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VII. DENTAL HEALTH

A. OBJECTIVES

At the conclusion of this workshop, the participant will be able to:

1. Discuss dental health of children.
2. Assess need and conduct oral hygiene education for children.
3. Discuss dental health of elderly.
4. Assess need and conduct oral hygiene education for older adults.
5. Develop oral hygiene education program

B. CURRICULUM

DENTAL HEALTH & ORAL HYGIENE

Children

1. Oral cavity
 - a. The oral exam begins with an assessment or examination of the mouth. Physical examination of the mouth includes inspection of the inner and buccal mucosa (lining). The mucosa is inspected for color, moisture, texture, and the presence of lesions such as ulcers or abrasions. The mucosa should be uniform pink color, moist, smooth and glistening, soft and elastic in texture. The gingival (gums) should be pink with no retraction or pulling away from the teeth; the gums should be inspected carefully for bleeding. The gums may be palpated gently for texture - there should not be sponginess or bleeding of the gums. Normally teeth are smooth, white and shiny. Inspect the tongue for color, size, texture, position, mobility and any coating. The tongue is normally positioned centrally; it is pink in color, moist, and slightly rough on the top surface and has a thin whitish coating. A flashlight or penlight may be needed to visualize the mouth.
 - b. Teeth usually appear 5-8 months after birth. By the time children are 2 years old, they usually have 20 of their temporary teeth. At about age 6 or 7, children start losing their deciduous teeth, and they are gradually replaced by the 32 permanent teeth. The eruption of the first permanent molar is between 5 - 8 years followed by the second molar around 10-14 years. By age 25, most people have all their permanent teeth. See attached figure.
 - c. Each tooth has a number of parts: the crown, the root and the pulp cavity. The crown is the exposed part of the tooth, which is outside the gum. It is covered with a hard substance called the enamel. The ivory-colored internal part of the crown below the enamel is the dentin. The root of the tooth is embedded in the jaw and covered by bony tissue called cementum. The pulp cavity in the center of the tooth contains the blood vessels and nerves. See attached drawing.
 - d. Dental caries (cavities) and periodontal disease (pyorrhea) are two problems that most frequently affect the teeth. Dental caries (tooth decay) is the most widespread dental disease among children.

Periodontal disease is seen in adults and older adults. Both problems are commonly associated with plaque and tartar deposits. Plaque is an invisible soft film that adheres to the enamel surface of teeth; it consists of bacteria, molecules of saliva, and remnants of epithelial cells and leukocytes. When plaque is unchecked, tartar (dental calculus) is formed. Tartar is a visible, hard deposit of plaque and dead bacteria that forms at the gum lines. Tartar buildup can alter the fibers that attach the teeth to the gum and eventually disrupt bone tissue.

- e. Decay is caused by dental plaque, a thin, sticky, colorless deposit of bacteria that constantly forms on everyone's teeth. When sugar is eaten, the bacteria in plaque produce acids that attack the tooth enamel. After repeated acid attacks, the enamel breaks down, and a cavity (hole) is formed. Dental decay is seen as darkened area on the tooth that may be painful.
2. Prevention and dental health
 - a. Oral hygiene. Cleansing of the child's teeth begins when the first tooth erupts. Dental caries can occur frequently during the toddler period, often as a result of the excessive intake of sweets or a prolonged use of a bottle during naps and at bedtime. Beginning at about 18 months of age, a soft toothbrush can be used. An initial dental visit is usually scheduled at about 2 years of age. Estimates are that 80% of preschool children have some tooth decay. Deciduous teeth guide the entrance of permanent teeth. Abnormally placed or lost deciduous teeth can cause the misalignment of permanent teeth.
 - b. Healthy teeth require conscientious and effective cleaning twice a day. Oral hygiene involves brushing and flossing. The purpose of brushing is to mechanically break up the bacterial plaque that collects around teeth. It also stimulates the circulation in the gums, thus maintaining their healthy firmness. The normal movement of the muscles of mastication and the normal flow of saliva also aid greatly in keeping the teeth clean.

The technique recommended for brushing teeth is called the sulcular technique, which removes plaque and cleans under the gingival margins. The toothbrush is held at a 45' angle against the teeth with the tips of the bristles resting against and penetrating under the gingival sulcus. The brush will clean under the sulcus of two or three teeth at one time.

Flossing of the teeth is especially beneficial in preventing the formation of plaque and removing it from the teeth, particularly at the gum line.

- c. Sealants. Children receive the greatest benefit from having sealants applied to their teeth, especially to newly erupted permanent teeth. A sealant is a clear or shaded plastic material that is applied to the chewing surfaces of the back teeth (molars) where decay occurs most often. This sealant acts as a barrier, protecting the decay-prone areas of the back teeth from plaque and acid.
When the back teeth are developing, depressions and grooves form in the chewing surfaces of the enamel. These irregularities are called pits and fissures. They are impossible to keep clean, because the bristles of a toothbrush cannot reach into them. Therefore, pits and fissures are snug places for plaque and bits of food to hide leading to decay. By forming a thin covering over the pits and fissures, sealants keep out plaque and food, and thus decrease the risk of decay.
 - d. Fluoride treatment may decrease the amount of dental caries by 60%. Fluoridation may be attained through several means including vitamin preparations, application of a concentrated gel or solution by a dentist, fluoride rinse, and addition of fluoride to the public water supply as well as dentifrices with fluoride added to the paste. To be most effective, fluoridation should take place between birth and 10 years of age.
 - e. Periodic and regular dental checks by dentists. At least one check up per year is recommended.
3. Dental health education.
- a. A patient education program for children and adults includes the following measures to prevent tooth decay:
 - If possible, brush the teeth thoroughly after meals and at bedtime. At a minimum, brush teeth in the morning and at bedtime. Assist children or inspect their mouth to be sure the teeth are clean.
 - Floss teeth daily
 - Adequate intake of nutrients particularly calcium, vitamin A, C, and D
 - Avoid sweet foods and drinks between meals.
 - Eat coarse, fibrous food (cleansing foods), such as fresh fruits and raw vegetables
 - Topical fluoride as prescribed by the dentist

- Prophylactic sealant to molars
 - Regular dental check-ups
- b. Dental health outcome criteria the nurse can use with clients of all ages
- An intact, smooth, well-hydrated oral mucosa of uniform color
 - No inflammation of the oral mucosa
 - Firm, well-hydrated, non-bleeding gums of uniform color
 - Well-hydrated tongue without inflammation
 - Smooth and well-hydrated lips
 - Experiences no oral discomfort
 - Teeth free of food particles and plaque
 - Demonstrates appropriate brushing and flossing techniques
 - Describes interventions that prevent tooth decay and dental plaque
 - Expresses positive feelings about sense of well-being and appearance

Older adults

1. Oral Cavity - mouth
 - a. Physical appearance, ability to communicate and nutritional intake are enhanced by a healthy oral mucosa and retention. Although tooth loss is not a natural consequence of aging, many older adults experience tooth loss as a result of the loss of supportive bone structures of the periosteal and periodontal bone. The bone loss also contributes to the difficulty associated with providing an adequate and stable support for dentures with advancing age.
 - b. Oral mucosa appears red (rather than pink) and shiny in older adults because of atrophy. Lips and gingiva appear thin because the epithelium has thinned and become keratinized; appears retracted. The vascularity of the oral mucosa is decreased, with the gums appearing pale as a result of reduced capillary supply. Salivary flow remains normal.
 - c. Attention to dental hygiene and dental care lessens the risk of tooth loss. Age-related changes affect the tooth enamel which becomes harder and more brittle, and the dentin, (the layer underlying tooth enamel), which becomes more fibrous and less conductive of pain

with increasing age. The chewing cusps are gradually flattened and there is loss of enamel that increases the risk of irritation to deeper dental tissue.

- d. Etiology of dental disease is frequently a microbial dental plaque. This is a biofilm that is dense, nonmineralized, and complex mass of colonies in a gel-like intermicrobial matrix. It adheres firmly, like glue, to the teeth and restorations. The initial action that causes damage occurs under dental plaque.
Gum disease, which damages soft tissue surrounding teeth and supporting bones, is also common in older adults and promotes tooth loss. Bleeding, swollen gums are most commonly associated with periodontal disease. Periodontal disease is characterized by gingivitis (red, swollen gingival) bleeding, receding gum lines and the formation of pockets between the teeth and gums. In advanced disease teeth are loose and pus is present. Bleeding from the gums is not healthy. White fluid (edema) and pus are also symptoms of disease process. Dental caries occur less frequently in older people, but they remain a problem. A poor diet lacking vitamins and minerals or a high carbohydrate diet with excessive intake of sweets can cause tooth decay.
- e. Dental problems can affect virtually every system of the body; therefore, they must be identified and corrected promptly. Diabetes is a strong predictor for periodontal disease because of the elevated blood glucose, suppressed immune response, poor wound healing and recurrent infections. With a compromised system, the dark, warm and moist oral cavity provides the environment for bacterial growth and the development of periodontal disease (severe gingivitis).
- f. Patients with periodontal disease may also be at greater risk for a heart attack than those without the disease. Plaque bacteria may enter the bloodstream. Periodontal disease may also contribute to fatty deposits in the heart and arteries.
- g. Smoking is considered a risk factor. The nicotine induces transient vasoconstriction. Smoking also decreases the neutrophil and leukocyte function, an important part of preventing infections. Research studies have shown that smokers have a higher concentration of periodontal pathogens. Smokers have a poor response to dental treatment modalities.

2. Oral hygiene
 - a. Healthy teeth and gums require conscientious and effective cleaning at least twice a day. The purpose of brushing is to mechanically break up the bacterial plaque that collects around teeth. Periodontal disease is of greater concern with older adults than dental caries.
 - b. Flossing needs to be done on a daily basis.
 - c. Antiseptic mouthwash can be used daily after brushing and flossing.
 - d. Dental caries may be prevented by decreasing the amount of sugar, especially between meal snacks high in sugar. Raw vegetable choices are less cariogenic.

C. BIBLIOGRAPHY

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