Gender-Specific Dental Health Issues and Treatment Considerations

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Interest in gender differences in health is growing, but for some specifically female health issues, more knowledge is required. General systemic differences may be found in oral health, and dental clinicians must be aware that some women may have gender-specific oral health requirements. For instance, the traditional proverb, "one tooth for every pregnancy," has not been taken seriously from a professional point of view for a long time. Today, however, it is well known that hormonal changes during gravidity place women under greater risk of excessive tissue reactions. Intensified oral hygiene is therefore required during this period to adequately prevent oral diseases.[1] Further, there are higher incidences of osteoporosis, degenerative arthritis, depression, temporomandibular disorders, and burning mouth syndrome, as well as different oral hygiene behaviors, in women compared to men.[2] General diseases, particular medications, and psychologic aspects should be explored during anamnesis, because they may have a serious impact on planning dental treatment.

There are, on the other hand, some concealed parallels between women and men. For example, treatment recommendations for bisphosphonate medication mainly applies to women who suffer from malignancies and osteoporosis; however, it may, in some cases, also be given to men, such as those affected by bone metastases due to prostate cancer. Today, the behavior of many women is greatly influenced by commercials and social constraints, which, in part, explains the higher prevalence of eating disorders, especially among young women.[3] Women are often a target for campaigns advertising bisphosphonate usage as a general osteoporosis prophylaxis for the elderly.

The aim of this article is to summarize various gender differences relevant to dental clinicians, including physical differences between women and men, diseases specific to women, and psychologic issues. The implications of these differences for dental health and treatment planning in female patients will also be discussed.

Physical Differences Between Women and Men

Hormonal Changes

Increased progesterone levels during pregnancy and in women taking contraceptives lead to enhanced capillary permeability, an increased number of polymorphonuclear cells in the local sites of inflammation, and reduced keratinization of the attached gingiva in the oral cavity.[4–6] Hormonal changes during pregnancy also affect the composition of saliva. While salivary calcium and phosphate concentrations are reduced during the entire period of gravidity, a decrease in pH and buffer capacity (bicarbonate and phosphate) has been observed during late pregnancy.[1,7] In local gingival sites, increased levels of active progesterone can lead to exaggerated gingival inflammation, especially with preexisting gingivitis.[8] Taken together, hormonal changes in women, particularly the increased progesterone levels, are associated with intensified tissue response to local irritants. Additionally, the reduced salivary buffer causes an increased risk of caries and, in the long term, women are assumed to be more susceptible to periodontal disease than men.[9] Higher rates of periodontal disease in women have, however, only been verified for aggressive forms of periodontitis in young circumpubertal females, but not in adults, which may in part be explained by the better oral hygiene observed among women than among men.[10,11] There are some indications that maternal gingivitis and periodontitis are risk factors for preterm birth and low birth weight, and may have adverse long-term effects on the infant's development.[12,13] As a consequence, women aiming to have children should ideally have a comprehensive dental examination and undergo any required therapies before pregnancy. Due to the effects of hormonal changes during gravidity and the potential risks for the mother and unborn associated with maternal periodontal infections, women should be encouraged to intensify their personal and professional oral hygiene during pregnancy.

When antibiotics (tetracycline and some penicillin derivates, or rifampicin mainly used as tuberculostatic)

are prescribed as an adjunct in dental therapy, the dental clinician must be aware that these possibly impair the effectiveness of contraceptives and inform the patient accordingly.[14]

Xerostomia and Burning Mouth Syndrome

In women, salivary glands are generally smaller in size, and the salivary flow rate (SFR) in rest and during stimulation is physiologically lower than in men. Normal SFR in rest varies between 0.26 to 0.33 mL/min in women and 0.36 to 0.50 mL/min in men. When SFR in rest is below 0.05 mL/min in women and 0.1 mL/min in men, hyposalivation is diagnosed.[15] Reduced SFR is frequently observed during postmenopause and related to low estrogen levels. Hyposalivation is also found in patients with systemic disorders such as diabetes, hypertension, malnutrition and vitamin B deficiencies, diarrhea, Parkinson's disease, rheumatoid arthritis, and Sjorgren's syndrome, or as a side effect of several medications, such as antihypertonica, diurethica, antidepressants, atropin, anticonvulsives, spasmolytica, and appetite suppressants.[16,17] As soon as the individual SFR in rest falls below 40% to 50% of the subject's individual flow rate, patients perceive their mouths to be dry, which is termed xerostomia. This symptom can also occur with normal flow rates but reduced amounts of mucous salivary components from the sublingual and submandibular glands. Xerostomia is frequently accompanied by disphagia, hypogeusia, and burning mouth syndrome,[18] and shows the greatest incidence in postmenopausal women.[19–21]

Temporomandibular Joint Disorders and Orofacial Pain

Several authors have reported an incidence of temporomandibular joint disorders (TMDs) in women about twice that than in men. The prevalence of women seeking treatment for TMD is even higher, with a 4:1 ratio compared to men. The greatest incidence was observed in women taking contraceptives and postmenopausal women receiving hormone replacement therapy (HRT). Possible explanations for this gender-specific difference are estrogen-related changes in the joint-disc structure and/or the generally increased relaxin-related joint laxidity in women.[22,23] Atypical odontalgia, which describes atypical facial pain in apparently normal teeth, has also been found predominantly in women in their mid-40s. They complain of persistent pain in one or more premolar or molar teeth and associate pain with dental procedures or trauma to the region. While the cause of atypical odontalgia is uncertain, differentiation pain appears to be a plausible mechanism.[24]

Menopause and Osteoporosis

Menopause refers to the time of a woman's last menstrual cycle. On average, it occurs at the age of 52 ± 3 years, and is proceeded by the postmenopausal phase.[25] During the age-related ovarial degeneration, ovarial estrogen production and secretion is reduced for 1 to 2 years and then stops. The low estrogen level causes a compensatory gonadotropin secretion for ovarial activation over a 10- to 15-year period, but with no ovarial response. The estrogen deficiency has a destabilizing effect on the vegetative nerve system, with a loss of the parasympathic stabilizing estrogen effect on the hypothalamic centers. This results in hypersympathotonic attacks, which are transmitted to the periphery by the cervical sympathicus and cause symptoms like hot flashes and sweating. Approximately 70% of women are affected by these symptoms, which tend to start 1 to 2 years before and continue for 2 to 3 years after menopause. In addition, estrogen deficiencies can cause depression, increased tenseness, and sensitivity (see Specific Psychologic Issues).

In women, bone metabolism depends more on estrogen levels than it does in men. Hence, estrogen deficiencies in women cause a more pronounced increase in osteoclast activity, reduced calcium plasma levels, and enhanced loss of calcium and hydroxyprolin in urine and feces. In case of reduced calcium serum levels, spongiosa compartments are the first source of calcium mobilization, since metabolic activity is higher there than in cortical bone.[26] In addition, the large bone-marrow compartments in spongious bone offer a larger surface for the resorptive process. The high rate of bone turnover leads to reduced bone mass, low bone density, and microarchitectural deterioration of bone tissue, while no significant changes in the chemical bone composition occur. These processes of age-related osteopenia are physiologic in the elderly, and should be distinguished from osteoporosis, which is a systemic skeletal disease with a rapid pathologic loss of bone mass, increased bone fragility, and associated risk of bone fracture.[27,28] Initial symptoms are back pain due to vertebral compression or microfractures (crush fractures) and loss in body height. The main burden of osteoporosis is the increased risk of spontaneous fractures, particularly in the radius (Colles fracture) and femur (hip fracture). The bones first affected by the remarkable loss of bone mass are the vertebrae (processus spinosus), ribs, radius, head of the femur, and maxilla.[29] Physiologically, postmenopausal women lose about 1% to 2% of their bone mineral content per year, while about 25% are affected by osteoporosis and lose as much as 5% to 8% annually.[30,31] It is assumed that at the age of 65 years, half of postmenopausal women show increased bone

fragility, and by the age of 80 years, all women show this condition.[28] In men, the reduction in bone mass generally starts after the age of 50 and progresses at a much slower rate than in women (factor 2).[30,31]

Dental implants in osteoporotic patients. In estrogen-deficient individuals, the trabecular bone in the maxilla is more prone to bone-mass reduction because it has larger marrow compartments than the mandible. Correspondingly, a greater resorption of the edentulous maxilla but not of the mandible was detected from lateral cephalograms in osteoporotic women than in age-matched healthy female control subjects.[32] In experimental studies, estrogen deficiency has been observed to negatively influence bone quality around titanium implants.[33,34] Further, estradiol therapy led to increased bone-to-implant contact and bone density around implants placed in cancellous bone of experimentally induced osteoporotic animals, while in the cortical bone only small changes occurred in the estrogen-deficient or substituted animals.[35] In experimentally induced osteoporotic rats, it was observed that calcium supplementation over several weeks facilitated regular bone formation in the maxilla and mandible.[36] The fact that new bone formation around dental implants in cancellous bone of osteoporotic animals was delayed suggests that patients with osteoporosis could benefit from an extended healing period (ie, 8 to 9 months in the maxilla and 4 to 5 months in the mandible).[37,38]

In a comparative clinical study, women (aged 51 to 91 years) were either treated with HRT or received no replacement. Implant treatment was performed, but no significant differences were observed in the long-term survival up to 7 years (11.3% failures in the HRT group versus 7.4% in the non-HRT group). Groups were further divided into smokers and nonsmokers. More implant failures were found to occur in smokers with HRT (27.3%) than in smokers in the non-HRT group (5.8%). All implant losses occurred during the initial healing phase, at or immediately after abutment connection, ie, early implant failures.[38] Possible reasons for the increased failure rate in smokers with HRT are the opposing effects of nicotin and estrogen on interleukin 6 (IL-6) production and reduced osteoblast activity. These opposing effects of smoking and estrogen intake also affect women using contraceptives and lead to an increased risk of cardiovascular diseases, particularly thromboembolism.[40]

The current knowledge from the literature indicates that a significant loss of bone mass or even osteoporosis is not a contraindication for implant placement; however, reduced bone-to-implant contact, delayed bone formation, and reduced mechanical implant stability in the porous bone quality should be expected. Several precautions can be taken to increase bone mineral density (BMD) and ensure regular bone formation around dental implants, especially in the osteoporotic maxilla.[41,42] Therefore, calcium substitution (1,500 mg/d) for 2 to 4 months prior to implant surgery and professional help to stop smoking must be considered. The implant-healing time before functional loading should in any case be extended. As additional precautions, a greater implant number for better load distribution could be placed and immediate or early implant loading avoided, but these safety measures are not evidence based.

Medical treatment considerations for osteoporosis. Selection of the appropriate medication for individuals with osteopenia depends on the severity of perceived symptoms and the risk assessment of bone fractures.

The controversial prophylactic estrogen substitution during the early phase of menopause was used over 20 years to prevent massive loss of bone mass by reducing the remodeling rate and increasing the calcium absorption. In addition, climacteric symptoms are reduced under HRT. Due to the increased risk of thromboembolism and estrogen-related cancer (mammary, cervical, or uterine), there has been growing restraint in prescribing HRT prophylactically. Alternatively, synthetic steroids, which have an advantageous effect on the climacteric syndrome, can be applied, but no associated reduction in fracture incidences has been documented.

To reduce the risk of fractures in advanced cases, bone apposition can be stimulated with endogene parathormones (eg, Teriparatid).[43] A reduced fracture incidence and decreased risk of breast cancer have been documented following the intake of selective estrogen-receptor modulators (SERM) (eg, Raloxifen), but SERM should only be given to elderly postmenopausal women, since these drugs are associated with climacteric burdens as side effects.

Supplementation of calcitonin, a peptide hormone produced by the thyroid gland, has also been described. It inhibits osteoclast activity and regulates the calcium level in combination with vitamin D and a parathyroid hormone.[26] Few studies are available on calcitonin, because it is expensive and restricted to parenteral use. While vitamin D stimulates the intestinal absorption of calcium and phosphate, parathyroid hormones facilitate increased calcium absorption from the distal renal tubules, mobilize calcium from bone tissue, and stimulate vitamin D activation.[44] A recent study of postmenopausal women with osteopenia demonstrated that an increased daily alkali intake of citrate (oral potassium citrate) facilitated a reduction in urinary calcium excretion and an increased citrate excretion. The latter was indicative of sustained systemic alkalization and resulted in an increase in bone mineral density.[45]

Figs 1a and 1b Patients with degenerative arthritis and painful joint swelling **(a)** are often handicapped in personal oral hygiene **(b)**.

Figs 2a and 2b Osteonecrosis in the maxilla from an inadequate complete denture margin **(a)**, and in the mandible with complicated wound healing following molar extraction **(b)**.

As an alternative to HRT, the use of bisphosphonates, eg, Fosamax Plus D (alendronate sodium/cholecalciferol), has been introduced for osteoporosis prophylaxis and is not only promoted to professionals, but also in direct-to-the-public campaigns. Bisphosphonates inhibit bone resorption and normal bone turnover remodeling by suppressing the recruitment and activity of osteoclasts, but its long-term use is linked with osteonecrosis of the jaw (see Cancer and Bisphosphonate Medication).

Today, the indications for low-dose HRT are restricted to patients suffering from hypersympathotonic attacks and limited to the 3- to 5-year period during which these climacteric symptoms are present. In addition, osteoporosis prophylaxis comprises physical activity, sufficient vitamin D and calcium-rich nutrition, and avoiding high alcohol consumption, cigarette smoking, caffeine intake, and high protein and sodium bicarbonate diets in order to prevent increased renal calcium loss.[25] The substitution of calcium ($CaCl_2$ 1g 1-2x/d) and vitamin D (800 IE/d) is indicated in patients with a higher risk of osteoporosis and as an adjunctive therapy.[42,46]

Specific General Diseases in Women

Degenerative Arthritis

In addition to being more prone to osteoporosis, women are also more frequently affected by degenerative arthritis than men, with an incidence of 3:1.[47–49] Manifestation of this autoimmune disease occurs at the age of 35 to 50 years with symptoms such as joint swelling, pain, reduced mobility and function, or even disability (Figs 1a and 1b).[50] The inflammatory joint destruction is mediated through interleukin 1 (IL-1) and tumor-necrosis factor alpha (TNF-α).[51] Therapy comprises nonsteroidal antirheumatics (analgetic and antiphlogistic effect) and a basic medication with sulfasalazine, cyclosporine A, or, more frequently, disease-modifying antirheumatic drugs (DMARD), eg, methotrexat. In addition, biologic medicine such as TNF-α blockers and antibodies are used, and local corticoid injection in the affected joints and systemic corticoids can be indicated.[52] Related to oral health issues, patients with degenerative arthritis are often limited in their personal oral hygiene and report xerostomia caused by the diverse medications.

Cancer and Bisphosphonate Medication

In the western world, breast cancer is the most frequent malignancy in women.[53] Mortality is mainly related to metastasis in the skeletal bone, lungs, and liver. The average survival time following diagnosis of bone metastasis is 28 to 30 months and is frequently prolonged if only skeletal metastases are present. Similar localizations of bone metastases are observed in prostate, bronchial, or thyroid cancer due to the tumor cell spread through the plexus vertebralis. In the skeletal bone, tumor cells activate osteoblasts and osteoclasts, leading to painful osteolysis, bone fractures, spinal compression, and hypercalcemia. The increased calcium level is associated with dizziness, nausea, and arrhythmia, and may lead to renal failure.

Major goals in the treatment of bone metastases are pain relief; reducing the risk of bone fractures; decreasing periods of hypercalcemia; reducing the necessity for treatment alternatives, such as surgery and irradiation; and, by no means the least important, improving the patient's quality of life and survival time. Intravenous delivery of bisphosphonates has been introduced as a treatment modality in patients with metastatic bone disease, in severe hypercalcemia of

malignancy, and for treating bone-resorption defects in multiple myeloma. Bisphosphonates are also used for the management of Paget's disease of the bone, severe osteoporosis, and heterotopic ossification following total hip replacement and spinal trauma.[54] Under bisphosphonate therapy, the activity of osteoclasts is irreversibly inhibited, which induces cell apoptosis and the cessation of osteolysis. This imbalance in bone remodeling leads to an increase in bone trabecular thickness and bone mass, but also impairs the reparative properties and reduces bone toughness, ie, the ability to sustain deformities without fracturing. Bone activation and/or turnover are significantly reduced and endothelial cell proliferation suppressed, which entails a loss of blood supply with avascular necroses. Since the jaws have greater blood supply than other bones and a faster bone-turnover rate due to their daily activity and the presence of teeth in function, bisphosphonates become highly concentrated in the jaws. Once deposited in the bone tissue, bisphosphonates reveal a low degradation rate and an estimated half-life of up to 12 years.[55]

The systemic side effects of bisphosphonates include nephrotoxidity, acute phase reaction, and gastrointestinal disorders (diarrhea). Moreover, bisphosphonate-associated osteonecrosis (BON) has been observed exclusively in the jaws.[56] Reports of BON in the jaw associated with the use of intravenous bisphosphonates, eg, Zometa (zolendronic acid) and Aredia (pamidronate), began to surface in 2003. Typical clinical symptoms of BON are complicated wound healing, painful soft tissue swelling with or without infection, cutaneous or mucosal fistula, sequesters, radiographic osteolysis, and osteosclerosis (Figs 2a and 2b). Painful bone exposure, ie, osteonecrosis of the jaw (ONJ), occurs as a result of the inefficient bone response to mechanical stimuli, such as tooth extraction, implant placement, or periodontal treatment. Less commonly, BON appears to occur spontaneously due to the thin oral mucosa over bone (eg, in the posterior lingual region of the mandible). In a group of BON patients who had received mainly intravenous bisphosphonate treatment, the inciting event was tooth extraction (38%), periodontal disease (29%), periodontal surgery (11%), implant placement (3%), or apicoectomy surgery (1%), while in 25% of the patients bone exposure occurred spontaneously without apparent dental disease, treatment, or trauma.[57] In a patient who had been successfully rehabilitated with an implant prosthesis over a 2-year period and who had been placed on etidronate disodium in the meantime, all implants were lost during the first year of bisphosphonate therapy.[58] However, in patients receiving oral bisphosphonates for osteoporosis prophylaxis for 1 to 4 years, implant placement was successful in all sites during the 3-year observation period.[59]

There are indications that the risk for BON is higher in patients who receive intravenous bisphosphonate medication than in those who take low doses orally, eg, Fosamax (alendronate), Actonel (risedronate), and Boniva (ibandronate) for the treatment of osteoporosis. The greater risk associated with intravenous administration is in part related to the higher doses used, but also result from the greater bio-availability of the substance than in the more limited gastrointestinal absorption. In addition, combined use of bisphosphonates and glucocorticoids or estrogen may increase the risk for BON. In a recent review, 30 references were included to cases of bisphosphonate-associated osteonecrosis, where most patients (94%) had been treated with intravenous bisphosphonates.[60] In cancer patients receiving intravenous bisphosphonate therapy, an incidence of up to 10% was reported, with a mean time from starting therapy to developing BON of 25 months. In patients receiving low-dose oral medication (eg, alendronate 70 mg/week), the risk of spontaneous BON is assumed to be low, with approximately 0.7 per 100,000 person-years exposure to alendronate.[61–63] A major concern is that with more women aging and taking bisphosphonates for longer periods of time, more cases of osteonecrosis may occur, even in patients receiving low doses of oral medications.

Dental treatment in patients receiving bisphosphonates. For treatment planning, an initial risk assessment is essential. Patients taking intravenous drug medication for more than 2 years, using glucocorticoids or chemotherapeutics, or receiving radiation of bone metastases in the jaw are particularly at risk of developing BON, while those taking low-dose oral bisphosphonates for a short period are exposed to less risk. A risk assessment may be feasible by C-terminal cross-linking telopeptide (CTX) blood testing, in which the CTX physiologically released upon osteoclastic bone resorption is determined. It is assumed that reduced levels of this octapeptide fragment in patients under bisphosphonate therapy reveal severely suppressed osteoclastic activity and are linked with a higher risk of BON.[64] The Council of Scientific Affairs[63] makes the following recommendations:

- Any required dental treatment should be performed before starting intravenous bisphosphonate therapy in order to eliminate all potential sources of infection. Patients should be informed about the risk of developing BON and advised to consult a dental clinician immediately in case of any problems, such as pressure spots or periodontal diseases. A short recall period (3 to 6 months) is recommended in patients treated with intravenous medication.
- If tooth extraction or bone surgery is necessary, conservative surgical techniques with primary

Figs 3a to 3c Severe palatal tooth erosion in a patient with bulimia nervosa: anterior view **(a)**, in occlusion **(b)**, and palatal view following endodontic treatment **(c)**.

wound closure should be considered. Prophylactic antibiotics may be given during the initial healing phase (until suture removal at 10 days), and the use of a chlorhexidine-containing rinse is recommended for 2 months postsurgery. When intervention in different quadrants is required, a stepwise surgical treatment approach at 2-month intervals could be appropriate. Since most cases of osteonecrosis arise within 2 months following dental procedures, uncomplicated healing following this period indicate normal tissue response and allows for an accelerated continuation. Discontinuation of the drug, however, is not likely to decrease the risk of BON due to the long half-life period.

- Implant placement in patients taking bisphosphonates should be carefully considered, especially when extensive surgery with augmentation or regeneration is required. The increased risk of BON and the benefits and disadvantages of non-implant treatment alternatives should be discussed with the patient. A clear contraindication for implant placement is patients who have already experienced BON.
- Since periodontal disease has been identified as the most common dental comorbidity in patients developing BON, periodontal health care and adequate conservative treatment of periodontal diseases are of major importance in individuals undergoing bisphosphonate therapy. Recognizing the possible complications of the drug's usage, the use of bisphosphonates for modulating host response in periodontitis therapy seems to be absolutely contraindicated.
- Treatment of bisphosphonate-associated osteonecrosis should be performed by an oral surgeon. Treatment comprises resection of the necrotic bone, primary wound closure, and pathohistologic investigation to detect possible local metastases.

Specific Psychologic Issues

Eating Disorders

There are some indications that women attach more importance to their appearance and dentition than do men. This tendency is further enhanced by society's expectations of what women should look like, as expressed through advertisements for beauty and fashion products.[2] The modern idealization of female thinness is assumed to be an important etiologic factor in eating disorders and the increased prevalence of smoking (for appetite suppression) among young females in some countries.[65] In a United States survey conducted from 2001 to 2003, the lifetime prevalences of anorexia nervosa, bulimia nervosa, and binge-eating disorder (BED) were 2 to 3 times higher (0.9%, 1.5%, and 3.5%, respectively) in adult women (≥ 18 years) than in men (0.3%, 0.5%, and 2%, respectively).[66] The frequency of eating disorders peaks in younger age groups. Although a general decrease in bulimia nervosa has been observed during recent decades, the prevalence of eating disorders among young female students (aged 20 years on average) in 2002 was still 11.7%. Five percent were suffering from a BED and 9.3% used vomiting, fasting, diet pills, and laxatives or diuretics to control weight (purging disorder). Among male students, the respective frequencies were 1.8% for eating disorders, 0.4% for BED, and 2.2% for purging disorders.[67] In a study analyzing gender differences in eating attitudes and behaviors among undergraduate college students, anorexic symptoms were found in 20% of the females and 10% of the males. In general, students without symptomatic attitudes and behaviors had a more positive self-concept and reported less psychologic distress than those with eating disturbances.[68]

While anorexia nervosa is characterized by self-starvation, drastic weight loss, and thinness, bulimia ner-

vosa comprises dieting, bingeing, and purging with usually normal body weight. It has been observed that about one third of patients with an initial diagnosis of anorexia nervosa develop bulimic symptoms within the first 5 years.[69] Due to frequent vomiting in bulimia patients, the teeth are exposed to hydrochloric acid, which leads to enamel erosion, caries, hypersensitivity, marginal deterioration of restorations, and possibly bite collapse. The first diagnosis is often made by the dental clinician, who may detect the typical erosions on the palatal aspect of the maxillary anterior teeth (Figs 3a to 3c). Interestingly, female dental clinicians have greater knowledge about the physical signs and oral manifestations of eating disorders, as well as a better perception of the diseases' severity.[70] The presumptive diagnosis of bulimia nervosa should be accompanied by sympathetic questioning, and psychiatric treatment and special dental care should be recommended if necessary. The dental clinician should inform the patient about the etiology of erosion and the possible consequences for dental health, and recommend local fluorides (rinsing solutions, gels, fluoride template). In extensive treatment, a conservative approach should be considered, especially in patients with active bulimia. In several countries, dental treatment is covered by health insurance as long as there is a psychiatrist's report about the cause relation and the successful outcome of bulimia nervosa therapy. However, most eating disorders are chronic conditions that are difficult to treat, and may even be lifelong.[66]

Depression and Other Psychologic Problems

The incidence of depression in women is twice as high as in men, with a peak during the transition to menopause, when about one third of women experience melancholia associated with hormonal changes.[71–73] The implications for dental treatment are that dental clinicians should be aware that xerostomia and burning mouth syndrome are common side effects of using antidepressants. In addition, patients' complaints about their dental problems and their expectations about treatments should be clearly defined to avoid any unrealistic expectations. In patients with xerostomia and sensitive mucosal tissues prone to sores and pressure spots, a tooth- and/or implant-supported restoration is, in general, favored above soft tissue–supported restorations.[74]

When treating female patients who are afraid of dental clinicians, it should be kept in mind that women who have been exposed to sexual abuse are likely to feel especially vulnerable during dental visits. Many may not realize that there is a relationship between the experience of abuse and fear of dental treatment, and thus are unlikely to inform the dental clinician about their painful history.[75]

Oral Health Perception

Women's oral hygiene behavior differs from that of men. Women tend to clean their teeth, use dental floss, and visit the dentist more frequently. According to data from the Swiss National Survey in 2002, 72% of women (≥ 15 years of age) had dental treatment during the last 12 months, compared to 66% of men. Further, 82% of women brushed their teeth more than once per day, compared to 66% of men. In the age group 15 to 24 years, 62% of females and 50% of males underwent orthodontic treatment.[76] Further, the psychologic impact of tooth loss and potential problems in accepting dental restorations are greater in women than in men.[77,78] Women perceive oral health as having a greater positive or negative impact on their quality of life than men. Specifically, women reported negative associations of oral health perception as causing them more pain and embarrassment and being more detrimental to their finances compared to men.[79]

Conclusions

Several differences exist between women and men related to various diseases and their prevalences. For some, sensitive exploration is required to detect them. This includes having a separate section in the anamnestic questionnaire to evaluate whether patients report xerostomia, burning mouth, TMD, climacteric syndrome, depression, dental fear, malnutrition, or smoking. In addition, medications such as bisphosphonates for osteoporosis prophylaxis, contraceptives, or others must be indicated, because they are an essential part of a patient's history. It can be concluded that dentists are in a strategic position to disclose early evidence of diseases such as bulimia nervosa or osteoporosis. A multidisciplinary approach and communication with a general medical practitioner, psychiatrist, and other specialists are required to provide more holistic and comprehensive treatments and lower the barriers for seeking professional help.

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