

# ORIGINAL ARTICLE

## Investigating the State of Dentistry in the Safavid Period

259




### Abstract

Dentistry has been one of the oldest branches of knowledge in the field of medicine. This medical discipline has undergone various changes throughout different historical periods. During the Safavid period (1135-907 AH), practitioners showed a keen interest in dentistry, and numerous medical texts were written in this field, serving as valuable sources of information about the medical conditions of that era. It appears that dentistry in the Safavid era did not experience significant transformation compared to previous periods and largely imitated the achievements of earlier practitioners. The primary topics of focus in Safavid dentistry included the treatment of toothaches, prevention of dental diseases, polishing and whitening of teeth, management of gum diseases, and pediatric dentistry. The most notable remedies prescribed by the medical community of the Safavid era for treating various dental ailments involved the use of Sanun, a concoction made from several herbal ingredients believed to alleviate or cure dental diseases. The main resource for this research was the medical texts from the Safavid era.

**Key words:** Safavid, Dentistry, Toothache, Gums, Medicine, Tooth

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## Introduction

Medical findings indicate that humans have faced dental diseases since the dawn of civilization and have suffered from various issues related to oral health. Evidence from the Indus Valley civilization suggests that some dental procedures were performed on teeth. Sumerian texts and works recorded on clay tablets explain the treatment of toothaches, tooth extractions, and the effects of dental caries (Yazdi, 2008, p. 22). Thus, humans have sought solutions to alleviate dental pain since the inception of civilization. Early medical advancements in dentistry cannot be attributed to a specific civilization, as no conclusive evidence indicates which civilization first engaged in dental practices. In ancient Iran, there were significant advancements in the field of dentistry. The achievements of this period can be observed through the remains of the burnt city and the religious texts that discuss dental practices. However, the most significant historical evidence regarding dentistry pertains to the post-Islamic era, during which important advancements were made in the field of medicine as a whole. Translating various works into Arabic during the early centuries and incorporating new experiences and scientific advancements contributed to significant progress in medicine during this period. They fostered the emergence of great physicians within the realm of Islamic civilization. However, these developments did not persist, and with the decline of Islamic civilization, the field of medicine also stagnated. Some scholars have attributed the Mongols' attack (616 AH) as the main reason for stopping medical progress (Browne, 1958, pp. 16-18; Elgood, 1973, p. 436). In any case, with the Mongol invasion, Iranian society endured significant damage, and security and stability were replaced by insecurity and instability. Naturally, in such an atmosphere, the potential for the growth and development of various fields of science, including medical science, diminished. The rise of the Safavid dynasty in Iran marked the beginning of significant developments across various fields. The stabilization of Iran's political landscape may have contributed to stability in other areas; however, this period also coincided with the advancements of European countries in multiple domains, which heralded the onset of colonialism.

Some believe that despite the high prestige of doctors during the Safavid era and the existence of the position of Hakim Bashi, medical science did not progress significantly and remained subordinate, often imitating earlier medical practices, particularly those of Sinai medicine (Savory, 2009, p. 219; Kasiri, 2008, p. 41). Sinaitic medicine refers to the compilation of medical principles, laws, and directives established by Avicenna, a renowned Iranian physician, as documented in his writings. Avicenna's medical methods laid the foundation for the work of subsequent physicians, a practice known as Sinaitic medicine. However, the features associated with Safavid-era medicine are also evident in the field of dentistry from that period. The medical texts, along with the practitioners of the Safavid era, primarily imitated and adhered to the dental principles established by their predecessors. This research was conducted to investigate dental conditions during the Safavid era. In this context, it aims to address the following questions:

- What treatment methods were employed to address various dental diseases during the Safavid era?
- What areas of dentistry were emphasized by the doctors of the Safavid era?
- Where does the prevention of dental diseases fit within the medical knowledge of the Safavid era?

The assumptions made in this research are as follows:





- Treatment took precedence in identifying the root causes of dental issues for physicians of the Safavid era.
- The use of Sanun was the most important therapeutic strategy employed by Safavid-era doctors in the treatment of dental diseases.

The research method employed in this study is historical-analytical, and data collection has been conducted using library resources. Limited information is available regarding the medical conditions of the Safavid era from sources written during that time, which primarily focused on recording historical events. This represents a significant challenge in the field of medical history research about this period. The topic of dentistry, as a sub-discipline of medicine, is notably absent from the historical texts of that era. Generally, non-political issues were deemed unimportant by historians of the time and were scarcely reflected in the traditional historiography of Iran. Consequently, the works of Safavid historians did not contribute to the accumulation of information relevant to this research. Among the various sources that assist researchers in historical studies related to the Safavid era are the travelogues written by individuals who visited Iran during that time. Although the information from these sources regarding Safavid period medicine is significant, dentistry is not addressed, and they do not provide any specific information on this matter. Therefore, this research primarily relies on medical texts from the Safavid period. Although these texts were written for medical purposes, some of them only make a brief reference to dentistry. It should not be overlooked that toothaches and dental issues are experiences that every individual may encounter multiple times throughout their lifetime. Therefore, based on this principle, all comprehensive medical texts need to address dentistry. The lack of attention, or minimal focus, on this subject in the medical literature of that period, was a significant shortcoming of the medical sources from that era. Some texts, such as *Tohfa Hakim Momin*, have demonstrated adequate and favorable attention to dental health and related issues. However, a notable drawback of medical texts from the Safavid period is their need for more focus on issues related to pediatric dentistry, particularly deciduous teeth. Significant shortcomings of medical sources from the Safavid era were the adherence of doctors and medical texts to traditional therapeutic methods before the Safavid period, a lack of attention to new techniques, and a failure to innovate in dentistry. Finally, it is important to note that medical sources from the Safavid era did not sufficiently focus on the underlying causes of dental diseases while addressing treatment methods in dentistry.

### **Background**

An independent study on dentistry during the Safavid period has yet to be conducted. Ismail Yazdi's book "An Overview of the History of Dentistry in Iran from the Past to the Present" primarily focuses on medical literature related to dentistry. While the author addresses dentistry in ancient Iran and the Islamic period, he does not provide any information regarding dentistry in the Safavid era.

In the book "Medicine in the Safavid Period", Cyril Elgood (1979) discusses the medical practices of the Safavid era in detail. However, the issue of dental knowledge during this period is scarcely addressed, as the author primarily focuses on other branches of medicine. Additionally, in another book titled "Medical History of Iran," the author examines the history of medicine within the context of Iran, including a section dedicated to the Safavid era. This work has also been completed without any references or specific





information regarding the knowledge of dentistry during the Safavid era.

The book, "Analysis of the State of Medical and Pharmaceutical Knowledge in the Safavid Era," by Zahra Eslamifard (2020) is structured into seven chapters. This work primarily focuses on the renowned physicians of the Safavid period and the hospitals of that era. Regarding dentistry, the author provides a brief overview of dental medicinal practices in less than one page; however, the topic of dentistry in the Safavid era is not extensively covered in this book.

Alireza Qanadi and Naimeh Sadat Davoudi published an article titled "The Toothbrush Tree in the Teachings of Islamic Medicine, Traditional Medicine, and Modern Human Knowledge" in the ninth issue of the Quarterly Journal of Medical History (2012). This article focuses on oral hygiene through the use of the toothbrush plant and incorporates hadith sources, the Holy Quran, and the works of Razi and Ibn Sina. However, it does not offer specific information regarding dentistry during the Safavid era.

An article titled "A Look at the History of Dentistry in Iran" by Mitra Karbasi Kheir (2014) was published in the 13th issue of the Quarterly Journal of Medical History in 2013. This article does not address the topic of dentistry during the Safavid period and instead focuses more on the ancient and early Islamic centuries.

Another article, "Some Viewpoints on Dentistry in Traditional Iranian and Islamic Medicine," by Mohammad Mahdi Fani and Alireza Salehi (2014), was published in the 15th issue of the Quarterly Journal of Medical History in 2013. This article primarily examined the practice of dentistry during the early centuries of Islam and did not offer any specific information regarding dentistry in the Safavid era.

### Ways to Prevent Dental Diseases

Prevention has long been regarded as one of the most effective strategies for managing various diseases by healthcare professionals. Naturally, it is also considered the best approach to maintaining dental hygiene. The primary tool for dental hygiene is the toothbrush, which remains widely used. The characteristics of the toothbrush are discussed in the fifth chapter of *Risalah Hifz al-Seheh*, and using gums is emphasized. Additionally, the toothbrush is noted for its role in preventing stomach vapors from reaching the teeth (Qazvini, 2006, p. 363). The ideal toothbrush is said to be made from materials such as olive wood, palm horn, willow, and apricot wood, with *Shuk al-yamaniyeh* being highlighted as the best option (Qazvini, 2006, p. 364). Arak wood is also mentioned as a suitable material (Qazvini, 2006, p. 364; Sharif, n.d., p. 51). It is stated in *Zad al-Mosaferin* that one should brush their teeth daily and consistently; however, excessive emphasis on this practice is not advisable (Sharif, n.d., p. 51). Using salt to protect teeth and gums was a common recommendation among physicians during the Safavid era (Sharif, n.d., p. 51; Qazvini, 2006, p. 364). In addition to the recommendations above, it is advised to avoid foods that may cause stomach spoilage, refrain from consuming sweets, exercise caution when using hot and cold water, and be mindful of the temperature of food. Additionally, it is important to use a toothpick after consuming sticky foods (Sharif, n.d., pp. 50-51).

Another effective method for protecting teeth is using materials that enhance their strength. *Tohfa Hakim Momin* recommends the use of *Suranjan*, a mixture of cooked garlic with cumin and fir leaves, *Bikh Marjan*, green olive skin, incense made from rosin, and burnt cow bone for fortifying teeth (Al-Tabib al-Tankabani, 1966, pp. 48-69-124-195-221-343). In fact, strengthening teeth is a preventive measure against dental diseases





and decay, a concept recognized by physicians during the Safavid era.

### **Ways to Alleviate Toothache**

Toothache is one of the most bothersome pains, often difficult to endure. Undoubtedly, one of the primary reasons people began to pay attention to dental hygiene was the discomfort caused by toothaches. During the Safavid period, physicians made significant efforts to treat toothaches and discovered various remedies. Emad al-Din Shirazi, in his treatise on opium, identified opium as a potential remedy for toothache. He suggested that dissolving opium in cow's milk with a small amount of Aqarqara (a plant similar to chamomile) and swishing it in the mouth could alleviate tooth pain (Emaduddin Shirazi, 2005, p. 115). The use of opium for treating toothaches was a well-known practice during that time, as noted in other texts. For instance, Zad al-Mosaferin mentions that opium should be mixed with rose oil and held in the mouth.

Additionally, soaking poppy husks in vinegar and rolling them in the mouth is recommended (Sharif, n.d., pp. 52-51). The use of tobacco to alleviate toothache is also prescribed in Tohfa Hakim Momin (Al-Tabib Al-Tankabani, 1966, p. 65). Although numerous remedies for toothache are proposed in Tohfa Hakim Momin, opium is recommended for treatment in only one instance (Al-Tabib Al-Tankabani, 1966, p. 343), indicating a limited endorsement of opium for pain relief. This lack of recommendation does not suggest that the author was unfamiliar with this method; rather, it appears to stem from a lack of confidence in its efficacy. Asrar al-Atebba advises pounding certain plants, such as Aqarqara and saffron, with an amount of opium equivalent to ten grains of wheat, forming a pea-sized tablet to place under the affected tooth as a remedy (Yonani, 2003, p. 125). Furthermore, Zad al-Mosaferin states that placing opium in the cavity of a decayed tooth can effectively relieve pain (Sharif, n.d., p. 52).

The simultaneous use of ginger and pepper, mixed with honey or rose water, and applied to the aching tooth has proven effective in alleviating toothache (Al-Tabib al-Tankabani, 1966, p. 234; Yousefi Heravi, 1900, p. 56). As noted, the use of pepper for treating toothache has been frequently emphasized by physicians of the Safavid period (Sharif, n.d., p. 52; Yousefi Heravi, 1900, p. 56). Additionally, vinegar has been recognized as a remedy for reducing toothache. In this context, mixing vinegar with various plants and fruits is considered beneficial for treating toothache, as described in Tohfa Hakim Momin. Some examples include mixing cooked pine with vinegar and applying it to the teeth; using boiled barley with vinegar; combining boiled plantain leaves with vinegar; mixing boiled cucumber with vinegar; and using boiled leaves and sweet fruit (a type of poplar) with vinegar. Other combinations include boiled black seed with vinegar, boiled marshmallow with vinegar, Eremurus plant with vinegar, and Hyssop plant with vinegar (Al-Tabib al-Tankabani, 1966, pp. 173-152-117-214-164-168-105-110-139). Vinegar is also prescribed in other medical texts from the Safavid era. For instance, Asrar al-Atebba mentions that mustard should be mixed with hot vinegar and applied to the teeth (Yonani, 2003, p. 125). Boiled Cymbopogon plant with vinegar is noted to have a similar effect (Al-Tabib al-Tankabani, 1966, p. 180). Furthermore, Zad al-Mosaferin suggests boiling cucumber skin and leaves in vinegar and swishing it in the mouth or boiling raisins with vinegar (Sharif, n.d., p. 52). Yousefi Heravi also recommended boiling white sugar with vinegar (Yousefi Heravi, 1900, p. 55). Additionally, it is advised to rinse the mouth with vinegar in combination with rose water (Sharif, n.d., pp. 55, 57). A similar remedy for





alleviating toothache is mentioned in both *Zad al-Mosaferin* and *Tohfa Hakim Momin*, which involves boiling snake skin in vinegar and swirling it in the mouth (Al-Tabib al-Tankabani, 1966, p. 97; Sharif, n.d., p. 52). The use of cow dung mixed with vinegar is also recommended for reducing toothache (Al-Tabib al-Tankabani, 1966, pp. 58-59). Overall, vinegar was likely to be a common method employed in dentistry during the Safavid era. This method is not particularly complicated; preparing vinegar and mixing it with the prescribed plants or fruits is generally accessible to the public. The use of oils derived from flowers and fruits has also garnered the attention of physicians. Rose oil (Sharif, n.d., p. 51; Al-Tabib al-Tankabani, 1966, p. 35), olive oil (Al-Tabib al-Tankabani, 1966, pp. 148-141), and egg yolk oil (Al-Tabib al-Tankabani, 1966, p. 60) are among the substances that have been most frequently emphasized.

The use of Sanun is another method for treating toothaches. Sanun is a medicinal compound applied directly to the teeth and is available in various forms. Hakim Momin noted that the effectiveness of Sanun in alleviating toothaches has been validated through experience, and his father frequently recommended its use (Al-Tabib Al-Tankabani, 1966, p. 342). He provided instructions for preparing different forms of Sanun, which include boiling figs with *Equisetum arvense* L., carob, olive, turmeric, alum, Lal Meiri, and Nar-sak (a type of lentil) (Al-Tabib al-Tankabani, 1966, pp. 70-67-123-100-140-181-163-212-256). Each of these ingredients can individually help reduce or cure toothaches.

As noted, Hakim Momin has proposed various remedies for toothache, including the use of citrullus, lentils, cumin, Indian mung beans, asparagus, rose, Khatai tulip, Persian leek, field cucumber, sour pomegranate, wild rue, greenshield lichen, stock flower, Soleimani basil, fern, pistachios, Hafaz (a type of plant), Aliq (a plant similar to a rose with berry-like fruit), snow, garlic, zedoary, walnut resin, chicory, mountain basil, sponge, sunflower, kohl, citron, barberry bark, raisins, and figs (Al-Tabib al-Tankabani, 1966, pp. 358-262-260-228-224-218-202-181-145-131-129-123-112-106-89-86-80-75-71-69-68-65-64-58-43-42-21-17-14-13-10). Additionally, wine (Al-Tabib al-Tankabani, 1966, p. 109; Yonani, 2003, p. 125), pepper (Al-Tabib Al-Tankabani, 1966, pp. 198; Sharif, n.d., p. 52), mustard (Al-Tabib al-Tankabani, 1966, p. 100 - Yonani, 2003, p. 125), and oxy-mel (Yousefi Heravi, 1900, p. 55) are recommended to alleviate pain or eliminate toothache. Chewing yellow lily and cockscomb flower is also advised (Al-Tabib al-Tankabani, 1966, pp. 48-260). One suggested method for treating toothache caused by heat is to avoid using cold water, according to Yusefi medicine and Bakhiyeh Khergheh (Yousefi Heravi, 1900, p. 55; Shamlou, 1715, p. 32). However, there is a differing opinion in *Zad al-Mosaferin*, which states that in such cases, the treatment involves taking cold water into the mouth (Sharif, n.d., p. 51).

### Gum Hygiene

The gums, as the foundation of the teeth, were a significant focus for dentists during the Safavid era. Physicians were often the first to recommend measures to strengthen the gums in relation to overall gum health. The use of drugs with opium properties has been regarded as one of the solutions for strengthening the gums. *Tohfa Hakim Momin* states that boiling pepper and poppy husks in rose water is beneficial for gum health (Al-Tabib al-Tankabani, 1966, p. 343). Additionally, the use of Barshasa opium for gum strengthening is mentioned in *Resaleh Afyooniyeh* (Emaduddin Shirazi, 2005, p. 117). Apart from opioids, various other remedies have been recommended to strengthen the gums, which





have held a significant place in traditional practices. Soranjan Sanun, cucumber Sanun, fig Sanun, camelthorn Sanun, yellow Harad Sanun, pearl Sanun, Indian mung bean Sanun, date bud Sanun, cinnamon Sanun, and Muharraq Shekar Sang Sanun (Al-Tabib al-Tankabani, 1966, pp. 343-117-67-33-38-234-80-221-134-82) are examples of treatments suggested by doctors for gum health. Another method to enhance gum strength involves rinsing the mouth with various liquids, such as boiled cucumber, olives soaked in salt, boiled Mazo tree, boiled sour pomegranate, boiled barberry tree, Kohl, rose flower, donkey milk, boiled musk, Myrobalan, Drimia, and boiled sunflower. Additionally, chewing fennel, cockscomb flower, and Kohl can also be beneficial (Al-Tabib al-Tankabani, 1966, pp. 129-129-229-10-10-14-260-229-247-23-39-17-14-224-14-14-229-117-140). Other recommended remedies for strengthening the gums include elm tree leaves, Muharraq Hajar Abyad, Fasan, Mazo tree, sweet almond, musk wood toothbrush, linseed, and pistachio wood toothbrush (Al-Tabib al-Tankabani, 1966, pp. 115-84-83-147-184-223-246-61-49).

Apart from the issue of strengthening the gums, the physicians of the Safavid era also proposed solutions to prevent gum decay. Some of the recommendations found in Zad al-Mosaferin include preventing stomach decay, avoiding foods—especially sweets—that adhere to the teeth, refraining from consuming unripe fruits, and steering clear of extremely hot or cold foods. Additionally, it advised regular tooth brushing and the consistent use of toothpicks and toothbrushes (Sharif, n.d., p. 50-51).

Swelling of the gums is another condition that has garnered the attention of medical professionals. Yousefi Heravi notes that the symptoms of gum swelling include pain at the root of the tooth and a sweet taste in the mouth (Yousefi Heravi, 1900, p. 57). Bahauddin Razi attributes the cause of gingivitis to the moisture and vapors from the stomach following the digestion of food (Razi, 2008, p. 119). In Bakhiyeh Khergheh, the symptoms of gingivitis are described similarly to those of Yousefi Heravi but are considered to vary based on the temperament of each individual (Shamlou, 1715, p. 34).

Some cases of gingivitis are also treated with specific remedies. For instance, it is mentioned in Zad al-Mosaferin that if gingivitis is due to the predominance of blood, bloodletting is recommended. Approximately nine grams of tragacanth, labiatae, sweet almond, eremurus, and marshmallow flower are recommended to be mixed to alleviate gum swelling. The swelling of the gums will subside more quickly if tamarind is added to this mixture (Sharif, n.d., p. 54). In Tohfa Hakim Momin, recommendations regarding gum health, the underlying causes of gingivitis are not addressed. Instead, yellow alum and fern are suggested solely for their treatment (Al-Tabib al-Tankabani, 1966, pp. 131-145). Razi advocates for using gold to reduce swelling in the gums and advises rubbing the swollen area with a finger to encourage bleeding, followed by applying ground myrobalan and areca palm (Razi, 2008, p. 119). He notes that gingivitis is particularly problematic for children, especially during teething. This condition in children can lead to diarrhea, seizures, tetanus, and eye pain, all of which typically resolve once the tooth erupts. Razi also suggests treating gingivitis by rubbing rabbit brain and chicken fat on the gums or by mixing honey with chamomile oil and applying it to the affected area (Razi, 2008, p. 195).

Foul odors and deterioration of the gums are issues closely associated with gingivitis. Asparagus is recommended for treating gum injuries and addressing unpleasant odors. Hakim Momin has prescribed garden cress, chewing pitch, rubbing sulfur on the gums,





and using *Psidium guajava* Sanun and *Tamarix* plants to prevent bad breath and gum decay (Al-Tabib al-Tankabani, 1966, pp. 113-71-200-11-215-35).

The physicians of the Safavid era also paid attention to the loss or decay of the gums. Yousefi Heravi identified a corrosive substance as the cause of gum erosion, recommending the use of *Boswellia* fermentation combined with drimia vinegar as a treatment (Yousefi Heravi, 1900, p. 58). This recommendation is reiterated in Bakhiyeh Khergheh (Shamlou, 1715, p. 34). Bloodletting was still regarded as an effective method for treating this condition in *Zad al-Mosaferin*. Additionally, the text suggests remedies, such as coriander seeds, lentils, barberry root bark, purslane seeds, sumac powder, rose, burnt pearl, sumac, yellow harad, and *Boswellia*. Ultimately, drimia vinegar is considered the most effective ingredient, with detailed instructions provided for its preparation (Sharif, n.d., p. 54). Hakim Momin has also prescribed the use of orpiment, garden cress, and certain Sanun to promote the growth of gum tissue in this context (Al-Tabib al-Tankabani, 1966, p. 135-71-342-343).

Bleeding gums is a common dental issue that doctors have sought to address through various treatments. Hervey attributes the cause of gum bleeding to an excess of moisture (Yousefi Heravi, 1900, p. 57). This same explanation is also noted in Bakhiyeh Khergheh (Shamlou, 1715, p. 33). Hakim Momin recommends the use of pomegranate, walnut, olive oil, and saffron to prevent further bleeding from the gums. Additionally, rinsing the mouth with a mixture of salt and vinegar is considered effective in stopping gum bleeding (Al-Tabib al-Tankabani, 1966, p. 129-75-141-136-106-249). The use of lentils, locusts, *Boswellia*, pomegranate blossoms, and Sanun is also advised to help halt gum bleeding (Yousefi Heravi, 1900, p. 57; Shamlou, 1715, p. 34-33).

### **Tooth Polish**

Teeth are considered one of the pillars of facial beauty. Consequently, the significance of dental aesthetics has always been acknowledged. Doctors from the Safavid era proposed various solutions for teeth whitening. Razi identified the condensation of steam on teeth as a cause of discoloration (Razi, 2008, p. 188). One common remedy among Safavid physicians for treating darkened teeth and polishing them was Sanun. This included Zojaj Feroni Sanun (a type of mineral glass) combined with egg and milk to eliminate tooth yellowness, *Phragmites australis* Sanun, pearl Sanun, and date leaves. Muharraq Shekar Sang Sanun (Al-Tabib al-Tankabani, 1966, pp. 207-206-207-234-236-82), Venetian ceruse Sanun, and Chinese soda (Razi, 2008, p. 189) are some of the things that are recommended for teeth whitening. In the book *Asrar al-Atebba*, there are also recommendations regarding the use of Sanun (Yonani, 2003, p. 126). Seawater bubbles were a common method for whitening teeth during that era (Al-Tabib al-Tankabani, 1966, p. 132; Razi, 2008, p. 189). Other recommended substances included sea bottom oysters, snail meat, cow horn (Al-Tabib al-Tankabani, 1966, pp. 52, 92, 132), deer horn (Yonani, 2003, p. 126), Bikh Marjan, mango seed, rabbit oil, burnt lentils, cabbage, white stone, burnt fig, and Chinese pottery (Al-Tabib al-Tankabani, 1966, pp. 102- 102- 102- 181- 181- 181- 19- 35-48), salt (Al-Tabib al-Tankabani, 1966, p. 249; Razi, 2008, p. 189), burnt oysters, burnt pepper, and burnt salammoniac (Razi, 2008, p. 189) were also prescribed for teeth whitening.

However, doctors have prescribed using ash in each of the cases mentioned above to address the darkening and yellowing of teeth. Although doctors recommend that, before





undertaking any of these treatments, it is preferable to prevent changes in tooth color through regular brushing. It is important to note that most doctors during the Safavid era did not identify the underlying causes of tooth discoloration; instead, they focused solely on treating the condition.

### **Worm of the Tooth**

Damaged teeth, commonly referred to in dentistry, affect many individuals. Consequently, medical practitioners have sought solutions to this pervasive issue throughout various historical periods. The medical texts from the Safavid era also acknowledge this problem and propose treatments for worm-eaten teeth. Similar to many other ailments, Safavid physicians prioritized prevention. In *Tohfa Hakim Momin*, the use of Sanun is recommended, which is a mixture of turmeric, basil seeds, barberry root bark, almonds, and pepper (Al-Tabib al-Tankabani, 1966, p. 342). The author asserts that these ingredients can help prevent tooth decay. Additionally, some physicians examined the causes of tooth decay, attributing it to factors such as foul odors and humidity (Yousefi Heravi, 1900, p. 56; Shamlou, 1715, p. 33). However, the texts do not elaborate on these causes, providing only a brief mention.

To treat worm-eaten teeth, the use of Ferula, carob, chicory, olive, and cymbopogon plants is recommended (Al-Tabib al-Tankabani, 1715, pp. 91-100-43-140-180). Additionally, rinsing the mouth with apricot juice has been suggested (Sharif, n.d., p. 52), as well as the inhalation of opium smoke (Emaduddin Shirazi, 2005, p. 136). Zad al-Mosaferin also proposes a mixture of henbane, leek seeds, onion seeds, and goat tallow. It is advised to throw these ingredients into the fire and allow the smoke to reach the affected teeth (Sharif, n.d., pp. 52-53).

Also, in *Tohfa Hakim Momin*, the previously mentioned cases, the use of Sanun as a permanent solution in dentistry is proposed in this work. This physician from the Safavid era also recommended using camphor to fill cavities in worm-eaten teeth (Al-Tabib Al-Tankabani, 1966, p. 344). Furthermore, salt, black pepper, Naswar arak, and henbane are advised for treating worm-eaten teeth (Yonani, 2003, pp. 126-125).

However, the doctors of the Safavid era did not determine why the condition affecting the tooth was called worm corrosion or what the origin of this term was. Additionally, another issue worth mentioning is the lack of attention exhibited by Safavid doctors towards the underlying causes of dental complications. Another point worth mentioning is that, apparently, the doctors of the Safavid era did not have a permanent solution for filling cavities caused by tooth decay. Instead, they opted for temporary relief by using various medications to alleviate pain.

### **Other Cases of Safavid Era Dentistry**

#### **1- Pediatric Dentistry**

One of the concerns parents have is related to their children's teeth, especially as they begin to grow. This can lead to impatience and even disorders, such as diarrhea. Dentists have not overlooked this concern, as doctors in the Safavid era provided prescriptions to help facilitate the growth of children's teeth. Asrar al-Atebba mentions that if a child's gum is hard and stiff, the tooth may have difficulty erupting, leading to fever and inflammation (Yonani, 2003, p. 127). *Tohfa Hakim Momin* suggests using a mole and a rabbit's brain to extract children's teeth (Al-Tabib al-Tankabani, 1966, pp. 19-334-107).





Additionally, Asrar al-Atebba mentions using a needle to open the area where the tooth should come out (Yonani, 2003, p. 127). Sea-bottom oysters are also recommended (Al-Tabib al-Tankabani, 1966, p. 132). An anecdote in Asrar al-Atebba suggests mixing onion juice and cow's milk with a pinch of salt and applying it to the child's gums for a few days to soften the gums and alleviate fever and diarrhea (Yonani, 2003, p. 127). Interestingly, Safavid era doctors seemed to solely focus on the growth of children's teeth, without mentioning the maintenance or protection of milk teeth. The absence of information on milk teeth is intriguing and may indicate a lack of attention or understanding of their importance during that period. Milk teeth were temporary and meant to be replaced by permanent teeth, which could explain the lack of emphasis on their care.

## 2- Tooth Weakness and Looseness

Tooth loosening in adults is a common issue that can lead to teeth falling out. Doctors during the Safavid era were aware of this problem and provided remedies for it. According to Asrar al-Atebba, if a tooth is loose due to certain substances being poured inside it, it is recommended to boil green oak galls, burnt alum and rose flowers in water and rinse the mouth with the solution to strengthen the tooth (Yonani, 2003, p. 124). Additionally, Tohfa Hakim Momin, suggests using barberry tree root, turmeric, and basil seeds for strengthening the teeth to strengthen the teeth (Al-Tabib al-Tankabani, 1966, pp. 342- 343). In another remedy, rinsing the mouth with carob, Sanun is advised for tooth strength (Al-Tabib al-Tankabani, 1966, p. 100). Boiled snakes in vinegar and burnt leaves of the borage flower are also considered beneficial (Al-Tabib al-Tankabani, 1966, pp. 231-97). However, the doctors of the Safavid era did not focus on identifying the underlying cause of tooth loosening, which is crucial for effective treatment. Addressing the correlation between tooth looseness and age, gender, particularly age, is also important but was overlooked during that time.

Tooth bluntness was a concern for doctors during the Safavid era. It refers to the deterioration of tooth enamel, caused by the acids in the tooth's environment. This leads to increased damage and quick filling of the tooth. Yousefi Heravi and the author of Bakhiyeh Khergheh suggested treating tooth bluntness by using a quadrilateral approach to tooth decay, recommending the consumption of purslane seeds (Yousefi Heravi, 1900, p. 56; Shamlou, 1715, p. 33). In Tohfa Hakim Momin, chewing apricot kernels and mountain basil (Al-Tabib al-Tankabani, 1966, pp. 111-42) were also believed to be effective in treating this dental issue.

## Conclusion

Many believe medicine experienced little progress and development during the Safavid era. While this may not be true for all branches of medicine in that period, as some areas may have seen improvements compared to earlier times, it can be confirmed to some extent that dentistry did not progress during the Safavid era. Essentially, doctors' foundation and main practices in the Safavid era were similar to those of earlier periods in medical history.

During the Safavid era, doctors focused more on treating dental diseases rather than addressing their causes and roots, prioritizing immediate relief. This approach has limited our understanding of the depth of knowledge possessed by Safavid-era doctors regarding the causes of certain dental diseases. For instance, they did not explain tooth decay, dis-





coloration, black and yellow teeth, or the origins of gum diseases. Instead, they offered treatment solutions for each of these ailments.

Toothache and how to deal with it are considered the most important aspects of dentistry, as emphasized by Safavid doctors. This emphasis can be attributed to the high prevalence of toothaches and their status as a fundamental concern in dental health. Safavid-era doctors also prioritized paying attention to gum diseases and providing prescriptions for their treatment. In addition, dentists of the Safavid era focused on pediatric dentistry. Still, due to the temporary nature of children's teeth (milk teeth), they did not offer many solutions for maintaining tooth health. Instead, they focused more on providing temporary pain relief.

Using roots, fruits, and leaves of plants and trees was the most important therapeutic solution for treating dental diseases during the Safavid era. Sanuns, preparations made from these materials, were commonly recommended and prescribed by doctors for dental treatments. Opium, known for its soothing effects, was not widely prescribed by Safavid doctors for dental issues. Some doctors emphasized its use, while others almost completely ignored it. The reason for this discrepancy is not clear, but it was unlikely to be because of the lack of knowledge about opium. Despite differing opinions on opium, Safavid doctors made efforts to address all known dental diseases, with some receiving more attention than others.

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#### **Conflict of Interest**

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#### **References**

- Al-Tabib al-Tankabani, M., 1966. *Tohfeh hakim moomen or tohfeh almoomenin*. Introduction by M. Najmabadi. Tehran: Mostafavi. [in Persian]
- Browne, E., 1958. *Arabian medicine*. Translated by M. Rajabnia. Tehran: Book translation and publishing company. [in Persian]
- Elgood, C., 1973. *History of Iranian medicine from ancient times to 1934*. Translated by M. Javidan. Tehran: Iqbal. [in Persian]
- Elgood, C., 1979. *Medicine in the Safavid period*. Translated by M. Javidan. Tehran: Institute of Publications and Printing of Tehran University. [in Persian]–
- Emaduddin Shirazi, M., 2005. *Resale afyoneh*. Tehran: Publishing Institute for Medical History Studies; 2005. [in Persian]
- Eslamifard, Z., 2020. *Analysis of the state of medical and pharmaceutical knowledge in the Safavid era*. Tehran: Chogan. [in Persian]
- Fani, M., and Salhei, A., 2014. Viewpoint of Iranian and Islamic Traditional Medicine about Dentistry. *Tārīkh-i pizishkī*, 15 (5), pp. 119-138. [in Persian]
- Karbasi Kheir, M., 2014. Overview of dental history in Iran. *Tārīkh-i pizishkī*, 13 (4), pp. 137-154. [in Persian]
- Kasiri, M. 2008. *Introduction to Isfahan Medical History*. Isfahan: Isfahan University of Medical Sciences. [in Persian]





- Qanadi, A., and Davoudi, N., 2012. Miswak Tree in Islamic Medicine. *Tārīkh-i pizishkī*, 9 (3), pp. 119-132. [in Persian]
- Qazvini, A., 2006. *Translation Resaleh hefz-al-sehea*. Corrected by M. Arab. Tehran: Museum and Document Center of the Islamic Council. [in Persian]
- Razi, B., 2008. *Kholasat al-Tajarob*. Corrected by M. Shams Ardakani. Tehran: Sohabay Danesh. [in Persian]
- Savory, R., 2009. *Iran under the Safavid*. Translated by K. Azizi. Tehran: Nashr markaz. [in Persian]
- Shamlou, M., 1715. *Kherghe Bakheeh*. Tehran: Library of the Islamic Consultative Assembly. [in Persian]
- Sharif, M., n.d. *Zadolmosaferin*. Qom: Ehyaeh Teb Tabiee. [in Persian]
- Yazdi, E., 2008. *A journey through the history of dentistry in Iran*. Tehran: Academy of Medical Sciences of the Islamic Republic of Iran. [in Persian]
- Yonani, T., 2003. *Asrar ol-Ateba*. Translated by M. Dehlavi Khouasani. Tehran: Publishing Institute for Medical History Studies. [in Persian]
- Yousefi Heravi, Y., 1900. *Jame ol-Favyed*. Tehran: Library of the Islamic Consultative Assembly. [in Persian]

