Prevalence and Comparison of Different Wasting Diseases in a Population of Rajasthan

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Abstract

Objectives: The aim of this study was to evaluate tooth wear among males and females of different age groups. Attrition, cervical abrasion & erosion are counted under the wasting diseases which may reduce chewing efficiency of an individual irrespective of age and caste. Chewing efficiency may decrease due to loss of tooth structure.

Material and Method: This cross-sectional analysis involved clinical examination conducted for 113 individuals including 57 males and 56 females. Statistical analyses were performed using classification of tooth wear index by Smith and Knight.

Result: The prevalence of wear was higher for the incisors than for the molars, whereas that for the molars was higher than that for the premolars and canines, also it was seen that tooth wear in adolescents is a serious and notable condition.

Conclusion: Tooth wear is common in people of Udaipur, the lack of awareness regarding oral hygiene amongst the people of various age groups. Commonly, the labial surfaces are affected cervically in the anterior tooth region. This lack of awareness leads to wasting diseases such as attrition, abrasion and erosion.

Key Words: *abrasion, attrition, erosion, wasting*

Introduction

Wasting diseases are modern day problems of dentistry. Changing lifestyle, increase in stress level, modern age problems and many other factors have been affecting severely to the oral health of an individual. Wasting diseases have taken their toll in the population around the world.[1] Attrition, cervical abrasion & erosion are counted under the wasting diseases which may reduce chewing efficiency of an individual irrespective of age and caste. Chewing efficiency may decrease due to loss of tooth structure. They are multifactorial diseases defined as the loss of hard tissues in absence of caries or trauma.[2] Attrition can be defined physiological wear of enamel, dentin or restorations caused by tooth to tooth contact. Many quantitative & qualitative methods have been used to describe tooth wear. Erosion is defined as the loss of tooth substances caused by chemical agents, particularly intrinsic or extrinsic acids, with no bacterial involvement.[1] Gastrointestinal and eating disorders may lead to intrinsic stains in the oral cavity. Ingestion of foods or beverages, including carbonated soft drinks, fresh fruits and fruit juices are the major factor leading to problem of extrinsic stains. Abrasion is defined as loss of tooth substances caused by processes involving bio mechanical friction.[1]Many types of pathological abrasion are seen in oral cavity such as vertical, horizontal and mixed.

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Serious oral health deterioration of an individual may lead to excessive tooth wear that in turn leads to hypersensitivity, pulpits, periapical periodontitis and pulp necrosis. Several major changes have been seen in majority of the populations due to socioeconomic status, dietary habits and lifestyle of individuals. Tooth wear has been one of the major leading oral healthproblems.[1]

Combination of a hard toothbrush, abrasive toothpaste & an intensive horizontal brushing technique lead to severe cervical abrasion. Attrition& cervical abrasions are most forwardly progressed by Para functional and personal habits. Most likely seen v-type cervical abrasions are in the cervical regions of the anterior tooth.

Friction of abrasives present in herbal/ayurvedic toothpastes, chemical dissolution on tooth surfaces are the prominent factors leading to cervical abrasions. Symptoms like – sensitivity to hot & cold food may be seen.

Materials and Method

The study was conducted amongst the patient reported to the OPD of a dental college in Rajasthan. Only those individuals who were willing to participate were included in the study while the rest were excluded from study. After taking their informed consent total of 113 participants, 57 males and 56 females of various age groups were included in this cross-sectional study. Data was collected by clinical examination and analyzed using classification of tooth wear index by smith and knight.[3]

In order to evaluate the restorative management of worn dentition of subjects "attrition, abrasion and erosions". Frequency and duration of cleaning-toothbrush, toothpaste, twig(neemstick) and toothpowders along with the Para functional habits such as tobacco chewing, stress, pencil biting and nail biting. Occupational hazards are playing an important role in occurrence of the wasting diseases. Individuals in fashion technology especially tailors and beauticians have a habit of keeping needles and bobby pins between their anterior teeth leading to severe V- type notches on the incisal surfaces of the anterior teeth. In addition to these entire factors patient's attitude towards oral health care was also recorded. The status of wasting diseases was classified under Smith and Knight Tooth Wear Index. Attrition was classified as class I, class II, class III a, class III b, class III c and class III d under Smith and Knight Tooth Wear Index. A sterilized dental blunt-ended explorer and mirror were used on each examination. The acquired information was recorded.

Results

A total of 113 participants, 57 males and 56 females of various age groups were included in this cross-sectional study.

Amongst the age group 20-29 years scores under 1, 2, 3, and 4 came as 9.09%, 9.09%, 18.18% and 63.63% respectively for males and 10%, 20%, 30% and 40% respectively for females.

Amongst the age group 30-39 years scores under 1, 2, 3, and 4 came as 8.33%, 8.33%, 50% and 33.33% respectively for males and 10%, 20%, 30% and 40% respectively for females.

Amongst the age group of 40-49 years scores under 1, 2, 3 and 4 came as 9.09%, 9.09%, 18.18% and 63.63% respectively for males and 16.66%, 18.33%, 30.76% and 46.15% respectively for females.

Amongst the age group of 50-59 years scores under 1, 2, 3 and 4 came as 16.66%, 8.33%, 16.66% and 58.33% respectively for males and 8.33%, 16.66%, 50% and 25% respectively for females.

Amongst the age group of >60 years scores under1, 2, 3 and 4 came as 18.18%, 9.09%, 27.27% and 45.45% respectively for males and 9.09%, 18.18%, 18.18% and 54.54% respectively for females.

Amongst the age group 20-29 years scores under tobacco, malocclusion, cleaning aids, and came psychological as 63.63%, 18%, 9.09% and 9.09% respectively for males and 20%, 20%, 20% and 40% respectively for females.

Amongst the age group 30-39 years scores under tobacco, malocclusion, cleaning aids, and psychological came as 36.36%, 9.09%, 27.27% and 27.27% respectively for males and 28.57%, 14.28%, 14.28% and 42.85% respectively for females.

Amongst the age group of 40-49 years scores under tobacco, malocclusion, cleaning aids and psychological came as 18.18%, 9.09%, 45.45% and 27.27% respectively for males and 8.3%, 8.3%, 58.3% and 25% respectively for females.

Amongst the age group of 50-59 years scores under tobacco, malocclusion, cleaning aids and psychological came as 64.28%, 7.14%, 14.28% and 14.28% respectively for males and 13.33%, 6.66%, 60% and 20% respectively for females.

Amongst the age group of >60 years scores under tobacco, malocclusion, cleaning aids, and psychological came as 20%, 20%, 50% and 10% respectively for males and 20%, 10%, 60% and 10% respectively for females.

A chi test was performed and the result was found to be statistically significant at $p<0.05$.

Table 1- Comparison between males and females of different age groups according to Smith and Knight tooth wear index

Scores	surfaces	Criteria
0	B/L/O/I C	No loss of enamel surface characteristics. No loss of contour.
1	B/L/O/I C	Loss of enamel surface characteristics. Minimal loss of contour.
2	B/L/O I C	Loss of enamel exposing dentine for less than one third of surface. Loss of enamel just exposing dentine. Defect less than 1 mm deep.
3	B/L/O I C	Loss of enamel exposing dentine for more than one third of surface. Loss of enamel and substantial loss of dentine. Defect less than 1-2mm deep.
4	B/L/O I C	Complete enamel loss-pulp exposure-secondary dentin exposure. Pulp exposure or exposure of secondary dentine. Defect more than 2mm deep-pulp exposure-secondary dentine exposure.

Smith and knight tooth wear index

Scores	20-29 yrs		30-39 yrs		40-49 yrs		50-59 yrs		>60yrs	
	M	F	M	F	M	F	M	F	M	F
1	1 (9.09%)	1 (10%)	1 (8.33%)	2 (20%)	1 (9.09%)	2 (16.16%)	2 (16.66%)	1 (8.33%)	2 (18.18%)	1 (9.09%)
2	1 (9.09%)	2 (20%)	1 (8.33%)	1 (10%)	1 (9.09%)	1 (8.33%)	1 (8.33%)	2 (16.66%)	1 (9.09%)	2 (18.18%)
3	2 (18.18%)	3 (30%)	6 (50%)	4 (40%)	2 (18.18%)	4 (30.76%)	2 (16.66%)	6 (50%)	3 (27.27%)	2 (18.18%)
4	7 (63.63%)	4 (40%)	4 (33.33%)	3 (30%)	7 (63.63%)	6 (46.15%)	7 (58.33%)	3 (25%)	5 (45.45%)	6 (54.54%)

Score '0' is considered as normal and thereby was not examined under this cross-sectional study.

Table 2- Comparison between males and females of different age groups according to Etiological factors.

Causes of abrasion	20-29yrs		30-39yrs		40-49yrs		50-59yrs		>60yrs	
	M	F	M	F	M	F	M	F	M	F
Tobacco	7 (63.63%)	1 (20%)	4 (36.36%)	2 (28.57%)	2 (18.18%)	1 (8.3%)	9 (64.28%)	2 (13.33%)	2 (20%)	2 (20%)
Malocclusion	2 (18%)	1 (20%)	1 (9.09%)	1 (14.28%)	1 (9.09%)	1 (8.3%)	1 (7.14%)	1 (6.66%)	2 (20%)	1 (10%)
Cleaning aids	1 (9.09%)	1 (20%)	3 (27.27%)	1 (14.28%)	5 (45.45%)	7 (58.3%)	2 (14.28%)	9 (60%)	5 (50%)	6 (60%)
Psychological	1 (9.09%)	2 (40%)	3 (27.27%)	3 (42.85%)	3 (27.27%)	3 (25%)	2 (14.28%)	3 (20%)	1 (10%)	1 (10%)

Discussion

Tooth wear status depends on a variety of factors which includes that how an individual maintains a healthy oral hygiene. There are various causes and habits like tobacco chewing, clenching, occupational habits such as putting sewing needles between the teeth which causes 'V' shaped notches on the incisal surface of the tooth. Tobacco is an important causative agent that contributes chiefly in various oral diseases. Numerous people who have the habit of chewing tobacco, place it in the lower buccal vestibules, in the posterior region of the mouth, initially drying out the oral mucosa of that region which indirectly helps in the abrasion of the buccal surface of the tooth in that region. Stress adds to the list of causative agents of wasting diseases because a lot of people develop the habit of clenching their teeth which leads to severe attrition, this habit starts as a voluntary action and then becomes involuntary which is known as bruxism or night clenching which ultimately leads to severe attrition. Cleaning aids when used in a wrong manner leads to maximum wear and tear of the tooth surfaces. Tooth brushing powder has abrasive particles that cause severe abrasion. Similarly the people in rural areas brush with neem twigs as it is easily available and cheaper in comparison to tooth brushes and pastes, as the twigs have rough surfaces, they abrade the tooth surfaces gradually over the time.

Poor oral hygiene may result due to negligence of personal oral health and lack of regular dental care. This study showed that most of the population needs to be taught the importance of oral hygiene, the necessity to quit tobacco, the necessity to be aware of their occupational hazards, stress management and importance of visiting a dentist regularly.

This epidemiological survey was conducted to assess the tooth wear status, brushing techniques, other oral hygiene practices and previous dental visits of people in Northern Rajasthan. The gathered statistics will help us in planning and implementation of awareness of oral hygiene programs. The study population comprised of individual representing all sections of society therein individuals were of different income group, different qualifications and different religions. This ensured that present study results are not only applicable on a certain population group but represents the generalized population.

In the present study, in both the maxillary and mandibular dentitions, the prevalence of wear was higher for the incisors than for the molars, whereas that for the molars was higher than that for the premolars and canines. Several other studies including Liu B et.al tooth wear in aging people and Donachie MA et.al assessment of tooth wear in an aging population have also shown the same findings.[4-5] The higher frequency of wear in the incisors may be attributed to the thinner enamel, the active role of incisors in joint activities and the high retention rate of incisors in older individuals.

Among the patient-related factors, age was the strongest risk factor for wear in all tooth groups. There is some evidence that tooth wear in adolescents is a serious and notable condition. Several other studies done by Barlett DW et.al, Salas MMS et.al and Coward PY et.al have also shown same the same findings.[6-8] In our study, starting from the adolescents, tooth wear had already reached a very serious degree. Moreover, canines and premolars showed an increasing trend in tooth wear with age. Teenagers should not be ignored if we want to control tooth wear. In reality, especially in the older group, normal physiological wear is a very important cause associated with ageing. There is a symbiotic relationship between illness and standard of living. Physical disabilities contribute directly maintenance of oral hygiene.

Conclusion

This indicates, the lack of awareness regarding oral hygiene amongst the people of various age groups. Commonly, the labial surfaces are affected cervically in the anterior tooth region. This lack of awareness leads to wasting diseases such as attrition, abrasion and erosion. Major reasons contributing to wasting diseases are unsuitable tooth brushing techniques, occupational habits, tobacco chewing, stress. Precautions should be taken to avoid or overcome these causes that lead to wasting diseases. Severity of the disease increases with the negligence of oral hygiene. These wasting diseases can lead to decline in the immunity and indirectly contribute to an unhealthy oral environment that creates a seat for exposure to contagious pathogens.

Conflict of Interest: Nil

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