and expectations of Baby Boomers and Senior citizens and provide them with quality care and patient service.

Learning Outcomes:

- Understand the societal and social impact of aging
- Identify the chronic diseases, conditions, and disabilities affecting those over age 50
- Discuss how chronic disease and disability may impact oral health
- Recognize how physical limitations affect daily self-care and make appropriate recommendations

INTRODUCTION

Every eight seconds, someone turns 50. By 2012, 100 million people will be 50 or older. People over the age of 65 exceed 35 million. By 2050, that number is expected to be 89 million. Influenced by the US Baby Boom that occurred between 1946 and 1964 followed by lower fertility rates especially in Europe, for the first time, globally those over 65 will soon outnumber those under the age of 5.[1]

The impact of this growing aging population is leaving its' mark on a pop culture that has long emphasized youth. It has become common in recent years to hear phrases such as "50 is the new 40" or "60 is the new 50". While it may seem that these are simple marketing phrases designed to make us feel better about getting older, there is scientific evidence indicating the aging process is being postponed. Findings demonstrate that levels of mortality and other indicators of health that used to exist at age 70 now occur at age 80; and those that used to prevail at age 80 appear at age 90.[2] So, not only are people living longer, but people are living longer in better health.

BOOMING NUMBERS OF SENIORS: IMPACT ON SOCIETY

It is anticipated that the growing numbers of older individuals, especially the Baby Boomer generation, will create a vastly different older population than has been seen in the past. Many will continue working to some degree. They will likely have more discretionary income. Few will be in nursing homes; more will choose active retirement communities. Non-Hispanic whites make up more than 80% of the older population; by 2030 the number is expected to decrease to 72%.[3]

Another dimension of the aging population is the number of people living to ages 90 and beyond. The fastest growing segment of the population is those aged 85 and older; referred to by some as the oldest-old or the super-elderly.[5] Centenarians or those age 100 and above now number more than 55,000 and are growing daily. About 80% are women.[3] Importantly, data now indicate that many of the oldest-old have health profiles that are similar to those 7-8 years younger allowing them to postpone disability and lead healthy, independent lives.[5]

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Work Life

Better health, higher levels of education, economic changes, knowledge work versus physical labor, availability of health insurance, increased prevalence of retirement savings plans (401K) versus pensions, and eligibility for social security benefits mean that more older individuals (men and women) are choosing to stay in the work force longer.[3,6] Between 2003 and 2010, the fastest growing labor force group has been those aged 55 to 64. By the year 2020, when all Baby Boomers will be 55 years or older, the percentage of workers age 55 and up is projected to be over 20%; an anticipated 8% increase from 2000. The enjoyment of working and usefulness is the most common reasons for staying employed.[3]

Not only are older workers choosing to transition into retirement rather than stopping work completely, but employers are encouraging older workers to stay in the work force by offering flexibility in terms of working fewer hours, fewer days or even a part-year schedule.[6] More older individuals than younger choose self-employment or alternative employment arrangements such as independent contracting, on-call work, temporary help, or contractual agreements.[3] Senior citizens who stay in the work force are twice as likely as their non-working counterparts to report that they are in very good to excellent health. In fact, those who retire at an early age, between 50 and 58 are the most likely group to report poor health as a major reason for retirement. Older workers also report higher levels of education and greater prosperity.[3]

Home Life

About 80% of people over the age of 65 own their own home. Most do not move. Those that do tend to do so around the time of retirement for reasons such as climate, property, or health care access. The percentage of older people living in a nursing home has been declining since 1990. In 2000, only 4.5% of those 65 and older lived in this type of facility. Both improved health and increasing options for long-term care play a role. Assisted living, which allows people to have more privacy and independence yet provides some personal and nursing services as needed is increasingly popular as is residential care facilities. Residential facilities have various levels of care in close proximity allowing people to move between arrangements as they need.[3]

With increasing age, living in a nursing home becomes more likely with about 18% of those over 85 years residing in one. The majority (41.7%) of seniors living in a nursing home are women over age 85. Male nursing home residents are generally younger; possibly because they have higher rates of serious and/or permanent injuries at a younger age.[3]

CHRONIC CONDITIONS: MEDICALLY COMPLEX AND COMPROMISED

As people live longer, the prevalence of disease especially chronic diseases like heart disease, chronic obstructive pulmonary disease (COPD), diabetes, and arthritis increases.[4] Improved screenings leading to earlier detection coupled with more effective treatments has decreased suffering, disability, and mortality.[2,5] This is evidenced by the fact that for the 8th straight year, the US mortality rate has dropped. The 2007 (last reported) rate is half of what it was 60 years ago.[3] More people are living to age 65, and those who do have more years remaining than people did a century ago.[3]

The top four leading causes of death in older individuals are heart disease, cancer, stroke, and COPD.[3] Heart disease and cancer account for nearly half of all deaths. Diabetes and Alzheimer's disease also are responsible for a significant number of deaths in seniors. In 2007, Alzheimer's disease and diabetes switched places with Alzheimer's disease now the 6th leading cause of death and diabetes the 7th.[7]

Heart Disease and Stroke

Cardiovascular disease is responsible for more deaths in the US than any other cause; it claims more lives each year than cancer, lower respiratory diseases, and accidents combined. It is the leading cause of death in both men and women accounting for one in every 2.9 deaths. Thirty-three percent of CVD deaths occur before age 75. Men are more likely to suffer a heart attack before age 75 while women are more likely to suffer a stroke. The average number of life years lost due to a heart attack is fifteen. Stroke is the leading cause of serious, long-term disability.

Ninety-percent of both male and female coronary heart disease (CHD) patients have exposure to at least one of the following risk factors: hypertension, high cholesterol, current cigarette use, or diabetes. For stroke, hypertension and cigarette smoking are the strongest risk factors.[8]

High blood pressure (HBP) or hypertension is a factor in 69% of people who have a first heart attack and in 77% of first strokes. It affects one in three adults. Until age 45, more men than women have HBP; between 45 and 54 years, the percentages are similar. After age 54, more women than men have HBP.[8]

Having total cholesterol at or above 200 mg/dL affects 46.8% of the adult population. A little over 16% have total cholesterol greater than 240 mg/dL. Only about one-third of treated patients meet their LDL cholesterol goals. For patients with a history of CHD, only 20% are at their LDL goal. A 10% reduction in total cholesterol levels may result in a 30% reduction in the incidence of CHD.[8]

Cigarette smokers are 2-4 times more likely to develop CHD and have a 2-3 fold increased risk of dying. Smoking doubles the risk for stroke. Male smokers die about 13.2 years earlier and females 14.5 years earlier than their non-smoking counterparts. Second hand smoke also plays a role as non-smokers exposed to cigarette smoke at home or work increase their risk of heart disease 25%-30%.[8]

Heart disease death rates in people with diabetes are 2-4 times higher than in those without diabetes. About 68% of people with diabetes die of some form of heart disease and about 16% of stroke.[9] The presence of diabetes at age 50 has been shown to confer the highest lifetime risk for cardiovascular disease of any single risk factor.[10]

Diabetes and Obesity

Diabetes affects 23.1% of people (12.2 million) ages 60 and older. Another 35.4% of seniors have prediabetes; a condition in which the fasting blood glucose is higher than normal, but not high enough to be considered diabetes. Prediabetes increases the risk of developing type 2 diabetes. More than one half of all cases of diabetes are diagnosed between the ages of 45 and 59. Another 34% are diagnosed at 60 or older.[9] More than 42% of those with diabetes are 65 years or older. As the numbers of seniors grow, it is estimated that the proportion will increase to 53% by 2025 and 58% by 2050.[11]

The risk of death for people with diabetes is twice that of people without diabetes.[9] A person with diabetes who suffers a heart attack has a significantly higher mortality rate at 30 days and one year post event than those who have a heart attack and do not have diabetes.[12] It has also been shown that up to 22% of people

ages 50-75 with type 2 diabetes may have asymptomatic coronary artery disease.[13]

In addition to heart disease, both type 1 and type 2 diabetes can lead to other serious complications. It is the leading cause of blindness and kidney failure. It affects the nervous system; almost 30% of people with diabetes over age 40 have impaired sensation in their feet. Diabetes is responsible for more than 60% of non-traumatic limb amputations. People with diabetes may be more susceptible to other illnesses, and once they get them they often have a worse prognosis. The cost of these complications results in medical expenditures that are 2.3 times higher than in the absence of diabetes.[9]

In addition to recognized systemic complications, having diabetes has been associated with increased cognitive decline, physical disability, falls, and fractures. Men and women over age 60 with diabetes were more likely to be unable to walk a quarter of a mile, climb stairs and do housework when compared to similar aged cohorts without diabetes.[11] Emerging evidence also seems to indicate that people with type 2 diabetes are more likely to have Alzheimer's disease and/or Vascular dementia.[14]

Overweight/obese is the strongest environmental risk factor for type 2. More than 85% of people with type 2 diabetes are overweight. Overweight is defined by a Body Mass Index (BMI) of 25-29.[9] Those with a BMI 30 and over are considered obese.[15,16] For those who are obese, the risk ranges from 3 to 6 times more likely depending on body mass index (BMI).[15,16]

Obesity influences metabolic and endocrine functions resulting in a greater production of agents that increase insulin resistance and systemic inflammation.[17] A 2010 report found that 68% of US adults are overweight or obese.[18] Results from the Framingham Heart Study indicate that overweight and obesity in adulthood are associated with large decreases in life expectancy and increases in early mortality.[19]

Lung Cancer and Chronic Obstructive Pulmonary Disease (COPD)

Lung cancer is the leading cause of cancer death among people 65 years and older.[3] Eighty-one percent of people with lung cancer are over the age of 60. In 1987, it surpassed breast cancer as the leading cause of cancer death in women. It causes more death than the three most common cancers (colon, breast, prostate) combined. The five year survival rate is only 15.6% compared to 64.6% for colon, 89.1% for breast, and 99.7% for prostate. The number of deaths from lung cancer increased 4% between 1999 and 2006. More cases of lung cancer are diagnosed in men than women; however the incidence in men has hit a plateau while it continues to climb in women.[20]

Smoking is the prime contributor to the development of lung cancer. Men who smoke are 23 times more likely to develop lung cancer and women 13 times more likely compared to non-smoking counterparts. Second hand smoke is also a contributor. Non-smokers who are exposed to second hand smoke at home or work increase their risk of developing lung cancer by 20%-30%.[20]

Chronic Obstructive Pulmonary Disease (COPD) is a term that refers to chronic bronchitis and emphysema; lung diseases that obstruct airflow and interfere with breathing. These diseases often co-exist. About 12 million adults have been diagnosed with COPD and another 12 million may have it and not be aware of it. COPD death is higher among women than men.[21]

Smoking is the primary risk factor for COPD. It contributes to 80%-90% of all COPD deaths. Second hand smoke and pollution may also play a role. People with COPD report significant life limitations from the disease ***(Table 1).*** They often experience shortness of breath and in advanced stages may require supplemental oxygen and mechanical respiratory assistance.[21]

Table 1: Percent of People with COPD Experiencing Limitations to Daily Life Activities[21]	
Normal physical exertion	70%
Household chores	56%
Social activities	53%
Limited ability to work	51%
Sleeping	50%
Family activities	46%

Oral Cancer

Oral cancer was diagnosed in 28,500 people in 2009. The survival rate for a stage IV diagnosis ranges from 30%-48% depending upon location. It affects more men than women (2:1).[22] The most common sites are ***(Table 2)***:

Table 2: Common Sites for Oral Cancer[22]	
Tongue	25%
Tonsils	10-15%
Lip	10-15%
Floor of the mouth	10-15%

The average age of diagnosis is 62 although one-third occur in those under age 55. When diagnosed, about 15% are found to also have cancer in the larynx, esophagus, or lung. Of those

cured, about 10%-40% will develop another cancer later. Eight in ten people with oral cancer use tobacco. Seven in ten are heavy drinkers. People who are heavy tobacco users and heavy drinkers are 100 times more likely to develop oral cancer. Recently, the human papilloma virus (HPV) has been shown to be a factor in about 25% of oral cancers especially cancer of the tonsils (50% of cases). People who develop oral cancer due to an HPV infection are less likely to be heavy drinkers or smokers. HPV-related oral cancer seems to have a better outcome than that caused by tobacco or alcohol.[22]

Alzheimer's Disease and Vascular Dementia

Alzheimer's disease is the most common form of dementia accounting for about 60%-80% of all dementia cases. In Alzheimer's disease, synapses in the brain responsible for information flow begin to fail; the number of synapses also start to decrease and brain cells begin to die. The second most common type is Vascular dementia. This often occurs due to small strokes affecting blood flow to parts of the brain. Symptoms may be similar to Alzheimer's but memory is sometimes not as seriously affected. Many people have mixed dementia; often both Vascular and Alzheimer's. People affected by Parkinson's disease may also experience dementia in later stages.[23]

Out of the 5.3 million people with Alzheimer's disease, 5.1 million are over age 65. This translates to 1 in 8 or 13% of those aged 65 and over. More women than men have the disease; this is believed to occur because women live longer not that they are more susceptible. As the number of elderly increase, it estimated that by 2030, 7.1 million will have the disease and by 2050 between 11 and 16 million.[23]

Alzheimer's is believed to be caused by multiple factors rather than a single factor. Genetics play a role as does overall brain health. The brain is a highly vascular organ and people with CVD, diabetes, and other vascular diseases seem to be at greater risk of developing Alzheimer's. There is some evidence to indicate that controlling cholesterol and blood pressure, managing diabetes, stopping smoking, losing weight, and increasing physical activity may help or avoid cognitive decline.[23]

People with Alzheimer's live an estimated 4-6 years once they have been diagnosed. Many people with Alzheimer's are assisted by unpaid caregivers namely family and friends. The majority of unpaid caregivers are women. Many provide more than 40 hours of care a week and 43% have been providing care for at least 4 years. Thirty percent of caregivers are also caring for a child or grandchild under age 18. Caregiving takes a toll on the health of the caregiver with many experiencing emotional stress, depression, or other health issues.[23]

FUNCTIONAL LIMITATIONS AND DISABILITIES

Growing evidence indicates that the prevalence of disability is declining. Earlier detection of disease, better treatments, and access to rehabilitation services have contributed to this advancement.[2] The ability to delay the onset of disability has been shown to be a stronger predictor of longevity than staving off disease. About a third of people living past age 100 have coped with chronic illness for 15 years or more prior to turning 100.[24] Staving off disability may mean that seniors have greater opportunity for social interaction. Older women with large social networks have been shown to have better cognitive function and less dementia.[25]

Disability may be defined as a substantial limitation in a major life activity. This includes not just the ability to reach, bend, stoop, stand, sit, or lift but activities of daily living (ADL) such as bathing, eating, toileting, dressing, and getting out of bed or a chair. An individual may also be considered disabled if they cannot fix their own meals, do light housework, manage their own money, and use the telephone or shop for personal items (Instrumental Activities of Daily Living). About 14 million people over the age of 70 have some type of disability. Disability can result from chronic diseases like diabetes, CVD, COPD, Alzheimer's, osteoporosis, or arthritis. Older individuals are also more likely to have vision or hearing impairments that may decrease their functional independence.[3]

Osteoporosis and Hip Fractures

The National Osteoporosis Foundation estimates that about 10 million people in the US have osteoporosis. Of this number, 8 million are women. Women can lose up to 20% of their bone mass in the 5-7 years post menopause. Many times people do not even know they have it until they break a bone. Factors that increase the risk for osteoporosis include older age, low calcium and vitamin D intake, an inactive lifestyle, cigarette smoking, and excessive use of alcohol.[26]

Osteoporosis can lead to bone fragility and increased risks for fracture. It is responsible for more than 2 million fractures yearly ***(Table 3)***. It is expected to rise to 3 million by 2025. One in two women and one in four men over age 50 will experience an osteoporosis related fracture. A women's risk of hip fracture is equal to the combined risk of breast, uterine, and ovarian cancers. The rate of hip fracture in women is 2-3 times higher than in men although the one year mortality rate for men with a hip fracture is twice as high. Women who have had a hip fracture are four times more likely to experience a second hip fracture. Hip fractures reduce quality of life. On average, 24% of hip fracture patients over age 50 will die in the year following the fracture. One in five will require long-term care. At six months after a hip fracture, only 15% can walk unaided across a room.[26]

Table 3: Yearly Osteoporosis-Related Fractures:[26]

- 135,000 pelvic fracture
- 297,000 hip fractures
- 397,000 wrist fractures
- 547,000 vertebral fractures
- 675,000 fractures at other sites

Arthritis

Osteoarthritis (OA) is the most common form of arthritis. It affects 33.6% (12.4 million) people over the age of 65. It most commonly affects the hands followed by feet, knees, and hips. It is a major cause of work disability and reduced quality of life. Symptoms begin gradually after age 40. After age 50, it affects more women than men. There is no cure; only treatment to relieve symptoms and increase function.[27]

People who are obese are 4 times more likely than normal weight people to develop OA of the knees. Weight control plays an important role in the prevention and management of symptoms. It has been shown that women who lost as few as 11 pounds cut the risk of developing knee OA by 50%. For every one pound of weight lost, there is a four pound reduction in the load exerted on the knee for each step taken during daily activities. A weight loss of 15 pounds has been shown to cut knee pain in half.[28] Knee and hip joint replacement procedures account for 35% of total arthritis related procedures.[27]

Impairment of Vision or Hearing

Vision and hearing impairments impact the quality of life and independence of older individuals. They are risk factors for falls, social isolation, and depression. Seniors account for about 37% of all hearing impairments and 30% of vision impairments. One in five adults age 70 and over has both hearing and vision loss.[3]

Vision impairment is defined as vision loss that cannot be corrected with glasses or contact lenses alone. There are 3.3 million American over the age of 40 with visual impairments. By 2020 the number is projected to be 5.5 million. The most common causes are cataracts, age-related macular degeneration, glaucoma, and diabetic retinopathy. Cataracts account for 50% of low vision cases.[29] Data shows that older individuals are experiencing better vision; likely due to improvements in cataract surgery; the most common surgical procedure in developed countries.[4]

Hearing loss is common in older individuals effecting about one-third of those 70 and older. By age 85, nearly half will be hearing impaired. Older men are more likely to have hearing difficulties than women. Risk factors include smoking, history of middle ear infections, and exposure to loud noise. Hearing loss often starts gradually and sometimes goes unrecognized. Seniors are more likely to have visual exams and wear glasses then get hearing evaluations and use a hearing aid.[3]

ORAL HEALTH IMPLICATIONS

Chronic disease along with disabilities and functional limitations can have both a direct and indirect impact on oral health. Some chronic conditions like diabetes have a well-established body of evidence[17] demonstrating the impact while others such as heart disease[30] and COPD[35] are emerging. Many people with chronic conditions may take multiple medications many of which can cause xerostomia[32] and some like bisphosphonates[33] that can lead to serious oral heath complications. Disability may affect oral health indirectly such as a limited ability to travel to the dental office for care. Sensory impairments may mean instructions are not seen or heard properly leading to poor adherence with recommendations.

Cardiovascular Disease

People with periodontal disease often have CVD and vice versa. The relationship between these two diseases has been studied extensively yet no definitive conclusion on a causative relationship has been established. Studies to date seem to indicate two biologically plausible mechanisms that associate the two conditions. Directly, periodontal disease is an inflammatory disease and its presence may increase the level of systemic inflammation increasing the risk for CVD. Indirectly, periodontal disease and CVD share many of the same risk factors especially smoking, diabetes, and obesity. It has also been shown that people with periodontal disease are more likely to have high cholesterol and hypertension. Thus it may be common inflammatory factors increasing the risk for both diseases. While studies have shown that treating periodontal disease may reduce some of the systemic markers of inflammation, no prospective intervention trials have shown that treating periodontal disease can reduce CVD outcomes.[30]

Based on current evidence, the editors of the ***American Journal of Cardiology*** and the ***Journal of Periodontology*** have made the following recommendations (***Table 4)***:

Table 4: Clinical Recommendation for Patients with Periodontitis[30]

Patient condition	Recommendation
All patients with moderate to severe periodontitis	Informed that there may be an increased risk for CVD with periodontitis
Patients with moderate to severe periodontitis and one known risk factor for CVD	Should consider a medical evaluation if they have not had one in the last 12 months
Patients with periodontitis and 2 or more known risk factors for CVD	Referred for a medical evaluation if not had one in the last 12 months

Diabetes and Obesity

It is well-established that diabetes increases both the incidence and severity of periodontal disease. The strongest risk relationship seems to be for those with poor glucose control. Many people with diabetes regardless of level of control may experience increased gingival inflammation. The periodontal infection triggers low level inflammation that leads to increased cytokine production. Researchers have theorized that this increase may contribute to the total systemic inflammatory burden. One cytokine, TNF-α that is often elevated with periodontal disease has been shown to play a role in insulin resistence.[17]

Over the last several years, the effect of periodontal disease on diabetes has been evaluated. Emerging evidence indicates that severe periodontal disease can lead to poor glucose control. It may also increase the severity and mortality of diabetic complications especially ischemic heart disease and kidney disease.[17] In light of this, researchers have looked at whether periodontal treatment can improve glycemic control. A meta-analysis of 10 studies that looked at the effect of periodontal treatment on glucose control found overall the reduction in glycemic control to be non significant. The investigators noted that many confounding effects such as smoking, BMI, and diet, play a role in glycemic control and this may have had an influence on outcomes.[34]

Chronic Obstructive Pulmonary Diseases (COPD)

The association between COPD and periodontal disease has not been studied extensively. A 2001 analysis of NHANES III data found that those with COPD were more likely to have periodontal attachment loss than those without COPD. The results also showed that those with the most attachment loss had a higher risk of COPD as well as diminished lung function.[35] However, 2003 and 2006 systematic reviews found a very weak association between periodontal disease and COPD.[31,36]

A stronger association has been found between periodontal disease and nosocomial (hospital or institutional-acquired) pneumonia particularly in elderly people with poor oral hygiene.[31,36] It is possible for plaque to be colonized by respiratory pathogens. Loss of immune function and the release of inflammatory cytokines may also play a role.[31] Oral health interventions ranging from toothbrushing to use of an antimicrobial have been shown to decrease the risk of lung infections.[36]

Oral Cancer

Early detection improves the survival rate for people with oral cancer. A manual oral cancer exam only takes a few minutes to perform and can easily become a regular part of every exam. New diagnostic aids may enhance the manual exam but are not a substitute for it.

Abnormal tissue like leukoplakia and erythroplakia are almost always caused by smoking or spit tobacco. They may range from harmless to cancer. Additional tests or a biopsy is the only way to confirm. About 25% of leukoplakias are either cancerous or precancerous. The rate for erythroplakias is 7 in 10 being cancerous or precancerous.[22]

It is estimated that 8 in 10 cases of oral cancer could be prevented by avoiding tobacco and alcohol use.[22] Dental professionals can help support tobacco cessation by openly discussing the oral health effects of tobacco with patients. A new test to detect oral HPV may help identify individuals who are at an increased risk of developing oral cancer in the absence of other risk factors.[37]

Osteoporosis

The association between osteoporosis and periodontal disease is not well-defined. Some studies have shown low bone mineral density to be associated with alveolar bone loss while others have not.[38,39] It has been hypothesized that this disparity in findings may be due to the presence of known osteoporotic risk factors such as hormone action, heredity, and other host factors.[38]

Of more immediate concern has been the role that osteoporotic pharmaceuticals may have in osteonecrosis of the jaw (ONJ). In the last few years, cases of bisphosphonate-associated ONJ have been reported; particularly after invasive dental procedures such as an extraction. These cases have occurred in people with a history of intravenous bisphosphanate use related to the control of bone pain for various types of cancer. For oral bisphosphonates, the risk of ONJ is very low; approximately 0.7 cases per 100,000.[41] Two studies released in 2008 are in alignment with this. One found that IV but not oral bisphosphonate use was associated with an increased risk for ONJ.[41] The second found ONJ rare in postmenopausal women with osteoporosis.[42] However, a 2009 case study found that the short-term oral use of bisphosphonates increased the risk of ONJ in older women who had been taking a bisphosphonate for 12 months or more. All occurred after either an extraction or trauma that resulted in jaw bone exposure. Those who were affected had additional chronic conditions like diabetes, hypertension, or cancer treatments.[43]

Dementia and Disabilities

The biggest challenge facing many people suffering from dementia or disabilities is the ability to seek care within a traditional dental setting. Depending on the nature or depth of the problems, many older individuals no longer drive and need to depend on caregivers to bring them to appointments. For those with advanced dementia, leaving home may not be feasible. Some may no longer be able to perform simple oral hygiene procedures. Many long-term care facilities are not able to provide adequate or regular access on-site for dental care. As well, upon retirement, most lose coverage for dental insurance and Medicare does not reimburse for most dental services.

People with functional disabilities or sensory disabilities may still be able to seek care in the traditional practice setting. Greater use of mobile carts and improved designs in canes and walkers are helping people stay mobile. Practitioners should anticipate that these individuals may need more time and assistance when they come for appointments. Some patients who do not appear disabled may have arthritis in their hands, which can result in difficulty performing routine oral hygiene procedures, especially flossing.

Vision and hearing loss can also impact care. Patients may not have the visual acuity to see oral health problems that are found. For patients with hearing impairment, taking off the mask and establishing eye to eye contact can be helpful. People with hearing loss are often embarrassed and may not admit that they cannot hear.

Xerostomia

Xerostomia has been reported to effect anywhere from 29%- 57% of older individuals.[32] Medication use is one of the primary culprits. It is a side effect in hundreds of drugs. More than 80% of adults take at least one prescription medication, and the percentage for those over 65 is even higher.[44] Chronic conditions like Sjogren's syndrome, thyroid diseases, and poorly controlled diabetes are also a factor.[45]

Xerostomia can cause both clinical and functional oral health problems. As the mouth dries, plaque increases and this may lead to an increase in caries particularly root surface decay. The saliva glands may become enlarged. It may be difficult to wear a denture. Functionally, severe xerostomia can make it hard to chew, swallow, or even talk.[45]

There are numerous over-the-counter products to help relieve xerostomia. These include oral rinses, gels, sprays, and artificial saliva. For more severe cases, prescription medications are available. It is common for people suffering from xerostomia to use gum, mints or lozenges; often containing sugar. This increases the risk for decay. Patient should be advised to only use sugar-free, non-acidic products. Chewing gum containing xylitol may be an option. Depending upon oral health status, supplemental fluoride treatments may be required.[45]

ORAL HEALTH INTERVENTIONS

Chronic health problems and disabilities can make daily care a challenge for many older individuals. People with arthritis may not be able to use string floss or any type of product that requires expert manual dexterity.

Power toothbrushes are an ideal brushing choice for those who have difficulty with home care devices. Handles tend to be larger than on manual brushes making them easier to grip. The mechanized action of the brush head allows the patient to focus only on placement thus reducing one of the variables associated with poor brushing. A power toothbrush may also be a good tool for a caregiver.

Sonic toothbrushes are a very popular type of power toothbrush ***(Figure 1)***. One study found that the Waterpik® Sensonic® Professional Toothbrush (Water Pik, Inc., Fort Collins, CO) removed significantly more plaque then the Sonicare® Elite, (Philips Oral Healthcare, Snolquamie, WA) the Oral B® Sonic Complete (Procter & Gamble, Cincinnati, OH) and a manual toothbrush.[46] ***(Figures 2, 3, 4)***

Figure 1: Waterpik® Sensonic® Professional Toothbrush – Model SR-1000W

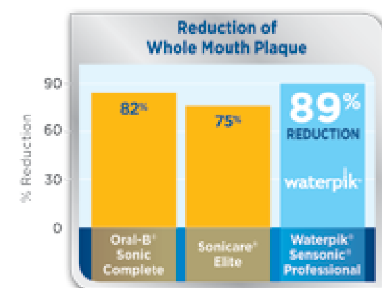

Figure 2: Reduction of whole mouth plaque[46]

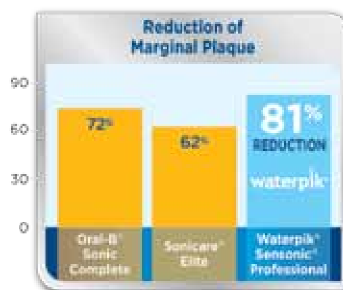

Figure 3: Reduction of marginal plaque[46]

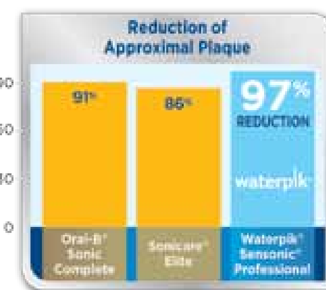

Figure 4: Reduction of approximal plaque[46]

Most seniors need some type of interdental cleaning. Dental floss has long been the primary self-care recommendation made by most dental professionals. However, string floss may not be the best product choice for older individuals because the dexterity required to use the product adequately may not be present. The Waterpik® Water Flosser ***(Figures 5 & 6)*** is clinically proven to be an easier, more effective alternative to string floss. Three studies with three different types of tips have compared the Water Flosser to string floss. In each study, the Water Flosser provided superior results over string floss for reducing gingival bleeding ***(Figures 7 & 8)***.[47,48,49] The Orthodontic Tip ***(Figure 9)*** was three times more effective at removing plaque than string floss and five time more effective than brushing alone ***(Figure 10)***.[48] There were no significant differences in plaque biofilm removal between the Classic Jet Tip ***(Figure 11)***, Plaque Seeker™ Tip ***(Figure 12)***, and string floss.[47,49]

Figure 5: Waterpik® Ultra Water Flosser, Model WP-100W; comes with the Classic Jet Tip, Plaque Seeker™ Tip, Pik Pocket™ Tip, Orthodontic Tip, Tongue Cleaner, and Toothbrush Tip.

Figure 6: Waterpik® Cordless Plus Water Flosser, Model WP-450W; comes with the Classic Jet Tip, Plaque Seeker™ Tip, Orthodontic Tip, and Tongue Cleaner.

Figure 7: Reduction of gingival bleeding compared to string floss[47]

Figure 8: Reduction of gingival bleeding at 14 days[49]

Figure 9: Orthodontic Tip

Figure 10: Reduction of plaque versus string floss[48]

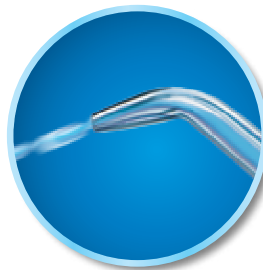

Figure 11:
Classic Jet Tip

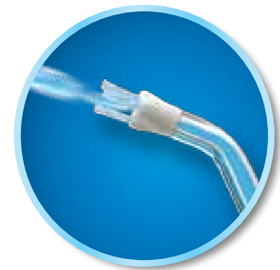

Figure 12:
Plaque Seeker™ Tip

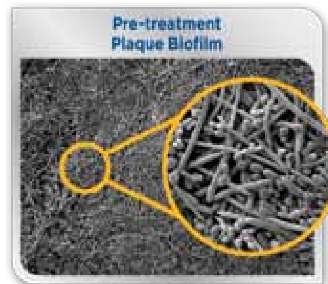

Figure 13:
Before treatment with the Water Flosser[50]

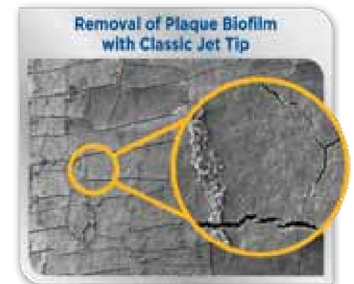

Figure 14:
Tooth surface after 3 second use with Water Flosser[50]

Another recent study with the Water Flosser was undertaken at the University of Southern California Center for Biofilms. The investigators evaluated the effect of a three-second pulsating (1,200 per minute) lavage at medium pressure on plaque biofilm using scanning electron microscopy (SEM). The results showed that the Water Flosser with the Classic Jet Tip removed 99.9% and the Orthodontic Tip 99.8% of biofilm ***(Figures 13 & 14)***. The researchers concluded that the hydraulic forces produced by the Water Flosser with 1,200 pulsations at medium pressure can significantly remove plaque biofilm from treated areas of tooth surfaces.[50]

In addition to difficulty with string floss, seniors may have other cleaning challenges. It has been shown to benefit people with unique and/or general health conditions including Orthodontic appliances,[48] implants,[51] crown and bridge,[52] and diabetes.[53]

Conclusion

Baby Boomers and Seniors will experience improved health and greater longevity than previous generations. Yet, many will live with chronic disease or disabilities that can impact their mobility and social functioning. The need for oral care will continue. Dental professionals will be called upon to help older individuals find new pathways to care as well as continue to dispense oral hygiene advice.

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POST TEST COURSE #10-15

Seniors and Boomers: Living Longer, Living Healthier. Considerations for Dental Professionals

1. **By 2050, the number of US adults 65 years of age and older is expected to be:**
   a. 69 million
   b. 89 million
   c. 99 million
   d. 109 million

2. **Seniors with the best health are most likely to:**
   a. Retire early
   b. Live in a nursing home
   c. Stay in the work force the longest
   d. Have financial problems

3. **What percentage of people over age 65 live in a nursing home?**
   a. 14.2%
   b. 9.7%
   c. 7.9%
   d. 4.5%

4. **Which statement is true?**
   a. Heart disease kills more men than women
   b. Heart disease kills more women than men
   c. Heart disease is the number one leading cause of death in men and women
   d. Heart disease is the second leading cause of death in men and women

5. **Diabetes affects what percent of people over the age of 65?**
   a. 10.5%
   b. 23.1%
   c. 31.2%
   d. 36.8%

6. **Chronic Obstructive Pulmonary Disease includes:**
   a. Emphysema and Chronic bronchitis
   b. Emphysema and nosocomial pneumonia
   c. Chronic bronchitis and lung cancer
   d. Noscomial pneumonia and lung cancer

7. **Women who have had a hip fracture are __ times more likely to experience a second hip fracture.**
   a. 4
   b. 6
   c. 8
   d. 10

8. **Women who lost as few as 11 pounds cut their risk of developing knee osteoarthritis by:**
   a. 20%
   b. 50%
   c. 60%
   d. 80%

9. **Vision and hearing impairment is a risk factor for:**
   a. Social isolation
   b. Falls
   c. Depression
   d. All of the above

10. **Which is the most common oral side effect from prescription medications?**
    a. Herpes virus
    b. Lichen planus
    c. Xerostomia
    d. Glossitis

11. **What percentage of oral cancer cases are believed to be related to an HPV infection?**
    a. 25%
    b. 35%
    c. 50%
    d. 75%

12. **Periodontal disease and cardiovascular disease share which risk factors?**
    a. Smoking
    b. Diabetes
    c. Obesity
    d. All of the above

13. **Which factor seems to be the stronger predictor of how severe periodontal disease will be in a patient with diabetes?**
    a. How long they have had the disease
    b. Whether they have type 1 or type 2
    c. Poor glucose control
    d. How much insulin they take

14. **How many studies have demonstrated that the Water Flosser is an easier, more effective alternative to string floss?**
    a. 2
    b. 3
    c. 4
    d. 5

15. **A Water Flosser will benefit people with:**
    a. Implants
    b. Diabetes
    c. Orthodontics
    d. All of the above

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2.	a	b	c	d
3.	a	b	c	d
4.	a	b	c	d
5.	a	b	c	d
6.	a	b	c	d
7.	a	b	c	d
8.	a	b	c	d
9.	a	b	c	d
10.	a	b	c	d
11.	a	b	c	d
12.	a	b	c	d
13.	a	b	c	d
14.	a	b	c	d
15.	a	b	c	d

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