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The Surprising Connections between Oral Health & Well Being! Routine Oral Checks- A missed Opportunity for Dental, Oral & Overall, Health!

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Case Report
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Abstract

Our teeth don't necessarily hurt until something big is going on. While some health issues show up in the mouth, Poor oral hygiene can lead to negative health outcomes, the problems go both ways: Some studies show that there may even be a connection between poor oral health and worse brain health Brushing at least twice a day, flossing at least once a day, contribute to greater dental, oral and overall health." Studies suggest that oral bacteria and the inflammation associated with a severe form of gum disease (periodontitis) play a role in diseases like oral thrush, loose teeth, carries. Similarly, diseases such as diabetes and HIV/AIDS lower the body's resistance to infection, turning oral health problems more severe.

A primary care doctor plays varied roles – a scientist, a healer, and an organized service provider. Healing may not reverse the damage but curtails the illness or its consequences from controlling our lives. Every PCP as they grow into the profession must be driven by competence, newer medical developments & technologies, precision in decision-making / treatment, improving people's lives, understanding the importance of compassion, and realizing that the science is incomplete, then only a healer emerges in him or her. The system must take responsibility for their appropriate training. Each PCP must make it a practice to have a quick scan of the mouth in every visit of their patients not to miss early detection, treatment, and preventive care opportunity.

Materials and Methods: This article is based on identification of two cases of Oral cancers one in early stage, biopsied leading to simple excision and cured from Bhutan and another case from Raichur in November 2023 in late stage currently under chemotherapy, one case of Aphthous ulcer and a few cases of gingivitis due to diabetes, with mixed results.

Keywords: Primary Care Doctors; Dentists, Gingivitis; Gum diseases; Periodontitis; Aphthous ulcers; Human Papillomavirus (HPV); Accredited Social Health Activists (ASHAs); Anganwadi Workers (AWWs)

Abbreviations: DCI: Dental Council of India; PCP: primary care provider; NHM: National Health Mission; NOHP: National Oral Health Programme.

Introduction

The health of our mouth, or oral health, is more important than many people, general practitioners and

the administrators realize. It is a key indicator of overall health, well-being, and quality of life. The significance of the mouth as part of our overall health is often overlooked and underappreciated, especially in developing countries and for those who have the biggest obstacles in getting access to dental care for want of dental services or its accessibility to rural and urban poor households [1].

India has more than the recommended dentist-to-population ratio by WHO (1:7500). There are about 55,000 dental clinics currently, but unfortunately over 90% of them are working in and around major cities. In contrast the over 75% of elderly population and young children who need oral/dental care reside in rural India. While there are about 312,927 dentists registered with the Dental Council of India (DCI), the government employs only 7500 dentists, or just 3% [1]. The rising prevalence of malocclusion and dental disorders among the population is fuelling the demand for orthodontic treatments and Implants, that are becoming a Main Growth Factor in Orthodontics. There is a total of 17580 Orthodontists in India as of December 04, 2023, and the number continues to grow in 2023, as over "20% of people seeking treatment want to replace their previous teeth with an implant."

A good oral health enables us to function as a human being (i.e. speaking, smiling, smelling, eating), it is also important for communication, human relationships, and financial prosperity. Poor dental health is a precursor for painful, disabling, oral conditions and costly health derangements. Poor oral health is linked to diabetes, heart disease, adverse pregnancy outcomes, stroke, and respiratory conditions, apart from tooth decay, gum disease and oral cancers. In India over 95% of adults over 50% of adults have of adults have dental caries and periodontal disease respectively.

There are many determinants that impact our oral health; however, diet and hygiene are controllable with the right habits. Tooth decay (cavities) is the most common chronic childhood disease, yet it is preventable through healthy diet choices and good hygiene habits. Plaque buildup leading to cavities, gingivitis or severe gum disease that put teeth, gums, and other parts of the body at risk [1].

Due to the shortage of dental doctors, primary care provider (PCP) / doctor, irrespective of the system they are trained (Allopathy, Ayurveda, Homeopathy, Unani, or Siddha) and shoulder the responsibility of basic dental and oral care. They play varied roles - a healer, an organized service provider and a scientist. Healing may not reverse the damage but curtails the illness or its consequences from controlling our lives.

Oral health is a mirror of systemic health and vice-versa. Medical professionals are e primary caregivers in a given population and as such a vast majority of the population visits them for health-related problems. Every PCP as they grow in the profession strive to be driven by competence, newer medical developments & technologies, precision in decision-making and comprehensive treatment, for improving people's lives. By understanding the importance of compassion and realizing that the science is incomplete without human touch, s/he emerges as a good healer. The system must take responsibility for empowering, and the individual PCP must make it a practice to scan the mouth in every visit of their patients, to gather meaningful information for early detection, treatment of many health conditions and preventive care opportunities of possible complications [2].

Do, primary care doctors pay closer attention to signs of illnesses like gum diseases to suspicious lesions, and general oral health that could provide a critical window into broader medical concerns? The answer at least in India is a big no! in most cases! A recent statement by the U.S. Preventive Services Task Force found that dental screenings by primary care doctors may not work well enough to catch patients most at risk of oral health issues [3-5]. But the fact is, a quick look by a Primary Care Physicians in all visits could catch health problems.

Case Reports

1. Precancerous Stage Patch in Buccal Mucosa of a Bhutan Lady: In one of my public Health Consultancy in Bhutan, in 2008, the Govt. coordinator took me to her house for lunch in one of trips. After the lunch her mother aged about 50years showed me her mouth complaining of a colourless, painless patch. She was chewing tobacco for nearly 20 years. Suspecting that to be Cancerous patch, I advised them to got to Kolkata, India for a Biopsy. I got a confirmatory message that it turned out to be in the initial stages of cancerous changes, an excision was done and is doing well even now.

2. Lakshmi, Raichur A Neglected Oral Pale Patch Turing into Squamous Cell Carcinoma with Secondaries over 1 Year: Lakshmi a 60-year-old lady from Raichur, Karnataka was referred on 26 October 2023 to Oncology department, Mazumdar Shaw Medical Centre, Bengaluru for non-healing ulcer on the left buccal mucosa for nearly 2 years. Initially she had a colourless painless patch over a year and that became an ulcer for last 1 year. She was consulting a private dentist in Raichur and later in government medical college, Bellary, when opening her jaw became difficult. She is known diabetic for over 10 years on oral anti-diabetic drugs, Hb1Ac poorly controlled. The oral cavity examination showed ulcerative growth in left side buccal mucosa, superior to gingiva-buccal sulcus, inferior to lower gingiva buccal sulcus medially up to gingival mucosa, anteriorly up to 2nd premolar, posteriorly up to retromolar trigone. Left level IB lymph node was palpable. While Biopsy confirmed squamous cell carcinoma stage iv,

and secondaries small dots in lung field probably tiny lymph nodes that could not be taken out for biopsy in the CT scan. Two sessions of Chemotherapy since 5th November 2023 and the lady is due for assessment next week.

These two cases give a glimpse of what a PCP or GP can do or the family neglect and the miss an opportunity for early diagnosis and better management and the consequences of delayed diagnosis.

3. Recurring Aphthous Ulcers Sign of Undiagnosed Diabetes: A Female patient 30 years old came in my OPD with c/o ulcer on the margin of the tongue with redness and burning pain since 7days which is recurrent from 15 months. Initially when complaint started, suffering once in month but for 5 months suffers twice in a month. Applying glycerine at the ulcer in the last 5 months when aphthae appear. Associated with unsatisfactory bowel movements 15 days.

History and family history: Nothing contributory. Currently she ate food 2 times a day Appetite -diminished, desires to eat spicy food and has aversion to vegetables. She was forced to drink small quantity of water in over long time. Sleep was not disturbed, nor was there any dreams. Urinary and Bowle habits were normal. Perspiration was scanty only in axilla. Menstrual history- Menarche at 13yrs, no complaint, flow for 5 days, regular menses.

On examination- Patient talked only when asked something, not sharing her feeling with anyone. Never expressed her anger for fear of disrupting relationship. General and physical examination: i) Weight-65kg, - Height-5'1", ii) pulse- 90/min – iii) BP- 114/82 mm/hg, iv) - RR-20/min - Pallor- absent -Icterus- absent - Cyanosis- absent. No Lymphadenopathy. Systemic examination of Respiratory, CVS and GI system added no additional information.

- **Oral Cavity Examination Revealed:** i) Lips- Red ii) Tongue- Aphthae ulcer on the margin of the tongue 6 to 7 in number, red margin of ulcer with yellow base, white coating of tongue. Gums- Pink Teeth- no caries. Neck & Throat Lymph nodes not enlarged Tonsils-NAD.

- **Investigations Done: Blood sugar= Fasting 140mg/Dl, PP= 220 mg/dl, Hb1Ac=7.8%**

Diagnosing her as diabetic put her on oral antidiabetics, diet, and exercise to reduce weight to 55 kg in 6 months' time (Table 1).

Sl. No	Complaints	Prescription with Date	Progress
1	7 Aphthous ulcers	Tab Amaryl 2 mg 45 minutes before each meal and Metformin 500 mg after each meal. Local application of Hexigel after mouthwash after each eating. 22/08/2023	NA
2	Ulcers less red and less painful	Continued the treatment 15/09/23	Aphthous ulcer in mouth is reduced by 10%
			-Burning pain in the mouth is reduced by 40%
			-Stool- Satisfactory
3	General condition good	Continue treatment except local application 10/10/23	Aphthous ulcer in mouth is reduced by 60%
	Painless 4 ulcers. Size reduced		-Redness at the site of ulcer is reduced by 80-90%
			stool- satisfactory
4	No ulcers	Asked to continue Diet, exercise and anti-diabetic drugs and reduce the weight to 55Kg	No aphthous ulcer in the mouth. -No complaint of constipation. Thirst is decreased.
	Happy		
	Weight 60 Kg		

Table 1: Progress Monitored.

4. A case of Scalded Mouth Syndrome: A male patient of about 57 years reported to me in June 2022 with complaints of mouth dryness and burning of oral soft tissues. Being a hypertensive for over a decade he was on hypertensive. In January 2022 in annual check-up, he was prescribed a new drug Zestril (Lisinopril an ACE inhibitor) for his resistant hypertension following a recent episode of mild heart attack. On examination there were no signs of any inflammation or infection in the mouth. Suspecting it to be an adverse reaction to the Zestril, I withdrew the drug and asked him to continue earlier drugs and apply mucosal soothers. Over weeks' time his problem was solved. Lisinopril is a medicine to treat hypertension and heart failure. It's prescribed after a heart attack as it prevents future strokes and heart attacks.

5. A case of Cheilitis: A obese (BMI 40) lady of 40 years presented with complaints of oral dryness, peri-oral itching, burning, erythema, fissuring and oedema in May 2023. As her Blood test of biomarkers especially blood cholesterol was high with disturbed LDL/HDL ratio, a general practitioner had prescribed her Simvotin 20 mg tablet (Simvastatin, a cholesterol-lowering agent) daily. After about 2 weeks of use she started feeling dryness of mouth and then slowly excoriation was seen at the angles of the mouth. I asked her to stop Simvotin and replaced with Gemfibrozil (a generic fibrate to reduce cholesterol level) and asked her to apply topical moisturiser and cortico-steroid and antibiotic ointment twice day. The rash resolved after discontinuation within a weeks' time [1-4].

Discussions

The health of our mouth, buccal mucosa and gums and Teeth, is more important than many people, primary care physicians the administrators realize. It is a key indicator of overall health, leading to our well-being and quality of life. Adults aged 20 to 64 years have an average of 25.5 teeth. Older adults, smokers, and low socio-economic and educated people have fewer remaining teeth. Once people get to 64, the average number of teeth goes down to 22. Between the ages of 50 to 64, people have about a 10% chance of having no teeth remaining at all, which increases to 13% when they get to age 74. Once past the age of 74, the number jumps even higher to 26%. While many get their first set of false teeth between 40 and 49, the need to replace teeth becomes nearly universal as people age over 65 years. Dentures to replace missing teeth can mean easier eating, better speech, a healthier face, and a great smile. In India, on average, people receive dentures when they are above 40, as they start getting severe health issues like periodontal diseases that will damage the mouth's soft tissues and bone that eventually lead to tooth loss [2].

It is a universal fact that the general primary health care providers (MLHP, Doctors in PHCs and general private care practitioners) irrespective of system they practice, don't look in the mouth a lot, and if they do, they're looking past the teeth and mouth into the throat. But just a quick scan of the mouth is simple and gives meaningful early detection, treatment, and preventive care opportunity. As we saw in our case studies, Aphthous ulcers, discoloured patches on buccal mucosa, Gingivitis, Glossitis are a few oral signs that primary care doctors can easily and must catch during checkups, investigate, treat, or refer in the larger interest of overall health [2,5].

Effects of Oral Hygiene on Overall Health

While some health issues may show up in the mouth, Poor oral hygiene can lead to negative health outcomes too. We now look at some common conditions the practitioner must be aware of and try to screen every patient they come across:

- **Oral Cancer:** Symptoms of oral cancer include a sore on the lip or in the mouth, white or reddish patches on the buccal mucosa, loose teeth, or a lump inside the mouth. "Anytime I have a patient with a white patch they have not had before, or if they have not bitten their tongue, or in the habit of chewing beetle leaves, nut and Tobacco, I doubt and advise for Biopsy. Alternately I have them come in again in 2 or 3 weeks, and if it's still there, I have it biopsied. Our two cases one of early diagnosis and another of the catastrophe of delayed action are living examples. Oral cancer is on the rise with HPV or human papillomavirus. Oropharynx cancers linked to HPV infection increased yearly by 1.3% in women and by 2.8% in men from 2015 to 2019 globally [6]. Oral cancer in India is estimated report each year 77,000 new cases and 52,000 deaths annually, with men being at higher risk than women. Oral Cancer is often diagnosed late in India, due to its painlessness resulting in poorer outcomes and a lower survival rate. According ICMR oral and pharyngeal cancer has one of the poorest 5-year survival rates as only 52% survive for 5 years and only one thirds of oral cancer is detected at the earliest stage. Tobacco consumption including smokeless tobacco, betel quid chewing, excessive alcohol consumption, unhygienic oral condition, and sustained viral infections including the HPV are the risk aspects for the incidence of oral cancer. Therefore, ICMR has launched new initiative to identify oral cancer through community level volunteers like ASHAs and AWWS.

- **Gum Diseases & Diabetes:** Gum disease marked by inflamed, bleeding gums is a sign of the illness. A dry mouth, stemming from reduced production of saliva, leading to discomfort, a hard time swallowing, and a higher risk of dental infections points to diabetes, as was our third case. In India nearly 34% to 51% of people with diabetes have dry mouth. An oral thrush due to a fungal infection, is indicative of poor immune system due to uncontrolled diabetes. Gum diseases are frequent and more severe in patients with diabetes, and by treating we improve diabetes-related outcomes [7].

- **Scalded Mouth Syndrome:** Scalded mouth syndrome is associated with a burning pain of oral soft tissues. A few case reports of scalded mouth syndrome have been reported with ACE Inhibitors, our case number 4 is one of them. A scalded sensation of the oral mucosa during the treatment with captopril or enalapril was initially reported [8].

- **Cheilitis:** Cheilitis is an inflammation of the lips that can be manifested as dryness, itching, burning, erythema, fissuring and oedema. The inflammation might occur in the perioral skin around the mouth and the vermilion border. Simvastatin, a cholesterol-lowering agent, has been reported to possibly induce cheilitis in patients with hyperlipidaemia. The rash resolves after drug discontinuation and subsequent treatment with topical moisturizers and topical corticosteroids [1].

- **Inflammatory Bowel Disease (IBD):** People with IBD have painful ulcers in the mouth called aphthous ulcers or stomatitis, commonly known as canker sores. Illnesses like Crohn's disease and ulcerative colitis have potential to show up in the mouth, a lesser-known aspect of these disorders that pose challenges for both patients and health care providers. "Crohn's disease in particular can cause mouth ulcers that look like sores. If a PCP sees red patches, that are shallow and round, on the soft tissues lining the mouth, like inner cheeks, lips, and tongue, need to refer. The body's immune response leads to an overproduction of pro-inflammatory cytokines, triggering a cascade of events including causing painful ulcers.

- **Heart Diseases & Oral Health:** Symptoms such as bleeding gums, persistent bad breath, and gum swelling can serve as early warning signs of heart diseases. Many clinicians don't look at the mouth as it is most unexpected place to find signs of diseases of the heart and blood vessels. Bacteria in the mouth enter other areas of the body, provides an open portal to get into the bloodstream. Heart issues often come with oral symptoms, notably a higher chance of gum disease. A chronic heart disease adds to an inflammatory response that, in turn, worsens gum inflammation and leads to more severe issues with the teeth and gums.

- **Osteoporosis & Dental Issues:** For patients with implants, dentures, and bridges, weak bones may lead to looser-fitting replacements. Certain medications for osteoporosis, bisphosphonate drugs, cause dental issues, something most primary care doctors don't think but all doctors must be aware of when prescribing any medications. Osteoporosis, can affect the teeth in noticeable ways, including tooth loss and gum disease.

The syllabus is almost the same for MBBS, BAMS, BHMS etc. in the first year, as all of them have anatomy, physiology, biochemistry, but BDS also has an additional subject known as "dental anatomy and histology.

Oral health is a mirror of systemic health and vice-versa. Medical professionals as the primary caregivers in each population and as such a vast majority of the population visits them for health-related problems. Oral medicine is a field related to the study of the diagnosis and treatment for the disorders that occur in the mouth or the "oral" region. Oral Medicine deals with the diseases or the disorders that happen around the oral structure, dental treatment of medically conceded patients, and the oral demonstration of systemic diseases. These doctors are expected to diagnose the various diseases and then perform surgeries and biopsies to cure that situation. The biopsies include the removal of tissue in the oral region to analyse and diagnose the disease.

Oral health has been linked to aspects of individual knowledge, attitude, and practices. Behavioural aspects that include the increased intake of sugary foods and beverages, and lack of proper oral hygiene have been touted as the main causes of poor oral hygiene. The knowledge of oral health is vital owing to its contribution to better oral health, and overall general health. However, unless medical students are taught, and they develop good oral habits and attitudes and put them into practice, very little will be realized with regard improvement in oral health and hygiene of them and the population.

The gap between dental and medical professionals for basic oral examination and management of minor illnesses including timely referrals can only be fulfilled by including dental education in both undergraduate and postgraduate medical curriculum.

Conclusions

Due to limited accessibility to dental doctors, primary care provider (PCP) / doctor, irrespective of the system they are trained (Allopathy, Ayurveda, Homeopathy, Unani, or Siddha) are entrusted the responsibility of basic dental and oral care and they play varied roles - a healer, an organized service provider and a scientist.

There are several challenges for geriatric oral health care in India. i) At present, India has no independent oral health policy, oral healthcare has the lowest share in the overall health budget, ii) Health insurance which is offered to only 10% of the people in the organized sector usually only covers emergency dental treatments, iii) awareness about oral health prevention and various government schemes is poor due to the low literacy level among the older adults and hence their poor utilization iv) the dentist to population ratio is very low in the rural areas where over 71 % of the older adults reside, v) at the undergraduate level, there is very little training in dental care for medical graduates and geriatric care embedded in the dental disciplines, with the result that dental graduates are not oriented toward geriatric care and medical graduates not well versed in oral

screening in general and dental care in particular vi) At the postgraduate level, there are no geriatric dentistry courses and vii) most importantly as healthcare is a state-controlled system, planning and implementation of healthcare schemes differ in different states and private dental care is flourishing only in urban areas.

The only solace is under the National Health Mission (NHM), the National Oral Health Programme (NOHP) was launched in 2013 and is still in a nascent stage [9,10].

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