International Journal of Community Medicine and Public Health
Vasthare R et al. Int J Community Med Public Health. 2019 Feb;6(2):883-888
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20185509

Review Article

Geriatric oral health concerns, a dental public health narrative

Ramprasad Vasthare[1]*, Anil V. Ankola[2], Arron Lim Yan Ran[1], Prateek Mansingh[1]

Department of Public Health Dentistry, [1]Manipal College of Dental Sciences, Manipal, Manipal Academy of Higher Education, Udupi district, [2]KLES's Institute of Dental Sciences, Belgaum, Karnataka, India

Received: 11 December 2018
Accepted: 26 December 2018

***Correspondence:**
Dr. Ramprasad Vasthare,
E-mail: vasthareram@gmail.com

ABSTRACT

Across the world, the segment of the elderly in populations is seen to be increasing at a rapid rate. There also exists a trend in which more teeth are retained as age increases due to effective dental public health measures like fluoridation. This inevitably places an increased need for dental healthcare among the geriatric populations. Since oral health greatly affects the systemic health of aged individuals, it is imperative for dentists and physicians to work together as a team to impart treatment to the best of one's abilities for geriatric patients. It is therefore, necessary to first assess the oral health concerns surrounding the geriatric population from the perspective of public health dentistry. Relationship of the elderly with periodontal disease, dental caries, salivary hyposalivation and xerostomia, cognitive changes, and simultaneous usage of diverse medications was discussed. This paper reviewed the literature and then examined and discussed the various problems mentioned in depth and suggested recommendations for a plan of action. Knowledge about the specific oral health concerns and issues will help to better position us in developing strategies for providing better oral healthcare to the geriatric population in addition to the existing systemic healthcare. In the future, the elderly will make up a huge portion of the demographic visiting dentist regularly for a myriad of oral health problems. Dental health professionals therefore, must have adequate training and competency to deal with the predicament of this geriatric population. Preventive and treatment services can ensure healthy aging which will improve the quality of life.

Keywords: Geriatrics, Oral health, Elderly, Ageing, Geriatric dentistry, Gerodontology

INTRODUCTION

Old age is a normal, inescapable, physiological phenomenon. Gerontology is the study of the physical and psychological changes that a body undergoes as it ages and geriatrics is the branch of medicine or social medicine that deals with health and care of the aged people.

This diverse segment can be subdivided into the following categories based on their age:[1]

- 65 to 74 years (young old) - relatively healthy and active;
- 75 to 84 years (old old) - range from those who are healthy and fit and those who are riddled with a cocktail of comorbidities;
- 85 years (oldest old) - most frail group. This segment is rapidly increasing in numbers day by day due to better healthcare that extends the longevity of human in developed countries.

Nowadays, retaining teeth as people advance in their years has become a predominant priority for all with more people adopting prophylactic measures such as drinking fluoridated water and consistent use of fluoride dentifrices. People are taking care of their teeth with strict regimens aimed at taking the best care of their teeth to ensure the longevity of their teeth.[2] Hence,

edentulousness prevalence shows a reducing trend with more and more elderly requiring oral healthcare other than just prosthetics much like other age groups.

On top of that, the systemic health of aged individuals is greatly influenced by the person's oral health. For example, as age increases, a person becomes increasingly susceptible to periodontal disease. Epidemiological, medical and immunological data support the notion that periodontal disease is associated significantly with cerebrovascular and atherosclerotic diseases independent of other known confounders.[3] Contrary to popular belief, oral bacteria can give rise to systemic diseases as well.

Oral and systemic health are interlaced to such a great degree that it is imperative for dentists and physicians to work together as a team to provide the best possible treatment for geriatric patients. However, the wide gap between these professions has resulted in subpar treatment for the elderly population as the medical professionals and the nurses have limited knowledge of the correlation between the two. The solution is the formation of a focused program that trains both the medical as well as the dental professionals to practice geriatrics to the best of their abilities. Such an approach would result in geriatric patients experiencing the best possible care for their oral as well as systemic health which enhances their quality of life.[4]

Thus, it is imperative to assess the plethora of oral health concerns surrounding the geriatric population to form a better understanding of the problems. The objective of this article was to analyze the literature from the perspective of Public Health Dentistry and then examine and discuss the various problems in depth. Furthermore, suggested recommendations for a plan of action were also proposed. This will help to better position us in developing any strategy for providing better oral healthcare to the geriatric population in addition to the existing systemic healthcare.

ORAL HEALTH CONCERNS FACED BY THE ELDERLY

Periodontitis in the elderly and its consequences

One of the earliest experimental gingivitis studies showed that supragingival plaque developed faster in elderly patients than in the younger ones.[5] Such findings can be attributed to the differences in the periodontal status but at the same time can also be due to the fact that oral conditions in older patients favor the growth of aerobic microorganisms. The immune system isn't as active as it used to be when they were young, hence it is easier for the bacteria to accumulate and attack the oral cavity in old age. Therefore, even a lesser amount of bacteria can stage an attack on the dentition with greater ease than in comparison to younger individuals. Thus, we can observe an association between an increase in age and incidence of periodontitis.

While the severity of periodontitis increases with increasing age, this often leads to the loss of teeth in the elderly. Data from studies have shown that loss of teeth in extremely old subjects (≥80 years) has a significant bearing not only on the masticatory abilities but also one's general abilities and nutrition intake.[6,7]

Thence, this leads to the elderly being more self-aware of their teeth and any tooth loss negatively impacts their psyche as they are far more self-critiquing than their younger counterparts. It reflects as a decrease in their self-confidence and drastically reduces their quality of life which only results in a vicious cycle of them neglecting to take care of themselves which compromises their status even further.

Conditions such as poor socioeconomic status and adverse habits such as smoking or chewing tobacco only make it worse for the elderly to maintain their teeth as they promote periodontitis. As it is, smoking increases the risk for periodontitis even in young aged patients. But, in the elderly, smoking increases the chances of resulting in periodontitis by leaps and bounds.[8]

If we take a look at it from the point of view of dentistry, it is evident that we need to develop skills in assessing risk in elderly patients. Such an approach should be comprehensive and aimed at reducing the infectious burden and improve self-sustainability. [9]

Dental caries in the older adult

Just like periodontitis, even dental caries has an increased incidence in the geriatric segment of the population in comparison to the younger population due to a decreased immunological response to external bacteria. According to a study on older patients, the annual incidence of coronal caries was 1.4 surfaces per 100 susceptible coronal surfaces while that for root caries was 2.6 surfaces per 100 susceptible root surfaces. It reveals to us that both forms of caries are active in the older population, leading to the conclusion that prevention and treatment of dental caries in the elderly is of paramount importance.[10]

Aged individuals, especially those living in nursing homes require extra assistance in order to maintain good oral hygiene. According to a study, impaired function and erratic professional dental care are main factors for increased rates of untreated tooth decay but no significant correlation exists between oral hygiene and the medical ailments or the plethora of medications taken.[11,12]

The significance of caries to health and economics does not have a parallel comparison. When the aged are made aware about the significance of maintaining a good oral hygiene along with educating them about the means to achieving it, even if they require assistance to do that, it will not only impress upon them the advantages of keeping healthy teeth, it will also result in a better state of

systemic health.[13] This not only boosts their immunity but will also have a positive economic effect. Someone once very rightly said, "Dental treatment isn't expensive, ignorance of one's teeth is." They can be educated about the numerous uses of fluoride in dentistry which can be used to improve one's oral health and hygiene.[14,15]

For the foreseeable future, it is undeniable that we can conclude that dental caries will be a major pest for the geriatric community, as reported by the high incidence of dental caries among the elderly.[14,16–19] The way we deal with it needs a complete makeover in accordance with risk assessment protocols.[14] There have been reports that certain general health characteristics like serum albumin concentrations in elderly individuals and dental characteristics like the presence of prosthetic crowns in elderly could have a relationship with the risk of root caries.[20,21] Although still primitive currently, these characteristics may in the future be used to evaluate the risk of carious lesions in the elderly and help classify high-risk individuals that need additional attention.

Other than that, molecular biology and genetics could also be the way forward. For example, in S.mutans the fab M gene has been discovered. It changes its membrane composition allowing itself to be impervious to the very acids it releases.[22] In the near future, we might be able to exploit this to inactivate the bacteria itself.

Salivary hypofunction and xerostomia

Certain medications, radiation, and chronic conditions make the geriatric patients more prone to decrease in salivary function. These people are often affected by diverse physical and oral health diseases and frequently do not possess the ability to access dental care. With increasing age, the reserve capacity for production of saliva by the salivary glands is diminished, leading to salivary hypofunction.[23] With a decrease in salivary function, there is an increased chance of developing caries and candidiasis along with denture discomfort.[23] Medications like antidepressants, anticholinergics, antipsychotics, antihypertensives, diuretics, sedative, and anxiolytics, etc. are responsible for xerostomia in geriatric patients.[24]

Due to the usage of a cocktail of medications, an elderly individual often ends up suffering from salivary hypofunction and xerostomia. Therefore, incorporating the measurement of the unstimulated rate of salivary flow in a routine dental checkup would help in the diagnosis of xerostomia and thus help us to intervene in a timely fashion to keep it in check before it affects the patient's quality of life.[25]

Cognitive change in the elder individuals

Progressive loss of function coupled with a decline in cognitive ability is generally indicative of increasing age.[26] Recognizing cognitive abilities can pose a problem when we work with people who have had a lot of experience in their lifetime and used to be able to take their own decisions.[27] Competency is a major concern when we have to provide healthcare to such individuals.

Treatment plans need to be broken down and explained to such patients in a very easy to understand language for comprehension. Such patients also tend to forget what was told and explained to them so it is imperative that everything is well documented by the dentist so that later on, even if they forget, everything is in order to remind them of it. The severely affected individuals, who do not possess the capabilities to comprehend things for themselves, are an enigma to work with. In such cases, consent can be a difficult issue. Even though they are mentally impaired, it does not mean that their teeth are any less important.[28]

The elderly patients and their medications

As a consequence of their increasing age, the older people have to take a number of medicines as they have to cope with various comorbidities. They are at a higher risk for medication-related conditions like adverse drug interactions due to too many medicines.[29] This is called polypharmacy.[30]

Those that are the most susceptible to poor health outcomes are the institutionalized ones, the ones with complicated medical conditions, and those who do not follow their medication regimens. Dental personnel should be competent enough to identify older patients who are vulnerable to adverse interactions due to their medications. The most frequently prescribed medications in the elderly are Antibiotics, Antihypertensive drugs, NSAIDs and drugs for various systems like Gastrointestinal, Psychotropic, and Endocrine.

To battle the wide range of diseases, the practice of polypharmacy is increasingly being practiced.[29] Unfortunately, it comes at the cost of increased risks for increased healthcare expenditure, ADEs, adverse drug reactions, non-adherence to medication and geriatric syndromes.[31] The care of many older adults is a monumental task. Successful intercommunication between the dentist, patient, and other physicians is essential to maximize positive medical outcomes and avoid the negative ones.[32]

CARING FOR THE ELDERLY - SPECIFIC ORAL CONCERNS AND ISSUES

Following are the factors that need to be kept in mind while caring for the aged:

Caries

Decay due to caries is a prime etiological factor for loss of teeth in old age. The risk for caries is increased with age, especially as the medications disturb the salivary flow and there is increased consumption of sugar.[33]

Oral hygiene

It is not always possible to mechanically clean one's denture which is why the importance of chemical methods for cleaning the prosthesis must be explained to the denture wearer to ensure optimal care of the denture and their oral hygiene.[34]

Inclination towards treatment

After a lifetime of experience with dental diseases, the elderly only choose to be treated for conditions that they believe are extremely serious and desire for them to be treated to the best ability of the dentist.[35] We need to make them realize that any dental disease, no matter how small or inconsequential should be treated at the earliest because it could turn into something major due to their compromised immune response.

SUMMARY OF GERIATRIC DENTAL PUBLIC HEALTH

As we approached the later decades of the 20th century, the constitution of the world populace changed drastically as an increased number of people started reaching even older ages.

This change had a major impact on general and oral healthcare services.[28] Masses of geriatric individuals especially in pastoral or rustic areas suffer from oral conditions that require greater attention by the dentist as most epidemiological studies across the globe have shown poor oral health, high risk of destructive periodontal disease and poor access to dental healthcare among them.[36,37]

The greatest challenge in the care for geriatric is to focus on the most old and the most frail, which is made more complicated by the presence of multiple medical, dental and psychological conditions. With the change in the current scenario, oral health professionals need to evolve and have a thorough insight into the systemic and oral health status of geriatric patients, their changing physiology and how to address these issues optimally.

In the future, the geriatric people are going to have more teeth, will be visiting the dentist more regularly, be better educated, will be better off financially and have a drastically divergent outlook on healthcare needs as compared to the geriatric population today.[28]

The Indian scenario

In India, among the older generation, 40% lives below the poverty line while 73% are illiterate. 90% of them lack social security.[38]

In general, there is very little orientation and training of the freshly graduated dental students with respect to the highly specific requirements of the elderly population during or after their course.[39] This needs to be rectified.

The following recommendations if implemented will be helpful and supportive.[40]

- Establishing continuing Dental Education programs on the care of the oral hygiene of the geriatric individuals.
- Including a component of geriatric care in the curricula of the undergraduate and the post graduate courses.
- Setting up of diplomas and certificate courses in the field of geriatric dentistry;
- Promoting research on the diverse facets of ageing and oral health problems related to it.

CONCLUSION

All across the world, the segment of the elderly in populations is seen to be increasing at a rate so fast that it has not been seen before. Supporting these people presents a myriad of challenges to the family's breadwinners, the society, the governments, and health care professionals.

Despite the fact that many of the oral diseases experienced by the elderly are either preventable or treatable, many of these persons do not avail themselves of the needed treatment. To make sure that the care of the aged is not ignored, the healthcare providers need to be educated by the establishment and refinement of the means to promote healthy ageing to maintain the good quality of life. The dental profession must endeavor to increase the usage of preventive dental services by the elderly. It must increase the preventive dental awareness of elders and must make both preventive and treatment services more accessible to the elderly populations.

ACKNOWLEDGEMENTS

We thank the following personnel for their immense help throughout the study.

- Library and Staff, Jnana Soudha, KLES's Institute of Dental Sciences, KLE University, Belgaum, Karnataka, India
- Library and Staff, Health Sciences Library, Manipal Academy of Higher Education, Manipal, Udupi, Karnataka, India.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Transgenerational.org. Demographics of Aging. Available from: http://transgenerational.org/aging/demographics.htm. Accessed on 8 December 2018.
2. Berkey D, Meckstroth R, Berg R. An ageing world: Facing the challenges for dentistry. Int Dent J. 2001;51(3):177–264.

3. Lockhart PB, Bolger AF, Papapanou PN, Osinbowale O, Trevisan M, Levison ME, et al. Periodontal disease and atherosclerotic vascular disease: Does the evidence support an independent association?: A scientific statement from the American heart association. Circulation. 2012;125(20):2520–44.
4. Papas AS, Niessen LC, Chuancey HH. Geriatric dentistry: aging and oral health. 1st ed. St. Louis, MO: Mosby-Year Book; 1991.
5. Holm-Pedersen P, Agerbaek N, Theilade E. Experimental gingivitis in young and elderly individuals. J Clin Periodontol. 1975;2(1):14–24.
6. Sheiham A, Steele J. Does the condition of the mouth and teeth affect the ability to eat certain foods, nutrient and dietary intake and nutritional status amongst older people? Public Health Nutr. 2001;4(03):797.
7. Nordenram G, Böhlin E. Dental Status in the Elderly: A Review of the Swedish Literature. Gerodontology. 1985;4(1):3–24.
8. Agnihotri R, Gaur S. Implications of tobacco smoking on the oral health of older adults. Geriatr Gerontol Int. 2014;14(3):526–40.
9. Kiyak HA, Persson RE, Persson GR. Influences on the perceptions of and responses to periodontal disease among older adults. Periodontol. 1998;16(1):34–43.
10. Hand JS, Hunt RJ, Beck JD. Incidence of Coronal and Root Caries in an Older Adult Population. J Public Health Dent. 1988;48(1):14–9.
11. Silva M, Hopcraft M, Morgan M. Dental caries in Victorian nursing homes. Aust Dent J. 2014;59(3):321–8.
12. Chalmers J, Carter K, Spencer A. Caries incidence and increments in community-living older adults with and without dementia. Gerodontology. 2002;19(2):80–94.
13. Thomson WM. Dental caries experience in older people over time: What can the large cohort studies tell us? Br Dent J. 2004;196(2):89–92.
14. Luan W, Baelum V, Fejerskov O, Chen X. Ten-Year Incidence of Dental Caries in. Caries Res. 2000: 205–13.
15. Drake C, Beck J, Lawrence H, Koch G. Three-year coronal caries incidence and risk factors in North Carolina elderly. Caries Res. 1997;31(1):1–7.
16. Fure S. Ten-Year Incidence of Tooth Loss and Dental Caries in Elderly Swedish Individuals. Caries Res. 2003;37(6):462–9.
17. Lawrence H, Hunt R, Beck J, Davies G. Five-year incidence rates and intraoral distribution of root caries among community-dwelling older adults. Caries Res. 1996;30(3):169–79.
18. Gilbert G, Duncan R, Dolan T, Foerster U. Twenty-four month incidence of root caries among a diverse group of adults. Caries Res. 2001;35(5):366–75.
19. Shah N, Sundaram KR. Impact of socio-demographic variables, oral hygiene practices, oral habits and diet on dental caries experience of Indian elderly: a community-based study. Gerodontology. 2004;21(1):43–50.
20. Yoshihara A, Hanada N, Miyazaki H. Association between Serum Albumin and Root Caries in Community-dwelling Older Adults. 2003;82(3):218–22.
21. Morse D, Holm-Pedersen P, Holm-Pedersen J, Katz R, Viitanen M, von Strauss E, et al. Prosthetic crowns and other clinical risk indicators of caries among old-old Swedish adults: findings from the KEOHS Project. Kungsholmen Elders Oral Health Study. Gerodontology. 2002;19(2):73–9.
22. Fozo EM, Quivey RG. The fabM Gene Product of Streptococcus Mutans Is Responsible for the Synthesis of Monounsaturated Fatty Acids and Is Necessary for Survival at Low pH. J Bacteriol. 2004;186(13):4152–8.
23. Turner MD, Ship JA. Dry Mouth and Its Effects on the Oral Health of Elderly People. J Am Dent Assoc. 2007;138(September):S15–20.
24. Shetty S, Bhowmick S, Castelino R, Babu S. Drug induced xerostomia in elderly individuals: An institutional study. Contemp Clin Dent. 2012;3(2):173.
25. Wiener RC, Wu B, Crout R, Wiener M. Hyposalivation and xerostomia in dentate older adults. J AM Dent Assoc. 2011;141(3):279–84.
26. Yellowitz JA. Cognitive function, aging, and ethical decisions: Recognizing change. Dent Clin North Am. 2005;49(2):389–410.
27. Berkey DB, Berg RG, Ettinger RL, Mersel A, Mann J. The old-old dental patient. The challenge of clinical decision-making. J Am Dent Assoc. 1996;127(3):321–32.
28. Meskin L, Berg R. Impact of older adults on private dental practices, 1988-1998. J Am Dent Assoc. 2000;131(8):1188–95.
29. Nobili A, Garattini S, Mannucci PM. Multiple Diseases and Polypharmacy in the Elderly: Challenges for the Internist of the Third Millennium. J Comorbidity. 2011;1(1):28–44.
30. Masnoon N, Shakib S, Kalisch-Ellett L, Caughey GE. What is polypharmacy? A systematic review of definitions. BMC Geriatr. 2017;17(1):1–10.
31. Maher RL, Hanlon JT, Hajjar ER. Clinical Consequences of Polypharmacy in Elderly. Expert Opin Drug Saf. 2014;13(1).
32. Berkey D, Berg R. Geriatric oral health issues in the United States. Int Dent J. 2001;51(3):254–64.
33. Gati D, Vieira AR. Elderly at Greater Risk for Root Caries : A Look at the Multifactorial Risks with Emphasis on Genetics Susceptibility. Int J Dent. 2011;2011.
34. Neppelenbroek KH, Readers D. The importance of daily removal of the denture biofilm for oral and Systemic Diseases Prevention. J Appl Oral Sci. 2015;23(6):547–8.
35. Ettinger RL. Treatment planning concepts for the ageing patient. Aust Dent J. 2015;60(S1):71–85.

36. Luhanga C, Ntabaye M. Geriatric oral health issues in Africa: Tanzanian perspective. Int Dent J. 2001;51(3):219–27.
37. Luan WM. A summary of geriatric oral health in China. Int Dent J. 2001;51(3 Suppl):207–11.
38. Gummraju N, Rao K. Geriatric care in India. J Gerontol Geriat Res. 2014;3(4):7182.
39. Nisizaki S. Improving oral health to enhance general health in elderly people in Uruguay. Int Dent J. 2001;51(3):247–53.
40. Shah N. Geriatric oral healh issues in India. Int Dent J. 2001;51(3):212–8.

Cite this article as: Vasthare R, Ankola AV, Ran ALY, Mansingh P. Geriatric oral health concerns, a dental public health narrative. Int J Community Med Public Health 2019;6:883-8.