



GENGIGEL[®]
Hyaluronic Acid

ORAL HEALTH
IN THE ELDERLY

FACT FILE

ORAL HEALTH IN THE ELDERLY

The oral health of older adults is a critical area of concern, given its profound impact on overall health and quality of life. This notion is prominently captured in the definition of “oral health” as published by the World Dental Federation in 2016:

“Oral health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.” (Glick et al., 2016)

This becomes an increasingly significant concern for the elderly demographic, which is particularly vulnerable and steadily expanding. **Between 2015 and 2050, the proportion of the global population over 60 years is projected to nearly double from 12% to 22%, reaching 2.1 billion** (source: World Health Organization). Moreover, it poses an economic challenge, given that the treatment of oral diseases can be financially burdensome and thus constitutes a significant public expenditure. Additionally, older individuals often contend with various **comorbidities** that necessitate an array of pharmacological treatments (Patel et al., 2021), which can have a negative impact and can exert adverse effects on oral health.

Consequently, oral diseases assume heightened significance among the elderly populace compared

to other age cohorts. Principal examples include periodontal diseases (with higher prevalence among those over 60), dental caries, and edentulism, often stemming from inadequate oral hygiene and preventative measures (Patel et al., 2021). In particular, **periodontal diseases, including gingivitis and periodontitis, are prevalent among older adults and can have far-reaching consequences if left untreated.**

In conclusion, prioritizing oral health in older adults is imperative for promoting overall health, well-being, and quality of life in later years. Acknowledging the unique challenges and vulnerabilities encountered by this demographic group and adopting targeted interventions and collaborative care models are essential steps towards enhancing oral health outcomes and augmenting the overall health of older adults.

2015
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PERIODONTAL DISEASES IN THE ELDERLY

Gingivitis is the most common problem among periodontal diseases in older people. **It is a reversible inflammation of the gums that manifests as swelling and redness, sometimes leads to bleeding and usually does not cause pain** (Trombelli et al., 2017). Frequently, patients remain oblivious to or downplay the severity of the condition, **potentially leading untreated gingivitis to progress into periodontitis**—a considerably graver and irreversible state. In periodontitis, inflamed gums gradually detach from the tooth, forming “periodontal pockets”, while adjacent tissues (such as gums, bone, and ligaments) deteriorate, ultimately resulting in tooth loss (Rani et al., 2022).

Periodontal diseases are markedly prevalent in the elderly population, with over **70% of individuals aged over 65 afflicted by one of these conditions** (Barzegar et al., 2022). **Underestimation of the initial symptoms precipitating the transition from gingivitis to periodontitis culminates in tooth loss**

for 10-15% of the global populace (Kinane et al., 2017).

Notably, periodontitis assumes significant proportions in older individuals. Non-functional teeth can exert adverse effects on longevity, correlating with hospitalization and morbidity, impeding mastication and digestion, and fostering aesthetically displeasing outcomes and halitosis. Additionally, numerous

comorbidities are linked with periodontitis, prominently including diabetes mellitus—a prevalent condition among the elderly—which exacerbates the patient’s inflammatory and metabolic status.

Consequently, periodontitis transcends mere clinical implications, profoundly impacting the quality of life and psychophysical well-being of affected individuals, particularly older adults (Kinane et al., 2017). The sole recourse to avert periodontitis is through vigilant recognition and treatment of gingivitis symptoms (Trombelli et al., 2017).

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PERIODONTAL DISEASES IN THE ELDERLY

The severity of periodontal disease is intricately intertwined with patient-specific risk factors, comprising both modifiable and non-modifiable elements. **Modifiable factors include cigarette smoking, diabetes mellitus, and psychosocial variables**, while **non-modifiable factors include genetics**, which are relevant to both the onset and progression of the disease (Kinane et al., 2017).

Central to this issue is the recognition of gingivitis, given its reversible nature and close association with oral hygiene. Inadequate oral hygiene fosters plaque accumulation beyond the threshold sustainable by immune defences, precipitating alterations

in the oral microbiota and consequent imbalance in oral health. Disruption of the oral commensal microbiota interacts with the host's immune responses, instigating gum inflammation. Thus, it becomes imperative to enlighten patients, particularly older individuals who may overlook personal hygiene, regarding proper oral care practices.

In summation, **educating patients on early gingivitis recognition, rectifying modifiable risk factors, and advocating optimal treatment modalities stand as pivotal measures in combating periodontal diseases.**

WHY RESORT TO NON-DRUG TREATMENTS?

In the management of gingivitis, alongside maintaining proper oral hygiene and controlling modifiable risk factors, the primary objective is to mitigate inflammation. This is of particular significance for elderly patients, as they are more susceptible to inflammation than other population categories (Ferrucci and Fabbri, 2018).

While nonsteroidal anti-inflammatory drugs (NSAIDs) have demonstrated efficacy in reducing gingivitis, their use is not advocated in clinical practice due to well-documented side effects, especially detrimental for older individuals (Wongrakpanich et al., 2018). Furthermore, older patients are particularly vulnerable to polypharmacy, given their increased susceptibility to drug interactions, adverse drug reactions (ADRs), and non-adherence to therapy. Consequently, it is imperative to refrain from introducing additional medications when non-pharmacological options are available (World Health Organization, 2019).

Professional mechanical plaque removal through supra- and subgingival debridement of teeth holds considerable importance in gingivitis treatment.

Antiseptic agents delivered via toothpastes or mouthwashes can complement mechanical oral hygiene. However, evidence suggests that conventional formulations containing specific detergents may exacerbate certain ulcerative conditions in the oral cavity (Tadin et al., 2019). Chemical plaque removal methods are widely acknowledged as clinically effective in managing periodontal disease. Nonetheless, patient tolerance is often limited due to discomfort and pain induced by various ingredients such as flavourings, astringents, essential oils, and preservatives (Tadin et al., 2019).

The use of coating devices containing hyaluronic acid (HA) has been proposed to promote healing by acting as a barrier that improves water retention and protects the lesion from the surrounding oral environment (Sridharan and Sivaramakrishnan, 2021; Chen and Abatangelo, 1999). HA has no contraindications or interactions with other drugs, rendering it an ideal choice for elderly patients (Casale et al., 2016).

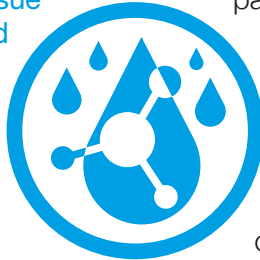


WHY HIGH MOLECULAR WEIGHT HYALURONIC ACID?

HA is a non-sulphated glycosaminoglycan (GAG) extensively distributed in neural, epithelial, and connective tissues, including the periodontium. Serving as a major constituent of the extracellular matrix (ECM), **HA substantially contributes to tissue regeneration, inflammatory response, and angiogenesis, and plays a pivotal role in wound healing** (Graça et al., 2020). Remarkably hygroscopic, HA exhibits notable viscoelastic properties, thereby impeding the infiltration of viruses and bacteria into tissues (Casale et al., 2016).

The properties of HA are directly related to its molecular weight. High molecular weight hyaluronic acid (HMW-HA) inhibits cell differentiation and promotes cell proliferation, and is involved in tissue

regeneration, wound healing, epithelial integrity, embryogenesis, plasma protein distribution, matrix structuring and water homeostasis (Valachová et al., 2021). HMW-HA has a remarkable hydration capacity and can swell to many times its original volume upon water uptake, improving tissue hydration and cell resistance to mechanical damage. This biopolymer is commonly used in the treatment of gingivitis, recession, and periodontal pockets due to its properties, and as a component of grafts and implants (Iviglia et al., 2019). In addition, **HA can act as a stable barrier against viral and bacterial invasion, promoting regeneration in oral cavity diseases** (Iviglia et al., 2019).



Why Gengigel®?

Hyaluronic acid deficiency resulting from oral tissue injury leads to free water imbalance and delayed healing. **Gengigel®, with its HMW-HA-based composition, protects the gingival mucosa by promoting the natural healing and recovery process of the tissue.** Thanks to its bioadhesive and film-forming properties, it forms a stable barrier that preserves the microenvironment of the mucosal surface and accelerates mucosal healing by maintaining the action of HMW-HA over a long period while delaying the absorption and excretion of HMW-HA. The ability of HMW-HA to retain large amounts of water helps Gengigel® maintain extracellular fluid balance and promote oedema resorption in inflammatory conditions, providing rapid relief to inflamed oral tissues. Importantly, hyaluronic acid has no local or systemic pharmacological effects on the mucosa, presenting a significant advantage for the elderly.

A recent systematic review of 38 randomized clinical trials reported that the concomitant use of HA in gingivitis (8), non-surgical (20) and surgical (10) periodontal therapy improved patients' clinical parameters, including periodontal probing depth, periodontal inflammation, and clinical attachment level (gingival recession) while reducing the prescription of nonsteroidal anti-inflammatory drugs (Karakostas et al., 2022). HA was predominantly employed in gel form across

most studies, with some using it as a mouthwash or spray, and in one instance, as fibres. Notably, HA was consistently deemed extremely safe, with no reported contraindications or side effects.

Clinical evidence on Gengigel® encompasses data from high-quality prospective comparative studies (Ibraheem et al., 2022; Al-Shammari et al., 2018; Gupta 2017; Polepalle et al., 2015). The studies covered various indications for Gengigel®, including the treatment of clinical signs associated with periodontal disease and gingivitis following surgical periodontal therapy or the healing of extraction wounds. Application modes ranged from single-use at the time of surgery to multiple applications post-surgery/treatment.

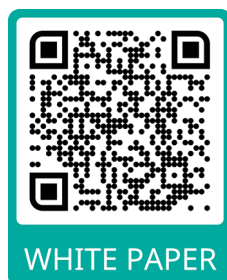
Gengigel® was shown to be an effective treatment for restoring healthy gums and controlling the inflammatory process at various stages of periodontal disease, providing a beneficial effect on early postoperative healing following extraction.

Additionally, three studies showcased Gengigel®'s effectiveness in older patients, highlighting its ability to maintain gingival and periodontal health, enhance the benefits of scaling and root planing (SRP), and expedite gum regeneration (Chauhan et al., 2013; Eick et al., 2013; de Araújo Nobre et al., 2007).



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