

Examining the Principles of Oral and Dental Hygiene in Children and the Elderly with Burns and Facial Plastics Surgery: The Original Article

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Abstract

The purpose of this article was to investigate the effect of conventional oral health education along with creating motivation through teaching topics such as examining the principles of oral health in children and the elderly, burns and facial plastic surgery on oral health indicators. One of the consequences of not observing oral and dental hygiene and one of the most common reasons for visiting dentists after caries and periodontal diseases is bad breath. The etiology of halitosis includes internal and external factors. Among these, 78% of patients with bad breath complaints have an intraoral cause, the most common of which is poor oral hygiene. Based on the comparison between Maslow's hierarchy and dimensions of health, it can be seen that bad breath can be a big obstacle for social health and belonging and acceptance in large social units. As a result, bad breath can be a strong motivating factor to improve the level of oral health of people, especially in children and the elderly. Health education is one of the best, easiest and least expensive ways to ensure the oral and dental health of people in society, and it is actually a process that connects

health information, people's performance, creates motivation and ability to change their lifestyle.

Keywords: *Dental hygiene, Children and the elderly, The elderly, Education.*

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Introduction

The world population is rapidly aging. Increasing healthcare services and reducing mortality can be considered as one of the most important reasons for population aging. There are about 600 million elderly people aged 60 and over in the world, and this amount will double by 2025 and reach two billion people by 2050. According to the latest official statistics of the National Statistics Center of Iran, which was taken in 2016, Iran has entered the aging stage of the population with approximately 9.3% of people over 60 years old [1-3]. United Nations statistical forecasts show that the population over 60 years old will increase rapidly in the next few years until 10.5 percent of Iran's population will be over 60 years old in 2025 [4-6], and this percentage will reach 21.7 percent in 2050. Oral and dental health is an integral part of a person's general health and affects all aspects of personal, social and psychological life of people, especially the elderly. Oral and dental health directly affects the body and mind of people [7-9].

Weakness in oral and dental hygiene plays a big role in the quality of life of the elderly and their health. Social interactions, type of diet, people's weight, how they speak, people's appearance and the ability to eat, are all affected by oral and dental health, and not only the elderly person, but also their caregivers and those around them are involved in it. With the increase in life expectancy and longer life of humans, the prevalence of oral and dental problems may increase. Studies have shown that poor oral and dental hygiene in the elderly population can lead to threats such as dehydration, heart diseases, joint infections, pneumonia and malnutrition [10-13].

The relationship between oral and dental problems and coronary heart disease has been reported in several studies. In a longitudinal study by Lee et al. in 2014, which aimed to investigate the duration and number of metabolic disorders such as diabetes, high blood pressure, obesity and high cholesterol in 399 it was conducted on people over 60 years old living in the villages of South Korea. It was observed that people who have many oral and dental problems are more likely to suffer from metabolic disorders [14-16].

Also, in a cross-sectional study by Sutherland et al., which was conducted on 185 elderly people between the ages of 70 and 97 with the aim of evaluating the relationship between oral infections and its relationship with high blood pressure in Brazil, the main finding was that the elderly who had more severe oral and dental problems had high blood pressure [17-19]. The factors related to oral health status among the elderly in different societies are different and are caused by cultural (Figure 1), social and economic differences among different societies [20-22]. These factors influence the different reporting of oral health levels among different countries [23]. Some social

and demographic factors are related to oral and dental diseases and problems and clinical patterns of these problems. The elderly is often considered as people with poor oral and dental health. The oral and dental health of the elderly is an important issue in the field of public health that requires increasing attention all over the world [24-26]. Although in our country, several studies have examined the oral health status of the elderly and its relationship with quality of life and cognitive status, but there is little information about the relationship between oral health and demographic characteristics; Therefore, the aim of this study was to determine the relationship between oral health and demographic characteristics of retired elderly [27-29].

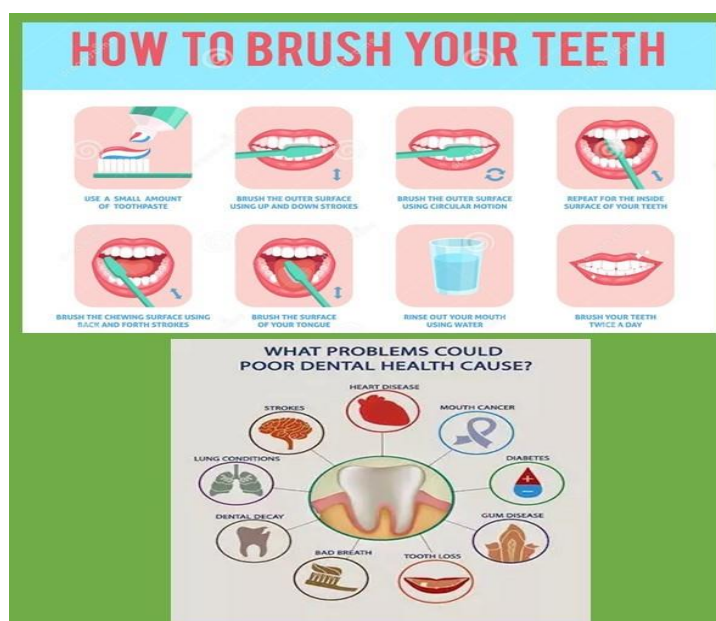


Figure 1. Although dentistry has always been part of the health community, for many years oral health was looked as a lesser health concern and was not held in high esteem among those in the health industry as compared to other professions

Search strategy and selection of articles: Search in Scopus, Google scholar, PubMed databases and by searching with keywords such as "Scanning Electron Microscope Analysis", "Investigation of Shear Bond Strength of 2 Types of Two-Stage Orthodontic Adhesive" and "Fluoride to Human Tooth Enamel" to obtain articles related to the selected keywords [30] (figure 2).

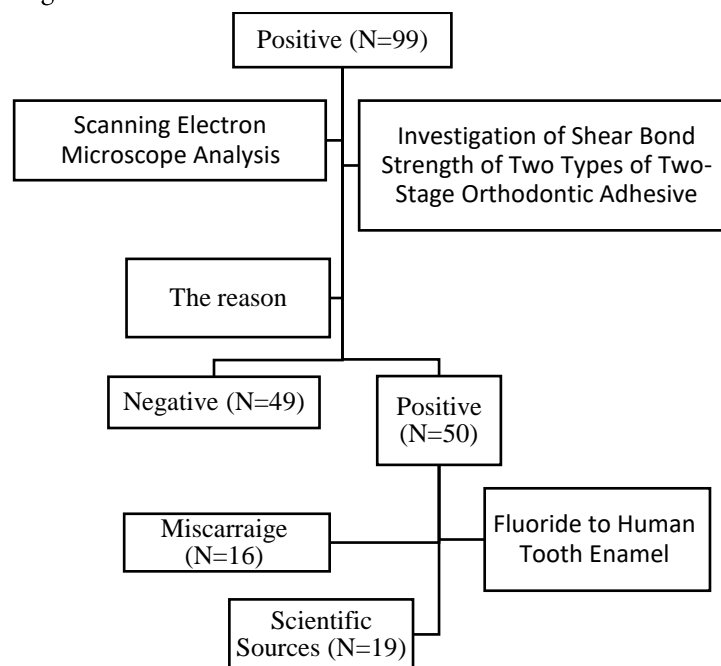


Figure 2. Flow chart of included subjects

Dental radiography methods

In general, radiography in dentistry is divided into two categories: Intraoral radiography and extra oral radiography. In intraoral radiography, the radiographic sensor is placed inside the patient's mouth, and in extra oral radiography, the radiographic sensor is placed outside the patient's mouth.

Intraoral radiography: Intraoral radiographs are the most common type. In this method, a sensor is placed inside the mouth and displays a high level of detail.

Applications

- Diagnosis of caries;
- Viewing the root of the tooth;
- Checking the health of the bone area around the tooth;
- Observing the condition of growing teeth [31].

Types of intraoral radiography

1. Bitewing radiography: This radiography is used to show the connection of the teeth in a situation that creates the best conditions for the dentist to detect caries. The reason why it is named "Bite Wing" is because the patient bites the wing-like device that keeps the radiography sensor in place while taking an X-ray [32-34]. The help that this type of radiography gives to dentists is that

the decay between the back teeth and the change in the thickness of the bones due to gum diseases are diagnosed. This type of radiography can show any decay or decay in the filling of the teeth.

2. Periapical radiography: This type of radiography shows problems around the roots of the teeth and is very useful in the treatment of N2. In this type of radiograph, it shows the height of each tooth from the crown to the root and the root part of the tooth. This radiograph shows abnormal changes in the roots and bones [35-37].

3. Occlusal radiograph: This radiograph shows the occlusal surface of the teeth and is larger than the rest of the usual radiographs.

Extra oral radiography: Extra oral radiographs are prepared in such a way that the radiographic sensor is placed outside the patient's mouth. These types of radiographs show less detail than intraoral radiographs and focus more on the jaws and skull [38].

Types of extra oral radiography

1. Panoramic radiography: In this type of radiography, an image of the entire mouth area is taken, which includes all the upper and lower teeth. This radiograph can help to see hidden teeth and diagnose tumors and cysts [39].

2. Cephalometry: This type of radiography is taken from one side of the head in such a way that it shows the relationship between teeth. Orthodontists use cephalometric prediction to determine the best type of orthodontic treatment according to the specific position of the patient's teeth.

3. Cone beam computerized tomography (CBCT): With this type of radiography, three-dimensional images of dental structures, soft tissue, nerves, and bone are taken. This type of radiography is mostly used to select and place dental implants. It also helps to diagnose periodontal problems, roots of teeth, jaws and diagnose cysts and tumors and fractures in the mouth and face.

4. Dental CT scan (CT): This type of radiography must be done in a radiology office or hospital, where the patient is lying down and the image is taken with a few rotations around the patient's head using a "flat layers" device. This method can be used for dental implants. It can be said that CT has a higher radiation dose than CBCT, but it shows the soft tissue better than CBCT.

5. Tomography: It shows a certain section of the mouth and blurs the rest. This radiography is used to examine parts that are difficult to see or are closed by other parts [40].

6. Sialography: In this type of photography, a dye is used that is injected into the salivary glands so that they can be seen in the radiographic sensor (salivary glands alone cannot be seen by X-ray). This type of radiography is used for problems such as obstruction, or Shogren 's syndrome.

Digital radiography (Digital Radiography): This method is the latest type of imaging in which the radiographic sensor is replaced by a flat electronic plate or sensor. It should be noted that extra oral radiographs such as CBCT, which are useful in diagnosis, have been used in many offices in Europe and America and are considered an advantage, but in our country, the Ministry of Health has not issued such a license for their use, according to our efforts [41-43].

MRI: It is a method used to produce 3D images of jaw joint problems. This method is also the best way to examine soft tissue (Figure 3).

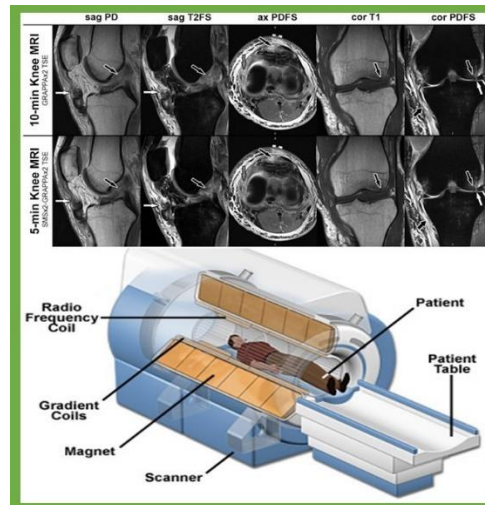


Figure 3. MRI

How is dental radiography performed? First, the dental technician covers you with a heavy lead apron to protect your body from the X-rays, then places a small piece of x-ray film between your teeth. This part stores the image taken by the X-ray. In this method, electronic sensors are used and the images taken are displayed on the computer. Finally, the dentist examines the images taken by dental x-rays to determine the problems of the patient's mouth and teeth [44].

Does dental x-ray hurt? Dental x-rays do not hurt at all and only take a few minutes. Only some people may feel a little nauseous due to the presence of a sensor in their mouth, which will be resolved immediately after the work is done. Health education is one of the basic principles of prevention of oral and dental diseases. Among the various target groups defined for oral health education; Children and the elderly (especially at school age) are of particular importance because changing behavior and continuing to maintain correct health behavior at this age can last as long as a person's life. In a meta-analysis, Ghafari et al. reported the maximum impact of oral health education programs in improving health behaviors, including brushing teeth and motivation to maintain hygiene [45]. Also, de Souse et al showed the effect of oral hygiene educational interventions in the form of less confrontation and more favorable changes in health behaviors. Burning teeth and gums is a benign disease that affects about 2% of the population, and women are up to seven times more susceptible than men. Usually, women get this disease after menopause. Although premenopausal women may also be affected. For most patients, burning is experienced on the top and sides of the tongue, the top of the tongue, the roof of the mouth, and the inner surface of the lips, although the pattern is highly variable and burning may occur anywhere in the mouth. The patient may feel that his mouth has been burned by hot food, and there may be a sour, bitter, or metallic taste in the mouth. The mouth may also become dry and food may taste

less. Some patients may also report a "empty" or "crawling" sensation in the mouth. The onset of tooth and gum burn is usually gradual and without any known trigger or event [46-48].

The following can be the start of a burn

- No burning or little burning when waking up in the morning, burning develops as the day progresses, and worse by evening.
- Symptoms persist throughout the day from the time the person wakes up.
- Intermittent symptoms with several symptom-free days [49].

Tooth and gum burns on the tongue, gums, lips, inner cheeks, roof of the mouth (palate) or wide areas of the entire mouth. The burning sensation can be quite severe, as if you have burned your mouth. Burns on the roof of your mouth, also known as your palate, take longer to heal than burns on your tongue. Because the tongue has the most blood in the body. In addition, the skin on your palate is more sensitive [50].

Tooth and gum burns appear suddenly, but can develop gradually over time: Mouth burns are very common and some can be serious enough to require immediate treatment. Generally, after removing the cause of the burn or washing the affected area with water (if the burn was caused by a chemical such as aspirin or Clorox), the wound will heal on its own, although it may be tender for a while. There are many inflammatory conditions in the mouth that may cause burning in the mouth, such as lichen planus, geographic tongue, and yeast infections [51].

What factors cause tooth and gum burns: No one really knows what causes tooth and gum burns. However, it is believed to be a type of nerve pain. This means that the nerve fibers in the mouth are now functioning abnormally and are transmitting pain even though there is no painful stimulus. The nerves in the mouth, which are responsible for feeling pain, are easily stimulated. Contributing factors may include menopause, adverse life events (job loss, death of a family member or spouse), psychiatric disorders, chronic fatigue syndrome, and fibromyalgia. Some patients also report problems falling asleep and staying asleep during the night.

Patients also often report other symptoms such as headache, fatigue, shoulder pain, back pain, irritable bowel syndrome, burning of the skin or genital area, panic attacks, palpitations, and ringing in the ears [51]. Burning teeth and gums are not caused by dentures or infection, although wearing dentures sometimes makes the burning worse. Improper nutrition can cause serious oral and dental health problems. If your diet lacks certain vitamins and nutrients, some oral diseases such as tooth and gum burns may develop or worsen. This is especially true if you don't get enough B vitamins. Vitamin or folic acid deficiency can cause a wide range of disorders, especially those with burning sensation.

Symptoms of tooth and gum burns may include the following

- A burning sensation that mostly affects your tongue, but may also affect your lips, gums, palate, throat, or entire mouth.
- Dry mouth with increased thirst;
- A change in taste in the mouth, such as a bitter or metallic taste;
- Loss of taste;
- Tingling or numbness in the mouth;
- Increased pain;
- Redness;
- High fever;
- Pus leaking from the wound;
- Tiredness [6].

Findings

There is an inverse and significant relationship between the oral and dental health of the elderly and their age; That is, with increasing age, the level of oral health in the elderly decreases, and vice versa, the lower the age of the elderly, the level of oral and dental health increases. Using Dunnett C test, there is a significant difference in the average oral and dental health between the study group without formal education and the middle school, diploma, bachelor's and higher education groups. Also, there is a significant difference in the average oral and dental health between the primary education group and middle school, diploma, post-diploma and bachelor education groups, but there is no significant difference in other comparisons; That is, in the group where the elderly are without formal education, the level of oral and dental health is lower than in the literate educational groups (guidance, diploma, bachelor and above). Also, the level of oral and dental health in people with primary education level is much lower than middle school, diploma, post-diploma and bachelor education groups and above. In other words, with the increase in the literacy level of the elderly, their oral and dental health has improved.

According to the results of this research, there was an inverse and significant relationship between the oral and dental health of the elderly and their age; That is, with increasing age, the level of oral health in the elderly decreases, and on the contrary, the lower the age of the elderly, the better the condition of their oral and dental health. Shah in India also showed in his study that the number of elderly people with decayed teeth increases with age. The result of Nikola's research was also in line with the results of our research. With increasing age in the old age period, factors such as physical limitations and reduction of social relations, cause the elderly to pay less attention to their oral health, and these factors provide the basis for the decline of oral and dental health in the elderly. According to the results of this research, the level of oral and dental health of the elderly is different based on gender. By examining the data of this study, it was observed that the oral and dental health status of elderly men is better and more satisfactory than that of elderly women. Women face difficult physical and mental conditions throughout their lives, which affect their oral

and dental health, one of which is fertility and multiple births. During this period, women's oral and dental health is greatly affected. The decrease in oral and dental health in women begins with the beginning of the reproductive period and becomes worse with the increase in the number of pregnancies. There is evidence that many factors that increase caries risk are more prevalent in women than in men. Among the most important of these factors, we can mention hormonal fluctuations, eating habits and the special social role of women in the family, which can disturb the oral and dental health of women. A significant decrease in oral and dental health during pregnancy has a negative effect on the quality of life of women. Shah's study in India showed that gender difference has no effect on the oral and dental health of the elderly.

In this study, the oral and dental health status of the elderly had a significant relationship with their educational status. In this regard, Hernandez's research was in line with the result of this research. Pollander in his study in 2003 in Sweden showed that the number of lost teeth in the elderly with a lower literacy level is significantly higher than the number of lost teeth in more literate people. In 2009, in England, Tsakous showed in his study that there is a direct relationship between the oral and dental health status and the level of education based on the oral and dental health assessment index in the elderly. In the study of Ziyai et al. in Gorgan city, no relationship was found between education level and oral health; Therefore, according to the results and various studies, it can be concluded that the higher the literacy level, the better the oral and dental health status, which the results of this study also confirm (Figure 4).











Raw	Study	Year	Severe COVID-19		non- Severe COVID-19			Proportion Wight 98%		Weight %
			Yes	No	Yes	No				
1	Wang et al.	2021						0.85	[0.39 – 1.02]	6.02
2	Kragholm et al.	2021						0.83	[0.42 – 1.01]	5.92
3	Papadopoulos et al	2021						0.74	[0.55 – 1.02]	5.65
4	Team	2020						0.91	[0.48 – 1.08]	6.03
Heterogeneity $I^2=0.00$, $I^2= 0.00$, $H^2=1.00$								0.98	[0.20 – 1.08]	
Test of $\Theta = \Theta$, $Q (4) =3.99$, $P= 0.66$										
1	Hafeez et al.	2020						0.68	[0.52 – 1.06]	6.02
2	Wang et al.	2020						0.74	[0.31 – 1.08]	5.92
3	Guan et al	2020						0.89	[0.19 – 1.01]	5.65
4	Zhang et al	2020						0.90	[0.29 – 1.02]	6.03
Heterogeneity $I^2=0.00$, $I^2= 0.00$, $H^2=1.00$								0.98	[0.20 – 1.06]	
Test of $\Theta = \Theta$, $Q (4) =4.44$, $P= 0.71$										

Figure 4. Oral and Dental Hygiene in Children

Discuss

Esan et al also reported the improvement of nutritional habits and the use of fluoride toothpaste in children and the elderly who underwent educational interventions. In the study of Rodrigues et al., the average plaque index showed a significant decrease, which indicates the effect of preventive health education programs in improving the plaque index. In the study of Yekaninejad et al., the health education group for children and parents caused a significant decrease in the gingival index

compared to the control group. In terms of the speed of effect among the three groups, the first group that showed improvement in the MGI index in the one-month follow-up was the bad breath group, but the other two groups showed improvement cases only in the six-month follow-up, which this article shows. that training based on bad breath has a faster effect than the other two types of training (Figure 5).

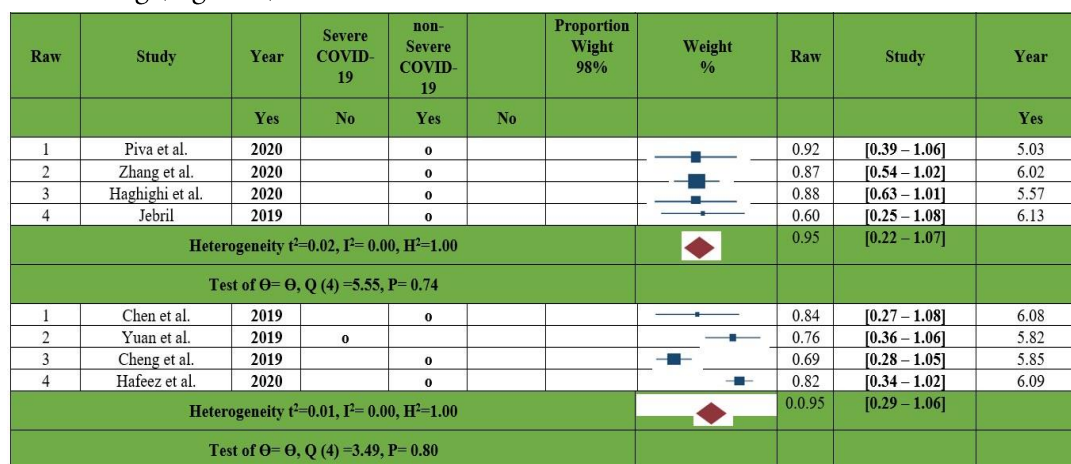


Figure 5. Oral and Dental Hygiene in Elderly

The stability of the effect was higher in the group of bad breath and male sex, which is in agreement with the results of Amiri's study. A decrease in the prevalence of bad breath was observed only in the bad breath group and in girls in the primary follow-up, and in both sexes in the secondary follow-up. The intensity of bad smell also decreased only in this group. The continuation of the reduction in the prevalence of bad breath has also been observed in the study of Amiri et al.

These results once again confirm the effectiveness of education based on bad breath and indicate that bad breath among children and the elderly often has an oral origin, which can be solved or prevented by providing awareness about the origin of bad breath witnessed a significant and continuous reduction in the prevalence and severity of bad breath. The prevalence of bad breath at the beginning of the study was 68.38%. Many studies have been conducted on the prevalence of bad breath, but it is often difficult to compare the results due to the different sample sizes, age groups of the samples, and the methods used to detect bad breath in the studies. In a study conducted by Yokoyama et al. on 474 high school students, the prevalence of bad breath was 40%. In the study of Ezzedini et al. on 1,250 children aged 2 to 14 in Tabriz, the prevalence of bad breath was reported as 48.2%. These figures show the high prevalence of bad breath and its importance.

In this study, among the 129 people who completed the questionnaire, 96.1% of the students brushed their teeth and only 10.5% used them twice a day, which is in agreement with Asgari et al.'s study that more than 80% of children and elderly used a toothbrush once or more than once, and the results of other studies were different. These results indicate the existence of factors that prevent students from visiting dentistry regularly. More than half of the people (61.5%) mentioned emergency treatment as the reason for their last visit to the dentist. This rate was 13.9% in Tomar

et al.'s study in India, which was conducted on 10-15-year-old students; The difference between the two results can be attributed to the difference in the age group of the two studies, as well as the difference in the level of culture and oral hygiene in the two countries. A study has shown that facial burn victims have poor oral conditions. Studies have shown that facial disfigurement causes psychological distress in patients with a facial burn injury and that the psychological conditions are linked to poor dental conditions and oral health-related quality of life in the general population; However, there is limited discussion in the literature whether the severity of a facial burn injury is related to the oral health-related quality of life of the victims.

Conclusion

The objective of this study was to examine the factors associated with oral health-related quality of life in patients with facial burns using two outcome measures derived from the Oral Health Impact Profile (OHIP-14) instrument. Burn injuries may have devastating impacts on a victim and is one of the major public health problems in the developing world. A burn to the oro-facial region may have compounding impacts that include physical changes to the oral-motor structure, morphology, mobility and oral functions. Elderly people over 65 years of age are an increasing population in our country, and they are a population of concern to the society in terms of health needs. Aging is a phenomenon that this group of people will soon face, and the biological, health and social needs should be provided for this group of society based on it. So that one of their problems is related to their oral and dental conditions, which will directly affect their nutrition and maintaining their health and where they live. With increasing age due to the use of drugs and cigarettes and various drugs that control blood pressure and diabetes and osteoporosis and cardiovascular and inflammatory diseases and exposure to various toxins in the environment and inappropriate food and anxiety conditions in people's lives it makes the elderly susceptible to a variety of underlying diseases, cancer and depression, which will lead to neglecting their health and hygiene. This study showed that patients with oro-facial burn injury have poor oral health status and that oral health behaviors, particularly the oral hygiene practice, dental visits and dental anxiety are the main modifiable factors that influence their oral health status. Referring the burn patients to a dentist at an early stage may prevent further deterioration of oral health, thus should be part of the post-emergency burn care.

Cavities detected as small dots on the teeth can develop, and if this happens, it becomes necessary to visit a dentist. Gum disease occurs when plaque builds up where the teeth connect to the gums. This can cause infection of the gums, as well as the underlying tissue and bone. According to the results of this research, the amount of oral and dental problems of the elderly increases with age. Also, the prevalence of oral and dental problems was lower in men than in women.

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