Age Related Changes to Taste

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Contents

Introduction

Taste perception is influenced by multiple factors, many of which are particularly relevant in older adults. As individuals age, progressive changes occur across all organ systems, including both peripheral and central structures involved in gustatory function, which may contribute to age-related alterations in taste perception.

Although taste perception is inherently subjective and varies between individuals, changes in gustatory function take on greater clinical and nutritional significance with advancing age. Age-related alterations in taste can affect food preferences, appetite, and dietary intake, potentially influencing nutritional status, overall health, and quality of life. Recognizing the factors that contribute to taste changes in older adults is therefore essential for understanding their broader implications and for informing supportive, person-centered care strategies.

Taste Physiology

Gustation, commonly referred to as taste, is one of the five primary senses and plays a fundamental role in the identification and discrimination of foods during consumption. Evidence in the literature suggests that around the age of 60, taste sensitivity tends to decline. This decline may be partially attributed to age-related reductions in taste bud size, loss of taste receptors, and broader physiological changes associated with ageing (Jeon et al., 2021). Eating is inherently a multisensory experience, involving the integration of taste, olfaction, vision, touch, and, to a lesser extent, hearing. As a result, alterations or impairments in one or more of these sensory systems can substantially influence taste perception, particularly in older adults. For instance, visual impairments may impact food appeal and expectations, while deficits in olfaction are especially impactful, given smells contribution to flavour perception (Singh, 2024; University of Texas Health Science Center at Houston [UTHealth], 2021).

The gustatory system works closely with the olfactory system to generate the perception of flavour. Olfactory receptors located within the

nasal epithelium detect food-related odorants that reach the nasal cavity either during mastication (chewing) or through inhalation. These chemical signals are transmitted to the brain, where they are integrated and associated with learned flavour experiences (Perry, 2023). When olfactory function is compromised, whether due to ageing or pathological processes, flavour perception is often diminished. Age-related declines in olfactory function therefore play a role in taste alterations, contributing to reduced flavour perception and decreased enjoyment of food.

The five basic tastes that individuals can perceive are: sweet, salty, bitter, sour, and umami. Taste perception occurs through taste receptor cells organized within taste buds, which are primarily located on the tongue within specialized structures known as papillae. Several studies indicate that sensitivity to sweet tastes tends to be relatively preserved with ageing, whereas the perception of bitter and sour tastes is more commonly compromised (Ponzo et al., 2024; Jeon et al., 2021; Schiffman, 2000).

Although all regions of the tongue are capable of detecting each of the basic tastes, certain areas exhibit heightened sensitivity to specific tastes (Singh, 2024; Gravina et al., 2013). Multiple types of papillae are present on the tongue, including fungiform, foliate, and circumvallate papillae, which differ in morphology, distribution, and functional role. In contrast, filiform papillae do not contain taste buds; instead, they house nerve endings responsible for detecting texture, temperature, and nociceptive (pain-related) stimuli (Chia et al., 2023; Gravina et al., 2013). Signals generated by these peripheral sensory receptors are transmitted via cranial nerves to the central nervous system, where they are integrated to produce the overall sensory experience associated with eating (Gravina et al., 2023). With advancing age, structural, cellular, and neural changes at both peripheral and central levels may disrupt these signalling pathways, ultimately contributing to declines in taste perception.

Taste Alteration Terminology

Presbygeusia and dysgeusia are among the most commonly used terms to describe taste alterations and age-related changes in taste perception in adults. Presbygeusia refers specifically to the gradual decline or impairment of taste perception that occurs as part of the normal ageing process (Ponzo et al., 2024). In contrast, dysgeusia describes a condition in which an individual's perception of taste is altered or deviates from normal taste sensation, regardless of the underlying cause (University of Texas Health Science Center at Houston [UTHealth], 2021).

In addition to these terms, several others are used to characterize diminished or altered taste perception, including the following:

- **Parageusia**: a distortion of taste perception that occurs during eating or drinking
- **Phantogeusia**: the perception of taste in the absence of any food or beverage stimulus
- **Hypogeusia**: a reduced ability to perceive taste
- **Hypergeusia**: heightened or increased sensitivity to taste
- **Ageusia**: the complete absence of taste perception
- **Aliageusia**: a condition in which normally pleasant tastes are perceived as unpleasant

(Ponzo et al., 2024; Barasch & Epstein, 2023).

Factors Affecting Taste

Age-related alterations in taste arise from multiple interacting factors, including the interaction between physiological ageing and medications, oral health status, lifestyle behaviours, hormonal regulation, and chronic disease processes.

The combined influence of these factors contributes to the complexity of gustatory changes observed in older adults.

Medications

Advancing age is associated with an increased likelihood of chronic disease and, consequently, an elevated risk of polypharmacy. Age-related physiological changes may heighten susceptibility to medication-induced taste alterations, making dysgeusia a clinically relevant concern in older populations. One review identified more than 250 medications that have been reported to cause taste alterations. Common medication classes frequently used in continuing care settings that have been associated with altered taste perception include angiotensin-converting enzyme (ACE) inhibitors, acetaminophen, antibiotics, diuretics, and centrally acting agents such as donepezil and olanzapine (Chia et al., 2023).

Oral Health

Saliva plays a role in taste perception by dissolving food, facilitating their interaction with taste receptors, and contributing to overall oral health. Both the quantity and composition of saliva can change with advancing age, potentially affecting taste sensitivity and oral comfort. Xerostomia (dry mouth) is relatively common among older adults and can interfere with food processing, swallowing, and flavour perception, thereby contributing to reduced appetite or poor intake (Roblegg et al., 2019). Despite the importance of salivary function, the literature examining age-related changes in saliva and their direct impact on taste perception remains limited, indicating a need for further research in this area (Roblegg et al., 2019; Xu et al., 2019). In addition, the use of dental prosthetics, such as dentures, implants, and bridges, may impair chewing ability and alter taste perception (Ponzo et al., 2024).

Lifestyle Factors

The cumulative effects of tobacco use, and alcohol consumption may compound age-related declines in gustatory function. Evidence suggests that individuals who smoke or consume alcohol may experience reduced or distorted sensitivity to bitter and sour tastes. These alterations are thought

to result from a combination of peripheral sensory damage and changes in central taste processing arising from long-term exposure, physiological ageing, and chronic environmental factors (Gnanambigai et al., 2025).

Obesity

Age-related changes in taste perception may also be influenced by obesity and metabolic dysregulation, conditions that become increasingly prevalent with age. Taste perception has been shown to differ in individuals with obesity or who have an increased obesity risk, with some studies indicating a heightened sensitivity to salty, sour, and bitter tastes. These alterations may increase the preference for foods with higher sweetness or salt content, potentially reinforcing dietary patterns that contribute to excessive energy intake and weight gain (Chia et al., 2023).

Gender and Ethnicity

The effects of ageing on taste perception may vary according to gender and ethnicity. Cultural background can shape taste preferences and sensory experiences through early dietary exposure, regional food availability, and habitual consumption patterns. Consequently, taste perception should be interpreted within a broader sociocultural context (Chia et al., 2023; Ponzo et al., 2024).

Sex-based differences in taste perception have also been reported in the literature. These differences are thought to reflect the influence of sex hormones on gustatory processing, as hormone receptors and signalling pathways are present within the gustatory system (Chia et al., 2023). One study found that women demonstrated reduced recognition of sour, salty, and bitter tastes compared with men, suggesting potential biological and hormonal contributions to taste perception (Yoshinaka et al., 2016).

Infections

Infectious diseases may also alter taste perception through a variety of mechanisms. This phenomenon was particularly evident during the COVID-19 pandemic, which disproportionately affected older adults. Research conducted by the National Institute on Aging reported that

approximately 60% of individuals who tested positive for COVID-19 experienced loss of taste or smell, with nearly one quarter failing to fully recover these senses over time. Emerging evidence suggests that SARS-CoV-2 may persist within taste bud cells on the tongue for up to 18 months in some individuals, contributing to prolonged gustatory and olfactory dysfunction. These findings highlight that long COVID can directly affect taste receptors and sensory perception. As COVID-19 continues to circulate within communities and poses significant risks to older adults, its potential impact on taste and nutritional status remains an important consideration (Yao et al., 2023; UTHealth, 2021; Barasch & Epstein, 2023).

Hormonal Influences

Ageing is associated with alterations in endocrine signalling that may affect gustatory function. Hormones play a significant role in taste perception, with several hormones expressed directly within the taste buds. Age-related changes in taste may therefore be reflected through altered hormonal regulation (Shin & Egan, 2010; Chia et al., 2023). Other hormones, although not synthesized within taste buds, influence taste perception through receptor-mediated or central mechanisms (Shin & Egan, 2010; Chia et al., 2023). One hormone has been implicated in learned taste aversion responses, especially in relation to foods associated with potential toxicity. Age-related changes in circulating hormone levels may thus contribute to the gustatory alterations observed in older adults.

Endocrine, Metabolic, and Neurological Disorders

Endocrine disorders, which may become more prevalent or severe with advancing age, can impair taste perception. For example, individuals with hypothyroidism have been shown to experience altered gustatory function, with bitter taste perception being particularly affected (Chia et al., 2023).

Metabolic conditions such as diabetes mellitus may influence taste perception through mechanisms including peripheral neuropathy, microvascular damage, and altered taste receptor function (Asan et al., 2022). One study demonstrated that diabetes can affect specific taste receptors

involved in the perception of sweet and savoury flavours, which can be further impacted by the ageing process (Asan et al., 2022). However, other evidence suggests that taste alterations associated with metabolic conditions may be reversible with appropriate treatment and glycaemic control (UTHealth, 2021).

Neurological conditions, including stroke, Parkinson's disease, and Alzheimer's disease, can significantly affect taste perception due to central nervous system involvement and cranial nerve impairment. In Parkinson's disease, loss of smell, or ageusia are common symptoms that substantially influence taste perception. Parkinson's disease predominantly affects older adults, further compounding age-related sensory decline (Doty, 2012; Graham et al., 2025). Similarly, research in individuals with Alzheimer's disease has demonstrated a decline in taste function, including impaired recognition of umami taste. These deficits may reduce interest in food, negatively affecting nutritional intake and overall quality of life (Kouzuki et al., 2020).

Consequences

As individuals age, taste perception is shaped by a range of interacting physiological, sensory, and contextual factors. Substantial alterations in gustatory function can have far-reaching implications for dietary behaviours, nutritional status, and overall well-being.

Decreased Appetite and Nutritional Status

When food no longer tastes as it once did, or when multiple factors negatively affect taste perception, individuals may experience a reduction in appetite. Decreased appetite can directly compromise dietary intake and nutritional status. For older adults who are already vulnerable or at risk, inadequate intake may contribute to malnutrition, which is associated with increased morbidity, functional decline, and reduced longevity.

Compensatory Behaviours

In response to diminished taste perception, some individuals adopt compensatory behaviours aimed at enhancing flavour intensity. These behaviours may include adding excessive amounts of sugar to beverages such as tea or coffee, or increasing salt use. While these strategies may temporarily improve palatability, they may also contribute to the progression of chronic diseases, such as diabetes or hypertension, and reinforce long-term unhealthy dietary habits.

Recommendations

The following recommendations aim to support taste perception, promote adequate nutritional intake, and enhance mealtime enjoyment through practical, person-centred strategies for older adults.

Enhancing Flavour

Older adults often require stronger flavour intensity to perceive certain tastes, particularly umami. Incorporating umami-rich foods, along with herbs and spices, into meals may improve palatability and enhance overall dietary intake without relying on excessive salt or sugar.

Managing Dry Mouth

Xerostomia is common among older adults due to age-related changes in salivary production and medication use. Improving oral moisture may enhance both taste perception and comfort during meals. Encouraging adequate fluid intake, particularly during meals, may help alleviate symptoms of dry mouth and support food enjoyment.

Monitoring Medication Effects

Several medications commonly prescribed to the ageing population are known to alter taste perception. Regular review of medications and documentation of potential taste-related side effects within individual care plans can help staff anticipate and accommodate these changes. This approach is

particularly valuable when residents report perceived taste alterations, as it supports individualized, person-centred care planning.

Meal Presentation

As ageing may affect not only taste but all five senses, attention to meal presentation is essential. Enhancing visual appeal can help compensate for diminished taste perception. Strategies include serving foods at appropriate temperatures, incorporating colour and contrast, offering choice, and paying attention to overall presentation to engage multiple sensory pathways.

Taste Screening

When reduced appetite or food intake is observed, screening or assessment of taste perception may help identify underlying gustatory changes. Early identification of taste alterations can guide appropriate dietary modifications and determine whether additional interventions or referrals are warranted.

Conclusion

In summary, the literature indicates that age-related changes in taste perception are common and arise from a complex interaction of physiological ageing, oral health status, medication use, and chronic metabolic, neurological, and endocrine conditions. Although reductions in taste sensitivity, particularly for sweet, salty, and umami flavours, are frequently reported, their effects on appetite and nutritional status vary and are shaped by individual health, sensory, and contextual factors. Importantly, the evidence suggests that taste alterations should not be considered in isolation, but rather within a broader, person-centred framework that recognizes the influence of mealtime presentation, food quality, and individual preferences.

Collectively, these findings support the implementation of practical, non-pharmacological strategies and interdisciplinary approaches to promote adequate nutrition, preserve enjoyment of eating, and enhance quality of life in older adults.

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