

# Prevalence of Noncarious Cervical Lesion and Associated Risk Factor in Patients Visited for their Dental Problems

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## ABSTRACT

**Objective:** To determine the prevalence of non carious cervical lesion and risk factor associated with NCCLs in patients visited our institution for endodontic treatment.

**Study Design:** Cross-sectional/observational study

**Place and Duration:** Study was conducted at College of Dentistry, Jouf University, Saudi Arabia for the duration of six months from July 2020 till December 2020.

**Methodology:** Total 600 patients of both gender with ages 15-70 years visited outpatient for their dental problem were enrolled. Patient's detailed demographics including age, sex, residence, diet, brushing frequency, smoking history etc were recorded after taking informed written consent. Frequency of NCCLs was examined as per WHO criteria. Factors associated with NCCLs were recorded. Data was analyzed by SPSS 24.0 version.

**Results:** Out of 600 patients NCCLs were found in 280 (46.67%) patients and 320 patients had no non-carious cervical lesion. Among 280 non-carious cervical lesion patients, 172 (61.43%) patients were males and 108 (38.57%) were females. Majority of patients 90 (32.14%) were ages 41-50 years. First premolar was the most affected teeth found in 160 (57.14%) patients.

**Conclusion:** The prevalence of non carious cervical lesions was high in our setup and use of hard brush, use of citrus food, older age and consumption of alcohol were the significant risk factors associated with NCCLs.

**Keywords:** Permanent teeth, non carious cervical lesions, brushing status, alcohol, citrus food

## INTRODUCTION

Non-carious cervical lesion (NCCL) can be identified as a dental cavity loss at the cement-enamel junction [1]. The neck and the histology of the tooth vary from root to crown. Enamel becomes increasingly thinner close to the enamel-cement crossing, which is why cervical areas are the most susceptible locations where dentine is most likely to be exposed to irritants. In comparison to its undulating direction in crown enamel section, the direction of the enamel prisms shifts to a flattened direction. The mechanical interlock between enamel or dentin in the cervical region, due to the flat surface of the enamel-dentin interlock, is weaker than in the other tight-fit areas. Furthermore the cervical layer of the tooth is the aprismatic enamel area, which is less mineral and physically thinner than the remaining enamel [2]. Several theories on NCCL formation concentrate on abrasive damage caused mainly by tooth brushing and erosion of intrinsically or extrinsically non-bacterial acid. The etiological component of such wedge forming defects has been hypothesised for the last 30 years as a result of the versatility of the dental tension. Different terminologies in the literature such as 'cervical degradation,' 'cervical abrasion,' and 'abfraction.'

An NCCL is a non-caries based failure in the structure of the tooth at the cement-enamel junction. It is well known that the exposure to acid mist can lead to a dental erosion.[4,5] However, studies have not been adapted to lifestyle habits including alcohol and smoking. Multifactorial interactions are involved in the formation, including erosion, abrasion and abfraction.[3]

NCCLs are critical in assessing their risk factors as quickly as possible to preventively preempt their progression.[6] Occupational and ambient exposure to acid mists can also lead to an inflammation of soft tissue, causing more oral health effects, such as periodontal

modifications and oral mucosal injuries. In addition, this persistent annoyance can increase infection susceptibility. This can in turn cause gingival recession and root exposure and thus leads to abrasion from the manual tooth brushes[8]. Long term acid contact can lead to salivary changes that facilitate the occurrence of periodontal disease.

This research was conducted in order to study the incidence of noncarious cervical lesions and their related risk factor for permanent teeth issues in patients visited our institution.

## MATERIAL AND METHODS

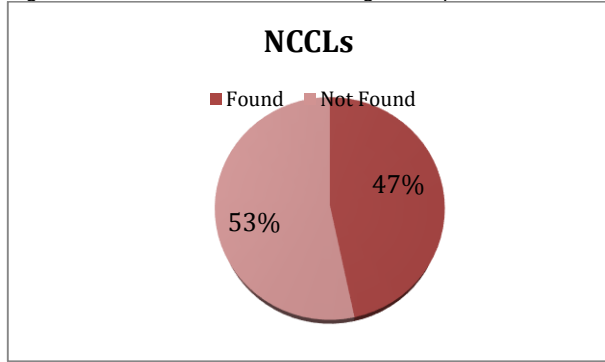
This cross-sectional study was conducted at College of Dentistry, Jouf University, Saudi Arabia for the duration of six months from July 2020 till December 2020. Total 600 patients of both gender with ages 15-70 years visited outpatient for their dental problem were enrolled. Patients detailed demographics including age, sex, residence, diet, brushing frequency, smoking history etc were recorded after taking informed written consent. Patients with severe dental disease, patients with oral carcinoma and those with no consent were excluded from this study.

NCCLs were analysed in frequency. NCCLs is diagnosed on cervical thirds of the tooth, no caries, wedge-like sharp edge loss, or C-like lesion on rounded edges. Risk factors including age, sex, diet, brushing frequency, history of smoking, drinking, etc have been investigated. The auto-designed questionnaire obtained all of these variables. SPSS 24.0 analysed all the results. Tables were used to record frequencies and percentages. In order to investigate the relation between NCCLs and potential risk factors, the test was performed with Chi square.  $P < 0.05$  is an essential value.

**RESULTS**

Out of 600 patients NCCLs were found in 280 (46.67%) patients while 320 (53.37%) patients had no NCCLs.(Figure 1)

Figure 1: Prevalence of NCCLs among all the patients



Among 280 patients, 172 (61.43%) patients were males and 108(38.57%) were females. 60 (21.43%) were ages 30-40 years, 60 (21.43%) patients were <30 years, 90 (32.14%) patients were ages 41-50 years and 70 (25%) patients were ages >50 years. Non Smokers were 120 (42.86%), while 160 (57.14%) were smokers. 90 (32.14%) Patients were user of soft brush while 190 (67.86%) were hard brush users. 108 (38.5%) patients had no frequently consumption of citrus food and 86 (61.5%) had frequently consumption of citrus food. 120 (42.86%) had no consumption of alcohol while 160 (57.14%) patients had alcohol consumption. Majority of the patients were first premolar 80(57.14%) while 35 (25%) were second premolar and the rest 25 (17.86%) patients were third molars. (table 1)

Table 1: Risk factors associated with NCCLs

Variables	Frequency No.	% age
Gender		
Male	86	61.43
Female	54	38.57
Age		
<30 years	30	21.43
30-40 years	30	21.43
41-50years	45	32.14
>50	35	25
Smokers		
Yes	80	57.14
No	60	42.86
Hard Brush user		
Yes	95	67.86
No	45	32.14
Citrus food		
Yes	86	61.5
No	54	38.5
Alcohol		
Yes	104	74.29
No	36	25.71
Affected Teeth		
First Premolar	80	57.14
Second Premolar	35	25
Third Premolar	25	17.86

Significantly risk factors associated with NCCLs with p value <0.04.

**DISCUSSION**

Literature data on NCCL prevalence indicate a high degree of discrepancy and are primarily determined by different parameters for lesion evaluation and morphological assessment. Analysis papers indicate that prevalence ranges between 5% and 85% [9]. Recent studies also show significant variations in NCCL prevalence from 9% (10) to 35%[11] to 77% [12]. There are a wide range of trends (participant number, age), different methodologies, and diagnostic criteria for explanations of such variations. The findings are different. This high variability may mean that precisely what presents an NCCL is very difficult to identify.

In present study the prevalence of non-carious cervical lesion was 46.67% while 320 (53.33%) patients had not found with non-carious cervical lesion. A study conducted in Jordan reported a prevalence of 91.80% when considering tooth surface loss [13]. In this analysis, the prevalence of NCCLs was 57.14 percent higher in premolars and less in seconds and thirds, and the findings showed similarities to the previous surveys. [14-16].

Most smokers 57.1 4% were the leading cause of NCCL prevalence. In the study Bomfim RA et al submitted that smoking cigarettes habit is considered to be a possible etiological factor in NCCLs due mainly to its effects on the gingival recession. [17] Considerable risks were found in this study and these were similar to those of the previous study, using hard brush, citrus food, older age and alcohol intake. [18]

There are many misconceptions about the etiology of such lesions and substantial differences among dentists in the recognition and treatment of cervical lesions exist [19]. A review of the evidence-based literature can not conclusively establish any one factor as the primary etiology of cervical abrasions because of inherent methodological limitations and conflicting results. Rather, a variety of factors related to tooth brushing may act in concert with dental erosion and, possibly, occlusal loading in the creation of non-carious cervical lesions [20].

**CONCLUSION**

The prevalence of non carious cervical lesions was high in our setup and use of hard brush, use of citrus food, older age and consumption of alcohol were the significant risk factors associated with NCCLs.

**REFERENCES**

1. Aw TC, Lepe X, Johnson GH, Mancl L. Characteristics of noncarious cervical lesions: a clinical investigation. J Am Dent Assoc. 2002;133:725–33. [PubMed] [Google Scholar]
2. Önal B, Pamir T. The two-year clinical performance of esthetic restorative materials in noncarious cervical lesions. J Am Dent Assoc. 2005;136:1547–55. [PubMed] [Google Scholar]
3. Levitch LC, Bader JD, Shugars DA, Heymann HO. Non carious cervical lesions. J Dent. 1994 Aug;22(4):195-207. [ Links ]
4. Tuominen LM, Tuominen RJ, Fubusa F, Mgalula N. Tooth surface loss and exposure to organic and inorganic acid fumes in workplace air. Community Dent Oral Epidemiol. 1991 Aug;19(4):217-20. [ Links ]
5. Chikte U, Josie-Perez AM, Cohen TL. A rapid epidemiological assessment of dental erosion to assist in

- settling an industrial dispute. *J Dent Assoc S Afr.* 1998 Jan;53(1):7-12. [ Links ]
6. Lussi A, Jaeggi T. Erosion - diagnosis and risk factors. *Clin Oral Investig.* 2008 Mar;12 Suppl 1:S5-13. doi: 10.1007/s00784-007-0179-z. [ Links ]
  7. Kinane DE. Causation and pathogenesis of periodontal diseases. *Periodontol* 2000. 2001;25:8-20. [ Links ]
  8. Wiegand A, Burkhard JPM, Eggmann F, Attin T. Brushing force of manual and sonic toothbrushes affects dental hard tissue abrasion. *Clin Oral Investig.* 2013 Apr;17(3):815-22. doi: 10.1007/s00784-012-0788-z. [ Links ]
  9. Levitch LC, Bader JD, Shugars DA, Heymann HO. Non-carious cervical lesions. *J Dent.* 1994;22:195-207. [PubMed] [Google Scholar]
  10. Ibrahim KG, Abubakr NH, Ibrahim YE. Prevalence of dental abfraction among a sample of Sudanese patients. *Arch Orofac Sci.* 2012;7:50-5. [Google Scholar]
  11. Handa A, Bal CS, Singh R, Khanna R, Handa RS. The prevalence of non-carious cervical lesions (NCCLS) in a North-Indian population. *IJCDC.* 2014;4:416-21. [Google Scholar]
  12. Jafari Z. The study of possible factors related to non-carious cervical lesions. *EJAE.* 2014;1:45-8. [Google Scholar]
  13. Amin WM, AL-Omouush SA, Hattab FN. Oral health status of workers exposed to acid fumes in phosphate and battery industries in Jordan. *Int Dent J.* 2001 Jun;51(3):169-74. [ Links ]
  14. Piotrowski BT, Gillette WB, Hancock EB (2001) Examining the prevalence and characteristics of abfractionlike cervical lesions in a population of U.S. veterans. *J Am Dent Assoc* 132: 1694-1701.
  15. Hirata Y, Yamamoto T, Kawagoe T, Sasaguri K, Sato S (2010) Relationship between occlusal contact pattern and non-carious cervical lesions among male adults. *J StomatOcc Med* 3: 10-14.
  16. SJ Kawagoe T, Miyake S, Sasaguri K (2008) Relationship between occlusal contact patterns and the prevalence of non-carious cervical lesions. *J Dent Health* 58: 542-547.
  17. Bomfim RA, Crosato E, Mazzilli LE, Frias AC. Prevalence and risk factors of non-carious cervical lesions related to occupational exposure to acid mists. *Braz Oral Res.* 2015;29:1-8. [PubMed] [Google Scholar]
  18. Almeida TF, Vianna MIP, Santana VS, Gomes Filho IS. Occupational exposure to acid mists and periodontal attachment loss. *Cad Saude Publica.* 2008 Mar;24(3):495-502. [ Links ]