

## Effects of Papaya Enzymes in Patients with Dry Mouth

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### Introduction

As we age maintaining oral hygiene and dental care becomes increasingly important to our overall health. Lack of oral hygiene and dental care can contribute to:

- Dental pain
- Infections in the mouth
- Bad breath
- Difficulty chewing and swallowing
- Loss of quality of life
- Social isolation

Although oral hygiene and dental care seems a natural process for many older people in residential care this process is often overlooked for a variety of reasons including: Staff are not aware of or trained in assessing and maintaining oral hygiene; Staff are not aware of or trained in detecting dental concerns; Residents exhibit challenging behavior which does not enable staff to carry out appropriate oral hygiene techniques; Facilities do not have the adequate oral hygiene assessment tools or products available to them [1].

Poor oral hygiene and dental care often become an issue for older people for the following reasons: They are prescribed more medications many of which cause a dry mouth and promote dental decay; They may have missing or decayed teeth which become an issue with chewing and swallowing; Incorrectly sized dentures can cause pain and issues with chewing and swallowing; They may have gum or oral infections or disease that may affect or inflict pain and affect chewing and swallowing [2].

### Dry mouth

Dry mouth has been reported to be most prevalent in the aging population. Even though it is clear that dry mouth is not part of aging, the elderly population tends to take more medication as a result of

several age-related health conditions [3,4]. This makes elderly more susceptible to drug-induced dry mouth. For instance, diseases such as urinary complications are more prevalent in the adult population. This makes them use urinary continence drugs that have been associated with dry mouth. People with advanced age use over the counter medication often to relieve pain associated with various age-related health conditions. This could expose them to salivary glands hypofunction as well as dry mouth. Other age-related factors that place people advanced in age in dry mouth susceptibility are the diminishing tooth retentions. Older people have been reported to have diminishing tooth retention which adversely affects oral health. Also, due to age, oral hygiene may be poor among the seniors. This could result in plaque that leads to dentine caries [5].

### Oral health conditions in the elderly in residential care facilities

According to Burgess (2016), poor oral hygiene and dental care have been associated with various ailments that could result into pain, tooth decay and infections which could consequently lead into difficulty in chewing, swallowing and talking. This could, in turn, lead to malnutrition, anxiety, depression, dehydration and ultimate loss of quality of life. There are several oral health conditions that have been reported in residential facilities caring for elderly people [6].

### Angular cheilitis

Angular cheilitis is commonly described as a bacterial or fungal infection that could be seen around the corners of the mouth resulting in a red and cracked appearance at the corners of the mouth.

The patient suffering from angular cheilitis experiences soreness as well as cracks at the corners of the mouth. Angular cheilitis involves the lip vermilion and its border. Also, the acute and chronic inflammation could affect the skin that surrounds the edges of the mouth. Other symptoms of angular cheilitis include dryness, fissuring, scaling, burning, itching and even edema [7,8] (Figure 1).

## Glossitis

This is also another dental condition that has been common in most residential cares and is associated with fungal infection that leaves the regions of the tongue reddened. This condition is suggestive of a general health problem in older residents.

This condition manifests itself through reddened and smooth sections identified in the tongue. Also, the elderly experiencing glossitis may have a sore and swollen tongue that resulting from fungal infection (Figure 2).

## Oral thrush

This condition is also known as oral candidiasis. This is caused by a group of yeast commonly known as *Candida*. This is where the fungus *Candida albicans* accumulates at the lining of the mouth. Even though this fungus is a normal organism that is found in the mouth, it could overgrow if not checked and could result in irritating symptoms. Oral



Figure 1: Angular cheilitis.



Figure 2: Glossitis.



Figure 3: Oral thrush.

thrush could manifest through white lesions that could be seen in the tongue or in the inner cheeks. However, these lesions could rapidly spread to tonsils, gums as well as into the back of the throat (Figure 3).

## Gingivitis

This is a dental plaque that is witnessed in the gum lines and leaves swollen red gums. This inflammation of the gums increases with the age of the patient. This is the first sign of the gum disease which manifests itself through bleeding gum during brushing. Gingivitis if left untreated may progress to periodontitis.

When the patient shows sign of swollen gums that are prone to bleeding when brushed or even touched, then it is likely to be a case of gingivitis. Also, a patient who suffers from gingivitis could have bad breath (Figure 4).

## Periodontitis

This is a condition where the gums and bone that provide support for the teeth are broken down and appear reddened. Even though it is known that aging has an effect on gums as well as oral mucosa by reducing by reducing their vascularity which in turn slows the healing of the gm after suffering injury, age does not have an obvious effect on periodontal changes during aging. Periodontitis could greatly reduce patient QoL as general health will be affected (Figure 5).

The signs that could be seen in senior residents with periodontitis include receding gums, loose teeth, and the sensitivity of the teeth, bad breath as well as roots that are exposed [7].

## Aims

Modern practice demonstrates that some Speech Pathologists utilize grape seed oil, papaya or pineapple juice to assist with thinning the viscosity of saliva. Our team wanted to investigate whether a



Figure 4: Gingivitis.



Figure 5: Periodontitis

**Table 1:** Oral health assessment tool.

Mouth Area	Healthy Status	Unhealthy Status	Actions Required	Referral to a GP
<b>Lips</b>	Moist and pink	Dry or chapped	Use lip balm	Yes
		Bleeding or ulcerated		Date:
		Visible Swelling		No
<b>Tongue</b>	Moist and pink	Coated	Use Osmist or other dry mouth spray as required	Yes
		Ulcerated	Use mouth wash	Date:
		Swollen	Brush teeth and tongue regularly	No
		Patchy/fissured		
		Dry or rough		
<b>Gums</b>	Moist and pink	Dry or rough	Use Osmist or other dry mouth spray as required	Yes
		Red	Use mouth wash	Date:
		Swollen	Brush Teeth and tongue regularly	No
		Bleeding		
		Ulcers		
		White patches		
<b>Natural Teeth or Dentures</b>	No food build up or residue noted on or between teeth	Food residue or build up in or on teeth	Brush teeth regularly	Yes
			Use bond for dentures if required	Date:
	No visible signs plaque coating	Light coloured plaque along gums or teeth	Use Osmist or other dry mouth spray to ensure healthy mouth	No
	No tooth damage	Some damage to teeth		
Dentures fit well	Dentures do not fit properly			
<b>Dental Pain</b>	No dental or oral pain stated	Complaints or behavioural suggestions of discomfort or pain stated or visible	Brush teeth regularly	Yes
			Dental referral to be made	Date: No
<b>Oral Cleanliness</b>	Clean and no food particles in or around mouth	Food particle in or around mouth	Brush teeth and tongue regularly	Yes
	No odour	Plaque or tartar visible	Use mouth wash if required	Date:
		Mouth odour present	Use Osmist or other dry mouth spray to ensure clean mouth	No
<b>Saliva</b>	Moist mouth	Dry, sticky mouth	Use Osmist or other dry mouth spray as required	Yes
	Watery and free flowing	Little saliva present	Use grape mildly thick Flavour Creations beverage	Date:
		Tissues parched and red		No
		Thick, ropy saliva		

combination of a topical spray together with a regimented oral hygiene program will be of benefit to older patients.

## Methods

A total of 12 cases studies were utilized at Jacaranda Village, an aged care facility based in Red Cliffs.

Prior to the study residents with dentures would have their dentures cleaned once a day, residents with their own teeth or no teeth would have mouth care attended once or twice a day depending on the resident's preference. 100% of residents had complained of dry mouth, cracked lips, mouth ulcers, swallowing difficulties and food residue.

We took mouth swabs of all of the residents and the results indicated that 80% of residents had a moderate to severe form of oral thrush.

We assessed all residents utilizing the Oral Health Assessment Tool to determine issues with their oral health status.

## Oral Health Assessment Tool

Tick all boxes that apply to each Area of the Mouth. If you tick an "Unhealthy Status" please consider "Actions required" and make a referral to the GP (Table 1).

## Treatment Phase

We made changes to our mouth care for a two week period to assess the changes. Residents teeth were cleaned twice a day for two weeks religiously and utilized a topical mouth spray to assist with the dryness of the mouth three times per day [6,9]. The nursing staff ensured all oral hygiene was attended to utilizing a tick sheet and passing on the information at the staff handover process.

## Results

After a two week period residents' mouths were re-swabbed and the results indicated that the oral thrush bacteria had decreased in all cases but not eradicated completely in those with moderate bacteria levels to begin with. 100% of residents advised the topical oral spray helped throughout the day with dry mouth symptoms and found these symptoms were relieved for longer periods of time. 80% of the residents reported that they had more of an appetite and that they felt that their saliva had increased.

## Discussion and Conclusion

In order to ensure that older people living in residential care facilities receive appropriate oral hygiene and dental care the facility needs to be committed to ensuring the education of champion staff to will undertake the role of ensuring all assessments are being conducted, interim measures are taken when issues are identified and referrals take place. The size of the participants was a small case study size and it is advised that further subjects be recruited to similar studies. Although this study does have flaws and much can be done to improve the research base, it does highlight the requirement for oral hygiene in residential facilities as well as the benefits of papaya enzymes in assisting with decreasing the dryness of the mouth.

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