

## Adverse effects on oral health



The rapid ageing of the global population has resulted in an increase in the prevalence of two or more chronic illnesses or multimorbidity<sup>1</sup>



By 2050, 1.5 billion people globally will be over the age of 65<sup>2</sup>



### Polypharmacy: Impact on overall health

Polypharmacy, or the administration of multiple drugs, is often associated with various drug-related problems<sup>1,4</sup>



Half of the global population of older adults is subjected to polypharmacy<sup>4</sup>

### Owing to age-related changes in pharmacokinetics and pharmacodynamics, older adults are at an increased risk of<sup>3,4</sup>

Drug–drug interactions

Drug–disease interactions

Medication non-adherence

Adverse drug reactions (ADRs)

Drug duplication

## Most common medications taken by older adults<sup>5</sup>



### Over the counter (OTC)

Medication for common cold, diarrhoea, constipation, indigestion, and headache



### Prescription

- Antacids (H2 blockers)
- Anticholinergic drugs
- Antidepressants
- Antidiabetic medication
- Antihistamines
- Antipsychotic medications
- Antiulcer drugs
- Drugs for osteoporosis treatment
- Hypno-sedatives
- Laxatives
- Medications for cardiovascular disease (CVD)
- Muscle relaxants
- Nonsteroidal anti-inflammatory drugs (NSAIDs)



### Changes across the course of life<sup>5</sup>

Age-related changes in the body including in the oral cavity alter the pharmacokinetics and pharmacodynamics of medications, which may lead to changes in the quality and quantity of saliva



### The role of saliva in oral health<sup>6</sup>

Apart from playing a protective role against oral infections, saliva also helps keep the mouth lubricated; clear oral debris; heal oral wounds; eat, taste, and digest food; maintain oral pH; talk; and even remineralise cavities



### In older adults

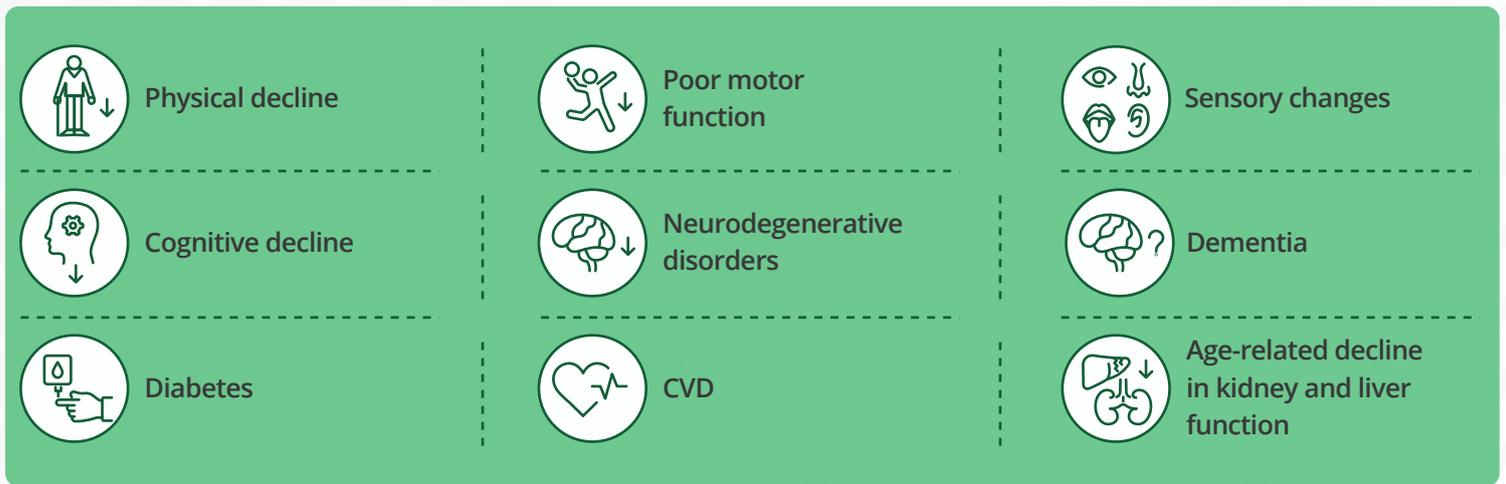
- Increased use of medication leads to hyposalivation<sup>7</sup>
- Certain morbidities and the ageing process lead to a higher risk for hyposalivation<sup>8</sup>

### Clinical consequences<sup>9</sup>

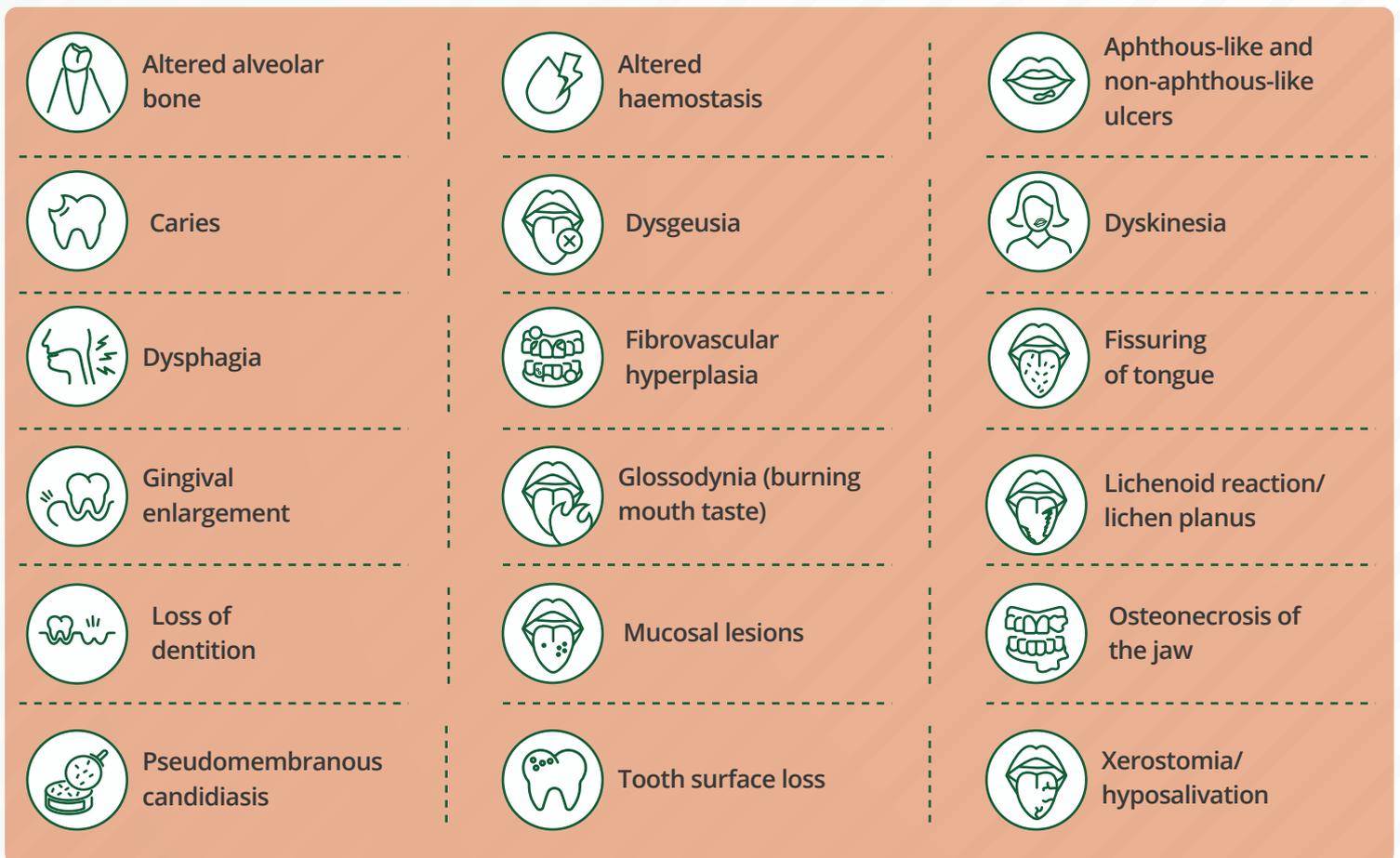
- Blockage of muscarinic and adrenergic receptors
- Inhibition of acetylcholinesterase inhibitors
- Downgrading of salivary secretory reflex
- Reduced blood flow to the salivary glands
- Change in the quality of saliva
- Xerostomia

**Oral soft and hard tissues become more susceptible to environmental factors and damage**

## Age-related changes and chronic illnesses linked to poor oral health in older adults<sup>2,4,5,10</sup>



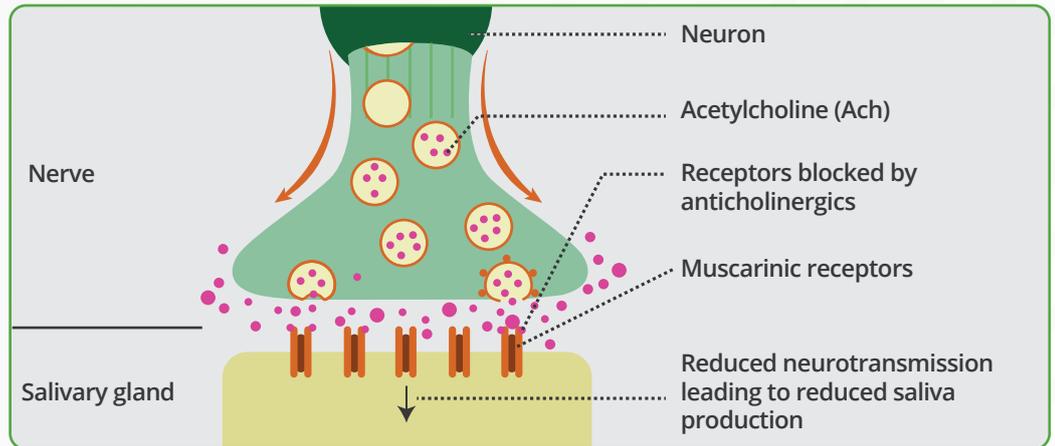
## Oral health complications caused by medication use<sup>2,4,10</sup>



**Thus, there is an urgent need for not only dental professionals, but healthcare practitioners (HCPs) of all domains to understand the implications of polypharmacy on the oral health of older adults and devise tailored treatment plans to optimise medication use**

# Prescription and OTC medications cause many side-effects leading to decline in oral health<sup>4,5,11</sup>

Anticholinergic medications, which block or prevent acetylcholine molecules from binding to receptors in the peripheral or central nervous system, compete with acetylcholine molecules to bind to muscarinic receptors in the salivary glands and reduce the production of saliva<sup>4,5</sup>



Adapted from: *Anticholinergic Drugs*. Lectorio. Retrieved from: <https://www.lecturio.com/concepts/anticholinergic-drugs/>

## List of commonly prescribed medications that exacerbate common oral health conditions<sup>1,4</sup>

	<b>Altered alveolar bone</b>	<ul style="list-style-type: none"> <li>Corticosteroids</li> <li>Enzyme-inducing antiepileptic medications</li> </ul>
	<b>Altered haemostasis</b>	<ul style="list-style-type: none"> <li>Anticoagulants and antiplatelet medication</li> <li>Antidepressants</li> <li>NSAIDs</li> <li>Herbal supplements</li> </ul>
	<b>Gingival enlargement</b>	<ul style="list-style-type: none"> <li>Calcium channel blockers</li> <li>Phenytoin</li> </ul>
	<b>Mucosal lesions</b>	<ul style="list-style-type: none"> <li>Antibiotics</li> <li>Antidiabetics</li> <li>Antiepileptics</li> <li>Antihypertensives</li> <li>Diuretics</li> <li>NSAIDs</li> </ul>
	<b>Oral lichen planus</b>	<ul style="list-style-type: none"> <li>Allopurinol</li> <li>Antidiabetics</li> <li>Antiepileptics</li> <li>Antihypertensives</li> <li>Antiarrhythmics</li> <li>Biologic agents</li> <li>Gold salts</li> <li>NSAIDs</li> <li>Penicillamine</li> <li>Sulfasalazine</li> </ul>
	<b>Osteonecrosis of the jaw</b>	<ul style="list-style-type: none"> <li>Antiresorptive/antiangiogenic agents</li> </ul>
	<b>Xerostomia and hyposalivation</b>	<ul style="list-style-type: none"> <li>Angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers</li> <li>Antithrombotics</li> <li>Benzodiazepines</li> <li>Beta-blockers</li> <li>Calcium channel blockers</li> <li>Insulin and oral antidiabetic drugs</li> <li>Laxatives containing magnesium compounds</li> <li>Proton pump inhibitors</li> <li>Psycho-analeptics</li> <li>Respiratory agents</li> <li>Statins</li> <li>Thiazide diuretics</li> <li>Urologic medication</li> </ul>

# Recommendations for HCPs for assessment of polypharmacy in older adults<sup>1,4,10</sup>



Dental care providers should verify current medications and consult with a treating physician



Understand the risk factors of polypharmacy in older populations and regularly assess patients



Use evidence-based, clinical pharmacologic knowledge to diagnose and treat oral implications of medications



Employ comprehensive geriatric assessment and medication reconciliation to assure accurate medical information



Leverage tools to understand the purpose and appropriateness of medication



Communicate with other HCPs to reduce medication errors and unnecessary polypharmacy



Reach an agreement with the patient to optimise medication impact



Encourage the patient to have regular oral check-ups



Be aware of possible interactions with current medications before prescribing new medication as a dental professional

## Key messages

Oral health professionals should be aware of the effects of polypharmacy and multimorbidity in older adults

HCPs as well as dental providers should focus on medical reconciliation as early as possible, in order to avoid ADRs

Prescription of medication should be made accounting for its potential effects on the oral health of the patient

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