



ASSOCIATION BETWEEN ATTRITION AND PHYSICAL, PSYCHOLOGICAL AND SOCIODEMOGRAPHIC VARIABLES

Clinical Research

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ABSTRACT

The aim of this descriptive observational study was to assess the possible risk factors contributing towards dental attrition. The sample consisted of 200 patients, 100 in case group and 100 in control group all falling in the age group of 15-60 years. The patients were evaluated for the dental and occlusal variables, craniofacial and morphological variables, soft tissue and functional variable, general health and dietary habits, psychological and parafunctional and Sociodemographic variable. Deep bite, Angle's class II malocclusion, faulty restorations, poor oral hygiene, TMJ disorders, ridging of buccal mucosa, scalloping of tongue, acidity, consumption of carbonated drinks, stress, bruxism, consumption of caffeine, age, married people and low socioeconomic status were found to be highly significant ($p < 0.001$) risk factors contributing towards dental attrition. Factors like non vegetarian diet and missing teeth were also found to contribute towards dental attrition. Some variables contributing towards dental attrition were well known earlier like age, bruxism, TMJ disorders but in this study some new variables were found like acidity, consumption of caffeine, scalloping of tongue and married peoples. Further studies need to be done regarding these variables as possible risk factors for Dental attrition.

KEYWORDS:

Tooth Attrition, Risk factors, feeding behavior, bruxism, Malocclusion.

INTRODUCTION

Dental attrition is defined as the physiologic wearing away of tooth as a result of tooth to tooth contact, as in mastication.¹ This occurs only on occlusal, incisal, and proximal surfaces of teeth,

not on other surfaces unless a very unusual occlusal relation or malocclusion exists. (Figure 1) The prevalence of attrition in India is 88%.² The affected teeth are characterized as flat, round or sharply angled with polished surfaces on the occlusal or incisal areas of the teeth and may be the result of excessive attrition of one tooth against the other.³

It is generally accepted that attrition is age related and therefore a physiological process. However it is sometimes observed in young dentitions also, when it is pathological in nature. Attrition initially affects the enamel and, if unchecked may proceed to underlying dentine. It causes discomfort and sensitivity especially during eating, drinking or tooth brushing. If left untreated, it may lead to pain or can affect the vitality of the tooth. It is also unaesthetic, especially when anterior teeth are involved.

An understanding of the etiological or possible risk factors of dental attrition is important to prevent this irreversible loss of tooth structure. There is very limited literature on the etiological factors or risk factors contributing to dental attrition.⁴ Majority of the papers are correlation studies to assess the relation of TMJ disorders or stress and attrition.⁵ "The present study takes a holistic approach towards the possible risk factors that might contribute to dental attrition. As severe grades of attrition may lead to non vitality, increased pain and sensitivity and even loss of tooth if left unattended, these irreversible damages to the tooth could be prevented with knowledge of these factors.

The aim of this descriptive observational study was to evaluate which physical, psychological or Sociodemographic factors are risk factors for high dental wear.

MATERIALS AND METHOD

The study was conducted in the Department of Orthodontics and Dentofacial Orthopedics, Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India. Before commencing the Research Institutional ethical clearance was obtained. The patients reporting in the OPD were randomly divided into case group and control group on the basis of attrition. The patients were thoroughly examined to assess dental attrition. Only those patients who had attrition in one or more tooth were included in the case group. The inclusion criteria were as follows:

1. Patients having generalized or single tooth attrition on the occlusal or incisal surface.
2. Attrition involving either the anterior or posterior teeth.
3. Patients in the age group of 15-60 years.

Restored or carious tooth surfaces were excluded from the study. Attrition level was graded by the tooth wear index by Smith & Knight⁷ as summarized in Table 1.

Those patients who had no signs of attrition in the anteriors or posteriors were included in the control group. The sample consisted of 100 patients in the case group and 100 in the control group. Assuming prevalence of attrition as 88% and $\alpha = 0.05$ the power of study as 85%, the sample size of 100 cases & 100 controls was justified.

The goals of the study were explained to potential participants and their written informed consent was obtained. Clinical oral examination of study subjects was done in the out-patient dental clinic using sterilized mouth mirrors and dental probes under the operating light on the dental chair unit. Patients were evaluated for the following factors:

1. Physical variables.
2. Psychological and parafunctional variables
3. Sociodemographic variables

The physical variables were evaluated under the following subheadings: a) Dental and occlusal variables b) Craniofacial morphological variables, c) Soft tissue and functional variables, d) General health and dietary habits. The details of these factors are summarized in Table 2.

Under General health and dietary habits, proper medical history of the patient was taken in which any history of acidity, gastric reflux, epilepsy or any medical condition was recorded, and its duration, first episode and frequency was also noted. Dietary habits were evaluated by questions focusing on, the type of diet of the patient (vegetarian, non vegetarian, mixed), type of food consumed (coarse food, junk food, or soft food) and consumption of carbonated drinks, its daily intake, frequency and amount was noted.

When evaluating Psychological and parafunctional variables, stress was evaluated by using the

Questionnaire by Sheldon Cohen, Tom Kamarck and Robin Mermelstein to calculate the

perceived stress score (PPS).⁸ There were fourteen questions with following options:

0. Never
1. Almost never
2. Sometimes
3. Fairly often
4. Very often

Seven questions with positive answers and seven with negative answers, PPS scores were

obtained by reversing the scores on seven positive answers e.g. 0=4, 1=3, 2=2, 3=1, 4=0, and then summing across all fourteen items. (Table 3).

Use of any psychoactive substances like tobacco, alcohol, caffeine, any medications taken for

sleep or anxiety or depression was noted and its frequency and amount was also recorded.

While evaluating parafunctional variables, any habits like nail biting, tongue thrusting or mouth breathing were noted and its duration, frequency was recorded. History of Bruxism was recorded according to the ICSD's minimal criteria for sleep Bruxism (1) the presence of teeth grinding during sleep; and (2) at least one of the following associated features: abnormal tooth wear, muscular discomfort, or sound associated with the tooth grinding.⁹ Questions were asked to evaluate Bruxism.⁹(Table 4)

Table 1: Tooth wear index by Smith and Knight.

GRADE	CRITERIA
0	No loss of enamel surface characteristics
1	Loss of enamel surface characteristics
2	Buccal, lingual and occlusal loss of enamel, exposing dentine for less than one third of the surface Incisal loss of enamel Minimal dentine exposure
3	Buccal, lingual and occlusal loss of enamel, exposing dentine for more than one third of the surface Incisal loss of enamel Substantial loss of dentine
4	Buccal, lingual and occlusal complete loss of enamel, pulp exposure or exposure of secondary dentine Incisal pulp exposure or exposure of secondary dentine

Table 2: Various factors evaluated in patients with dental attrition

1. Physical Variables
A. Dental and Occlusal variables:
1. Past dental history.
2. Family history for attrition.
3. Teeth affected by attrition.
4. Attrition level. (Tooth wear index by Smith & Knight)
5. Overjet
6. Presence of anterior open bite (negative overbite) or deep bite
7. Presence of anterior or posterior crossbite (unilateral or bilateral).
8. Classes I, II or III malocclusion, (based on Angles first molar relationship.)
9. Maxillary and mandibular arch form.
10. The type of anterior guide.
11. Any supernumerary or missing teeth.
12. Crowding of teeth.
13. Presence of large restorations causing tooth interferences or high points.
14. Pain or sensitivity in teeth
15. Chewing efficiency as reported by patients
16. Aesthetics as evaluated by patient and clinician
17. Periodontal condition
18. Abrasion or erosion present
19. History of orthodontic treatment.
20. Oral hygiene status (Green and Vermillion index) and brushing habits
B. Craniofacial Morphological variables:
1. Facial form(Leptoprosopic, Mesoprosopic, Euryprosopic)
2. Facial profile(Straight, Convex, Concave)
3. Facial asymmetry.
C. Soft tissue and functional variables:
1 Masticatory muscles(Normal, Pain or hypertrophy)
2 Temporomandibular joint(Normal, Pain or clicking sounds)
3 Opening pattern of mandible

4	Scalloping of tongue
5	Ridging of buccal mucosa
D. General health and dietary habits.	
1.	Medical history with special note on any medications or illness
2.	Dietary habits
2. Psychological and Parafunctional variables:	
1.	Stress evaluation
2.	Any habits (nail biting, tongue thrusting, mouth breathing)
3.	Use and frequency of psychoactive substances (tobacco, alcohol, caffeine, or medications for sleep, depression, and anxiety)
4.	Bruxism
3. Sociodemographic variables:	
1.	Age
2.	Sex
3.	Marital Status
4.	Education
5.	Income level
6.	Awareness of the attrition by the patient
7.	Employment status

Table 3: Questionnaire to evaluate stress

S.No.	Question
1.	In the last month, how often have you been upset because of something that happened unexpectedly?
2.	In the last month, how often have you felt that you were unable to control the important Things in your life?
3.	In the last month, how often have you felt nervous and "stressed"?
4.	* In the last month, how often have you dealt successfully with irritating life hassles?
5.	* In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6.	*In the last month, how often have you felt confident about your ability to handle your personal problems?
7.	* In the last month, how often have you felt that things were going your way?
8.	In the last month, how often have you found that you could not cope with all the things that you had to do?
9.	*In the last month, how often have you been able to control irritations in your life?
10.	*In the last month, how often have you felt that you were on top of things?
11.	In the last month, how often have you been angered because of things that happened that were outside of your control?
12.	In the last month, how often have you found yourself thinking about things that you have to accomplish?
13.	*. In the last month, how often have you been able to control the way you spend your time?
14.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
choose from the following alternatives: 0. Never 1. Almost never 2. Sometimes 3. Fairly often 4. Very often.	
*scored in reverse direction. PPS scores are obtained by reversing the scores on seven positive answers e.g. 0=4, 1=3, 2=2, 3=1, 4=0, and then summing across all fourteen items.	

Table 4: Questionnaire to evaluate Bruxism

S. No.	Question	Answer
1.	According to you, or your bed partner, do you grind your teeth during your sleep?	6 to 7 nights a week/ 4 to 5 nights a week/ 2 to 3 nights a week/ once a week/ 2 to 3 nights a month/ 1 night a month; never or rarely

2.	Have you had dental work because you grind your teeth during your sleep?	Yes/no
3.	Do you have muscular discomfort in your jaw because of your teeth grinding?	Always/ sometimes/rarely/ never/do not know
4.	Is the tooth grinding so loud that your bed partner (or individuals living with you) can hear it?	Always/ sometimes/ rarely/ never/do not know

OBSERVATIONS

Table 5 a: Dental and occlusal variables:

Variables	Group		Pearson Chi-Square value	Significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1. Family history for attrition No Not Aware yes	5.0% 90.0% 5.0%	11.0% 81.0% 8.0%	3.416a	0.181
2. Overjet Increased Decreased Normal Edge to edge	23.0% 16.0% 48.0% 13.0%	21.0% 11.0% 63.0% 5.0%	6.599a	0.086
3. Bite deep bite anterior open bite normal	36.0% 3.0% 61.0%	10.0% 17.0% 73.0%	25.570a	<0.001***
4. Cross bite Absent Present	87.0% 13.0%	89.0% 11.0%	0.189a	0.663
5. Angle's malocclusion class II class I class III	80.0% 11.0% 9.0%	10.0% 86.0% 4.0%	1.144E2a	<0.001***
6. Maxillary arch form Round Square V shaped	79.0% 13.0% 7.0%	94.0% 3.0% 3.0%	10.151a	0.017
7. Mandibular arch form Round Square V shaped	87.0% 7.0% 5.0%	93.0% 2.0% 5.0%	3.978a	0.264
8. Missing tooth present absent	33.0% 67.0%	15% 85.0%	8.882a	0.003*
9. Crowding of teeth Absent Present	61.0% 39.0%	65.0% 35.0%	0.343a	0.558
10. Faulty restoration present absent	34.0% 66.0%	7.0% 93.0%	22.365a	<0.001***
11. Pain and sensitivity present absent	65.0% 35.0%	18.0% 82.0%	45.495a	<0.001***
12. Periodontal condition Unhealthy Healthy	59.0% 41.0%	75.0% 25.0%	5.789a	0.016

13. Abrasion or erosion Absent Present	91.0% 9.0%	95.0% 5.0%	1.229a	0.268
14. Oral hygiene poor good average	25% 0.0% 75.0%	3.0% 20.0% 67.0%	24.240a	<0.001***

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Table 5 b: Craniofacial morphological variables:

Variables	Group		Pearson Chi-Square value	significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1. Facial form Euryprosopic Leptoprosopic Mesoprosopic	10.0% 28.0% 62.0%	1.0% 20.0% 79.0%	10.747a	0.005
2. Facial profile Convex Concave Straight	44.0% 7.0% 49.0%	25.0% 1.0% 74.0%	14.813a	<0.001**

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Table 5c: Soft tissue and functional variable:

Variables	Group		Pearson Chi-Square value	significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1. Masticatory muscles Pain and hypertrophy Normal	9.0% 91.0%	8.0% 92.0%	0.064a	0.800
2. TMJ Clicking and pain Normal	36.0% 64.0%	7.0% 93.0%	24.915	<0.001**
3. Mouth opening Restricted normal	4.0% 96.0%	0.0% 100.0%	11.048	0.004*
4. Ridging of buccal mucosa Present absent	85.0% 15.0%	40.0% 60.0%	43.200	<0.001**
5. Scalloping of present present absent	83.0% 17.0%	34.0% 66.0%	49.449	<0.001**

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Table 5d: General health and dietary habits:

Variables	Group		Pearson Chi-Square value	significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1. Medical history acidity absent	51.0% 49.0%	11.0% 89.0%	37.401a	<0.001**
2. Type of food consumed Coarse Junk Normal	82.0% 0.0% 18.0%	70.0% 5.0% 25.0%	7.087a	0.029
3. Carbonated drinks present absent	80.0% 20.0%	40.0% 60.0%	33.333a	<0.001**

4.Type of diet	86.0%	65.0%	11.921a	0.001**
·non vegetarian	14.0%	35.0%		
·vegetarian				

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Variables	Group		Pearson Chi-Square value	significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1.stress	22.0%	4.0%	28.365a	<0.001***
·severe	43.0%	30.0%		
·moderate	31.0%	46.0%		
·mild	4.0%	20.0%		
·not present				
2.Para functional habits	37.0%	21.0%	30.126a	<0.001***
·Nail biting	17.0%	0.0%		
·Bruxism	46.0%	79.0%		
·Absent				
3.Psychoactive substance	81.0%	65.0%	15.753a	<0.001***
·Caffeine	5.0%	0.0%		
·Anti depressant drugs	14.05	35.0%		
·Absent				

Table 6: Psychological and Parafunctional variables:

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Table 7: Sociodemographic variable:

Variables	Group		Pearson Chi-Square value	significance
	Attrition present (case) N=100(%)	Attrition absent (control) N=100(%)		
1.Age	23.0%	17.0%	23.583a	<0.001***
·10-20 yrs	43.0%	73.0%		
·21-30 yrs	23.0%	8.0%		
·31-40 yrs	4.0%	2.0%		
·41-50 yrs	7.0%	0.0%		
2.Sex	48.0%	40.0%	1.299a	0.254
·Male	52.0%	60.0%		
·Female				
3.Marital status	48.0%	19.0%	18.876a	<0.001***
·Married	52.0%	81.0%		
·Unmarried				
4.Income level	84.0%	61.0%	13.266a	<0.001***
·Lower middle class	16.0%	39.0%		
·Higher middle class				
5.Education	14.0%	15.0%	0.040a	0.841
·Illiterate	86.0%	85.0%		
·Literate				

P<0.005 = significant (*-significant, **-moderately significant, ***-highly significant)

Results

A total of 200 patients were evaluated in the age group of 15-60 years, out of which 100 patients were in case group and 100 patients were in control group.

First Factor was Physical variables under which we the first variable to be evaluated was Dental and occlusal variables (Table 1A). Under this we found Deep bite, Angle’s class II malocclusion, Presence of faulty restorations in the posterior region, pain and sensitivity and poor oral hygiene to be highly significant(p<0.001) in patients with Dental attrition. It was also found that presence of missing teeth was significant (p<0.005) in patients with dental attrition. Next variable

evaluated was craniofacial morphological variables (Table 1B), in which we found convex facial profile to be highly significant in patients with dental attrition and straight facial profile (74%) in patients without Dental attrition. Next soft tissue and functional variable (Table 1C) were evaluated under which, TMJ problems like pain and clicking sounds, ridging of buccal mucosa and scalloping of tongue was highly significant in patients with dental attrition. Majority of the patients not affected by dental attrition were free from TMJ problems (93%). Last factor to be evaluated under Physical variable was general health and dietary habits (Table 1D) in which we found that consumption of carbonated drinks and non vegetarian diet to be highly significant in patients affected by dental attrition. We also found patients having medical history of long term acidity were significantly associated with dental attrition.

Second factor was psychological and parafunctional variables (Table 2) under which, stress was highly significant in patients who were affected by dental attrition, that also severe form of stress was present. Parafunctional habits like Bruxism and nail biting were also highly significant in patients with dental attrition. Use of caffeine in forms of Tea and Coffee was also highly significant in patients with Dental attrition.

Last factor to be evaluated was Sociodemographic variables (Table 3) in which the age group from 30 above i.e., 31-40, 41-50 and 51-60 years was significantly associated with dental attrition (p<0.001). We also found marital status i.e., married patients were very significantly associated with dental attrition whereas the unmarried sample (81%) was not affected by dental attrition. Lastly patients falling in the lower middle class were significantly (p<0.001) affected by dental attrition.

Discussion

Wear of tooth surface can be due to various reasons like attrition, abrasion, erosion and abfraction. This study has focused on the wear of tooth surface due to a phenomenon known as attrition. There have been various studies in the past which relate the extrinsic and intrinsic factors with dental attrition^{4, 11,12,13,16,18,24,25,38,39}. However, this is the first study which has taken a holistic approach towards this phenomenon by evaluating the physical, psychological and sociodemographic variables at one time. Since severe attrition can lead to non vitality of tooth or even loss of a tooth apart compromised esthetics and function, one needs to know which variables can lead a tooth prone to dental attrition.

Patients reporting in the OPD of Department of Orthodontics, Jamia Millia Islamia were included in the study. A total of 200 patients were included in this study out of which 100 patients were in case group and 100 patients were in control group. The age group of the sample was from 15-60 years. The reason for including this age group was that permanent dentition usually erupts by 15 years of age and not much loss of tooth and supporting structures is observed by the age group of 60 years. Assessment of tooth wear was graded by the tooth wear index by Smith & Knight. The study was conducted under the following three headings: physical, psychological and Sociodemographic variables. Under the physical factors, four variables were studied dental and occlusal variables, craniofacial and morphological variables, soft tissue and functional variables, and general health and dietary habits.

Under **dental and occlusal variable**, patients having deep bite were found to be more affected by dental attrition when compared to patients with normal bite. Angle’s class II malocclusion was a significant predisposing factor as compared to class I and class III. Our result are in consensus with a study done by Seligman et al¹¹ who after follow up of 20 years of patients with dental attrition found that angle Class II malocclusion is a significant predisposing factor to dental attrition. However, future studies are required to evaluate which division of Class II malocclusion (Div.1 or Div.2) is predisposing the patient to dental attrition.

We also found that the absence of teeth in any of the arches was significantly related with dental attrition. A few previous studies have also observed a relation between missing teeth and increased tooth wear.^{4,12} This could be attributed to disturbed occlusal relation and presence of interferences in patients with missing teeth. As a risk factor for occlusal wear, the number of remaining teeth was also identified by Ekfeldt et al.¹³ Presence of crowding was not found to be significantly related to dental attrition. Faulty restorations were found to be highly significant predisposing factor which could again be attributed to

occlusal interferences. Pain and sensitivity was highly related to the patients with dental attrition which could be understood by the fact that attrition leads to dentinal or pulpal exposure and hence increased pain or sensitivity in these patients. Other tooth wear lesions like abrasions and erosions and poor periodontal conditions did not predispose the patient to the dental attrition. However patients having dental attrition were significantly related to poor oral hygiene. This finding is in accordance with the previous studies.^{4,11,14,15}

Second factor which was evaluated was **craniofacial morphological variables**, amongst this; patients having convex facial profile were significantly associated with dental attrition, this could be explained by the fact that patients having convex facial profile would be having Angle's class II malocclusion which itself is associated with dental attrition. Facial form and symmetry were not found to be associated with dental attrition.

Third factor was **soft tissue and functional variables**, as in earlier studies,^{16,17} we did not find any positive relation between tenderness of the masticatory muscles and high occlusal wear. Clicking, pain and tenderness of TMJ and restricted mouth opening were found to be highly significant in patients with dental attrition and the association between these factors has been found to be true by many studies in the past.¹⁸⁻²³ Ridging of buccal mucosa and scalloping of tongue were also found to be significantly associated with dental attrition. This could be explained by the fact that scalloping of tongue is found in malocclusions with narrow arches which could be a predisposing factor to dental attrition.

Fourth factor was **general health and dietary habits**, under which patients giving history of frequent acidity were found to be significantly related with dental attrition, which could be due to the fact that acidity is related with stress which is well established etiological factor for dental attrition. Acidity can also lead to prolonged lower pH in the oral cavity, which could cause dental erosion but could also be related to dental attrition. Consumption of carbonated drinks was also found to be highly significant in patients with dental attrition. Several authors have discussed the role of erosive nutrients in the development of dental wear²⁴⁻²⁷. It could be due to keeping the carbonated drinks longer in the oral cavity or brushing just after the intake of the acidic drinks, which can lead to the dissolution of the enamel. This suggested that an erosive diet makes the occlusal surfaces vulnerable to wear even by weakly abrasive materials by softening them, such as raw vegetables, which would not have an effect on sound dentine.^{28, 29} However; Pigno et al²⁴ did not find any correlation between consumption of soft drinks and the development of occlusal wear. Consumption of Non vegetarian diet was also found to be a highly significant predisposing factor in patients with dental attrition. Type of food consumed like coarse food, junk food and soft food was not related to dental attrition. Interestingly, in one of the previous studies, an examination of a skull sample from the 15th and 16th centuries with advanced dental wear showed only a few dental anomalies and no skeletal malocclusions which could be attributed to coarse food consumed as compared to present day food habits¹⁵.

Under psychological and parafunctional variables, stress and bruxism were found to be highly significant predisposing factor in patients with dental attrition. Dental attrition is often associated with Bruxism, which appears in turn to be influenced by psychological factors, which include stress, anxiety and depression.³⁰⁻³⁵ Overall, the majority of studies suggest an association between self reported bruxism, and wearing a way of tooth surface^{13, 24, 36}. Hence stress leads to bruxism which further leads to attrition. Marbach et al. found that only 34.4% of the patients with self reported bruxism in their study showed evidence of tooth wear, so we can say that not every case of bruxism will present with attrition and vice versa. However, Seligman et al. found no relationship between degree of tooth wear and bruxism¹¹.

Use of psychoactive substances was found to be a highly significant predisposing factor in patients with dental attrition. Amongst psychoactive substance caffeine was highly related, caffeine was taken in the form of tea in 80% of the patients and rest 20% of the patients took in form of coffee. Use of psychoactive drugs was not found to be associated to dental attrition. In a study done by Young he found that patients with anxiety states, depression, anorexia or bulimia nervosa on tranquillizing or antidepressant medications associated with xerostomia and reversible sialadenosis were predisposed to tooth wear as the medications result in loss of salivary protection against both acid soft drinks and intrinsic acid vomiting.³⁷

Under **Sociodemographic variables**, it was found that occlusal wear

increases with age and this has been found in the previous studies as well^{24,25,38,39}. Only Seligman et al¹¹ did not find a correlation between age and attrition; the probable cause could be that they did not use a randomly selected sample with different age strata. In this study, sex of the patient was not related with dental attrition, this is in accordance to study performed by Peres et al, but in other studies it is generally accepted that men have higher wear levels than women probably because of stronger masseter muscle function in men.^{11, 16, 24, 38, 39} In our study it was found that married people had significantly higher dental attrition than unmarried sample which might be related to increased levels of stress. Income level also had significant relation with the dental attrition. Patients of lower middle class were found to be significantly associated with dental attrition. This is in accordance with the study conducted by like Bernhardt⁴, who found that unemployment was significantly related to dental attrition which could be due to stress and depression. The literacy level had no significant relation with dental attrition.

This study has provided an insight into various physical, soft tissue, parafunctional and Sociodemographic variables as possible risk factors of Dental Attrition. It will help us better understand the possible significant variables contributing to attrition, which will help us educate the patients and warn them of the consequences. It will also help the clinicians to take timely preventive steps as soon as any risk factors are identified.

In the future, the study can be conducted on a bigger sample and later one can also correlate the etiologic factors with the genetic makeup of individuals.

Conclusion:

1. Deep bite, Angle's class II malocclusion, faulty restorations, pain and sensitivity, poor oral hygiene, TMJ disorders (like clicking, pain and tenderness), ridging of buccal mucosa, scalloping of tongue, acidity, consumption of carbonated drinks, stress, bruxism, consumption of caffeine, age, married people and low socioeconomic status were found to be highly significant risk factors contributing towards dental attrition.
2. Convex profile and non vegetarian diet were found to be moderately significant risk factors for dental attrition.
3. Missing tooth in any of the arches and restricted mouth opening were found to be significant risk factors leading to dental attrition.

Fig. 1. GENERALISED ATTRITION IN LOWER TEETH



Photo legend:

Figure 1 – Generalized attrition in mandibular teeth

Table legend:

- Table 1 - Tooth wear index by Smith and Knight
- Table 2 - Various factors evaluated in patients with dental attrition
- Table 3 - Questionnaire to evaluate stress
- Table 4 - Questionnaire to evaluate Bruxism
- Table 5a - Dental and occlusal variables
- Table 5b - Craniofacial morphological variables
- Table 5c - Soft tissue and functional variable
- Table 5d - General health and dietary habits
- Table 6 - Psychological and Parafunctional variables
- Table 7 - Sociodemographic variable

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