

The Etiology and Prevalence of Non- Carious Tooth Loss (NCTL) in a Rural area in Sudan.



Medical Science

KEYWORDS: - Non-caries tooth loss, abrasion, attrition, erosion, abfraction.

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ABSTRACT

Non – carious teeth loss (NCTL), Abrasion, attrition, erosion and abfraction are destruction or wear of tooth tissue where bacteria or caries are not involved as causative factor. This epidemiological cross sectional study aiming to survey the prevalence of NCTL and to relate its occurrence with the multi-factorial variables in the people of the rural areas. All the people attending the dental department in a rural hospital during the study period of four months were included in the study (70) people (1960 tooth). Tooth brushing, dietary habits, oral health education programmes and characteristics of NCTL were examined and analyzed using WHO tooth wear index. the prevalence of NCTL were 71.4%, with axial depth of 1-2 millimeters, 73.4% of NCTL. Affecting the posterior teeth, there is strong association of condition and old age group ($p < 0.01$), hard type of food ($p < 0.03$), right handed with horizontal tooth brushing. Most of the patient receive no treatment until there is symptoms. Oral health education, early detection of the lesion and further studies comparing urban and rural residence with a larger sample size are needed.

Introduction:

Non – carious teeth loss (NCTL), abrasion, attrition, erosion and abfraction are destruction or wear of tooth tissue where bacteria or caries are not involved as causative factor. Abrasion- is the pathologic tooth structure caused by mechanically by toothbrush or dentifrice. Erosion- is loss of tooth structure from chronic exposure to chemical or acidic materials. Attrition- is the wear of tooth structure caused by tooth-to-tooth contact. Abfraction- results in non-caries cervical lesions due to tooth flexure and tooth weakening largely induced by para-functional habit. These defects are usually multi-factorial and potentially destroy the teeth once the destruction reach the dentin layer all of these factors contribute to its progression and deterioration of the natural dentition. As an ageing, population retains its teeth for longer time, the issue of tooth wear is becoming of increasing importance to the dental profession.(1)

The prevalence of NCTL varies from 5% to 85% and its severity increase with aging, different factors play a role in the initiation and the progression of the condition, as well as the life style where variation is expected in the tradition, type of food, way of brushing, type of dentifrices and brushes between the urban and the rural communities where we conduct our research. Slight lesion may not cause discomfort, during progression of the lesion teeth sensitivity to cold or hot drinks and food or spontaneous pain if the lesion is close to the pulp tissue, most of the people of the rural communities seek for treatment at this level.

Literature Reviews:

Grippio forward a new classification of hard tissue lesions of teeth. He defined four categories of tooth wear. Attrition is the wearing away of tooth substance as a result of tooth to tooth contact during normal or

parafunctional masticatory activity. Abrasion is the pathological wear of tooth substance through bio-mechanical frictional processes, e.g. tooth brushing. Erosion—the loss of tooth substance by acid dissolution of either an intrinsic or extrinsic origin, e.g. gastric acid or dietary acids. Abfraction is the pathologic loss of tooth substance caused by bio-mechanical loading forces.(2)

The term “biocorrosion” to supplant “erosion” as it continues to be misused in the United States and many other countries of the world. Biocorrosion embraces the chemical, biochemical, and electrochemical degradation of tooth substance caused by endogenous and exogenous acids, proteolytic agents, as well as the piezoelectric effects only on dentin.(3)

In study done by Faye B. et al. In Senegalese people they concluded that, the prevalence rate for abrasion was reported to be 77.70%, 12.50% for abfraction and 9.80% for erosion. Etiological factors were studied for abrasion and erosion. 54% of the patients with abrasion used their toothbrush horizontally. For erosion, only external factors were identified: consumption of acidic drinks.(4)

Que K1 et al. studied the non-caries cervical lesions, cervical dentine hypersensitivity and related risk factors. they found that prevalence of 61.7% and 27.1%, respectively. The 60-69 age group had the greatest proportion of subjects with NCCLs. Michael JA1, et al. concluded that, associations between abfraction lesions, bruxism and occlusal factors, such as premature contacts and wear facets. (5) In study done by Hur B et al. they concluded that there is no clinical evidence of enamel loss above the occlusal margin of NCCLs as would have been expected according to the general abfraction mechanism. . Lai ZY et al. concluded that NCCL was very common

amongst middle-aged and elderly populations in South China. Older men who had unhealthy oral habits like using toothpicks, eating hard food and drinking vinegar beverages tended to have more teeth with NCCL(9).

Objectives:

Main Objective:

To determine the prevalence of the non-carious tooth loss.

Specific objectives:

To relate the NCTL with the oral hygiene attitude.

To determine the etiological factors of NCTL.

To find the treatment done to the patients with NCTL and their concepts.

Methodology:

Study Design:

This study is descriptive analysis by clinical survey of the lesion characteristic and symptoms and questionnaire .

Study population:

All the patients attending the hospital in the period of the research are included in the study 70 patients 40 males and 30 females with age ranged from 20- 80 years. All the patients attending the dental clinic in the period 9/1/2016 to 23/1/2016 were included in the study. The oral examination in a dental chair using standard operating light, mouth mirror , dental explorer and a periodontal probe using WHO tooth wear index and subject questionnaire.

Study area:

Alhoosh is small city created in the rural area, created in 1947, south Wadmedani the capital of the Gezera State Sudan, the population 12 thousand , there is small rural hospital providing the health service . Statistical analysis was performed using SPSS version 17.0 software for Windows. Any association of age , gender ,type of food, bruxism, frequency of tooth brushing and other variable associated with NCTL. Were examined in a multivariate logistic regression models , the odd ratio (OR) and 95% the confidence interval (CI) were calculated.

The results:

Among 70 subjects , 71.4% have at least one non carious lesion including 30 males and 40 females. 98% of NCTL found on the buccal surface ,the second molars, the lateral and the central incisors were the least teeth affected .3%,7.6%,8.9%, respectively.

Table No. one:

Distribution of NCTL according to age groups. :

Age Group	With NCTL	Without NCTL	Total	Prevalence of NCTL
20-40	5	9	14	58.7%
41-60	10	32	42	82.1%
61-80	3	11	14	87.5%
Total	20	50	70	71.4%

Table No. two

Distribution of NCTL.(type of tooth defect)

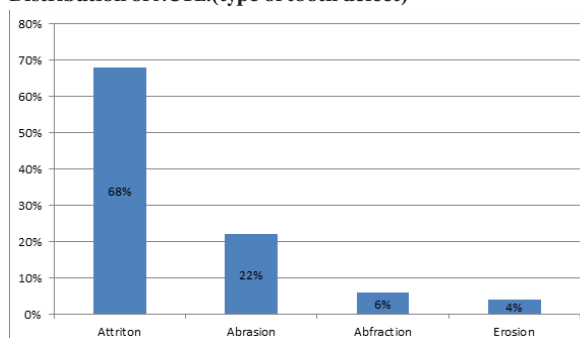


Table No. three ,

The Association of symptoms with NCTL:

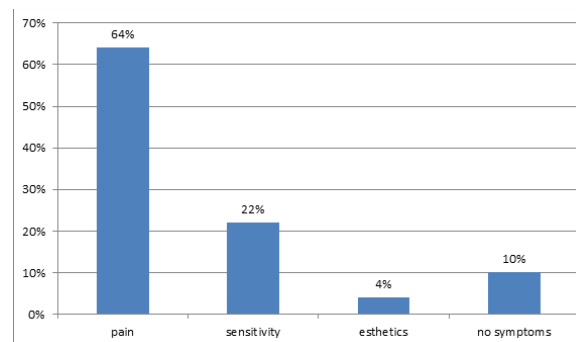


Table No. four.

The previous treatment done :

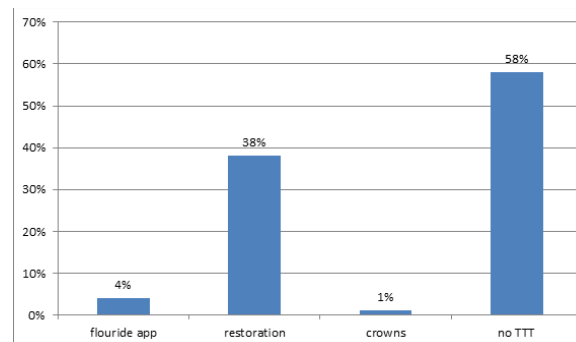
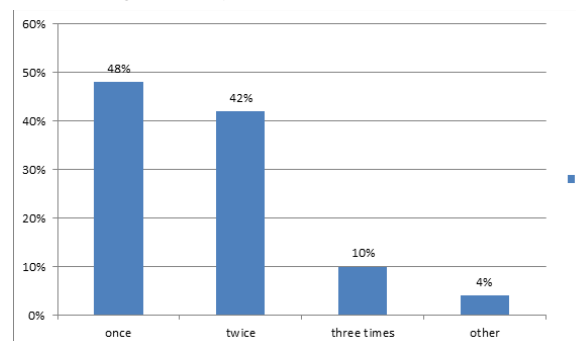


Table No. Five,

The brushing frequency:



Discussion:

The prevalence of NCTL. Is 71.4% Among this group of people who are living in a rural areas, we expect their life style is different from urban and they are living in a low socioeconomic condition. It is supported with the study done by Faye B. et al. and . Que K. et al. Mamaladze M. et al. Ceruti P. et al. . Lai ZY et al. (4, 5,6,7,9) .The prevalence of NCTL is higher among old ages this finding goes with the results of the study done by Que K. et al. (5). Where attrition reach up to 68% with no gender predilection . The NCTL. Was present mainly on the facial or buccal surface of the posterior teeth (98%) where only (26%) in the anterior teeth supported by the result of the study done by Wood I. et al. (8). The occurrence of NCTL. Is (55.5%) maxillary teeth, (44.4%) in the mandibular teeth .The prevalence of NCTL is high in the first mandibular premolars (32.3%), maxillary 2nd premolars (22%) it is supported by the study done by Borcic J et al (10)

Conclusion :

- NCTL were common in people living in rural areas with no difference with who are living in urban .
- NCTL is multi-factorial condition such as age, type of tooth brushes, way of brushing.

- The mandibular first premolars are commonly involved by NCTL.

- People in rural areas were not aware about the condition and they receive no treatment.

Recommendations:

- Public health education about NCTL. Is recommended for people in rural areas.
- Oral health routine checkup .
- Distribution of the oral health service in rural areas.
- Early treatment of NCTL. and prevention of its progression.

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