

The Effect of Emotional Abuse on Nail Biting Related Malalignment of Teeth

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Abstract

Background: Emotional abuse is a very common form of child abuse. It is suggested that the adverse outcomes from all forms of abuse mostly result from the emotional impacts. Nail biting or onychophagia is a common stress-relieving oral habit related to a psycho emotional state of anxiety. It is one of warning signs of child maltreatment. Nail biting children are at risk of developing malocclusion of the anterior teeth. **Objectives:** To determine the effect of emotional abuse on nail biting habit in relation to tooth alignment. **Materials and Methods:** This comparative study included 522 students aged 13–15 years who were attending secondary schools in Kirkuk/Iraq. Information on emotional abuse and presence or absence of nail biting habits were obtained using a structured, self-administered questionnaires. The malalignment of teeth was measured according to WHO in 1997 which include crowding of anterior teeth from canine to another canine for both upper and lower jaw. The data were collected, summarized, and statistically analyzed. **Results:** In present community, the severe and moderate level of emotional abuse was higher than mild level and there was an effect of abuse on nail biting habit that affect malalignment of teeth. **Conclusion:** The occurrence of emotional abuse in our community can be considered quite high as moderate and severe levels of abuse were reported more frequently than mild levels of abuse. It has an effect on nail biting and malalignment of teeth as nail biting was higher in higher level of abuse than lower.

Keywords: Child abuse, emotional abuse, malalignment of teeth, nail biting, parent education

INTRODUCTION

All forms of child maltreatment, including physical and sexual abuse as well as neglect, occur simultaneously with emotional abuse.^[1]

Emotional abuse is the core of and is comorbid with all types of child abuse, including physical or neglect of children.^[2] It is suggested that the adverse outcomes of all forms of abuse mostly result from the emotional aspects.^[3] It is often a misunderstood form of trauma, and perhaps the most damaging type of abuse. Emotional abuse often leads to long-term consequences for adults that can be elusive and its very nature allows it to hide in plain sight.^[4]

The limited attention paid to emotional abuse is largely due to the lack of a precise definition for this concept. Different researchers have put forth various definitions for “emotional abuse” based on two: caregivers’ behaviors

or the outcomes of abusive behaviors.^[5-7] Consequently, the variety of definitions have led researchers to use different terms, such as “emotional abuse,” “psychological maltreatment,” “psychological abuse,” and “verbal abuse.” An alternative framework to assess emotional abuse by Glaser that does not rely on parental behavior or parent–child interactions.^[8]

Parents’ education level socioeconomic factor plays a significant role in childhood mental health.^[9,10] Many published studies described parents’ education level of fathers and mothers as the predictors of their children’s mental health.^[11,12]

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The periodic absence of responsive care damages the development of the brain which uses science to discuss that neglect can give rise to even more harm to a young child's growth than physical trauma, largely because of the significant consequences of persistent high stress as they had been found.^[13]

Nail biting or onychophagia is a common stress-relieving oral habit. Onychophagia, the habit of biting one's nails is commonly observed in both children and young adults. Nail biting includes biting the cuticle and soft tissue surrounding the nail as well as biting the nail itself, onychophagia is a nail disease caused by repeated injuries of nails. Nail biting as auto destruction and onychophagy are its most aggressive forms. The need to bite or eat fingernails is related to a psycho emotional state of anxiety. A nail biting child is exhibiting an evolutionary disturbance related to the oral stage of psychological development.^[14]

Nail biting had been described by Williams^[15] as a nervous habit often related with anxiety, boredom, and defeat or working on difficult mission. Many studies had stated that nail biting is one of warning signs of child maltreatment as self-calming behaviors as a result of anxiety, stress, terror, pain, sadness, tension, seclusion and inactivity.^[16]

Nail biting children are at risk of developing malocclusion of the anterior teeth. Non-physiological forces acting on the teeth, such as those from nail biting, can expedite resorption or cause apical root resorption. Dental examinations of these patients can show crowding, rotation, and attrition on the incisal edges of the mandibular incisors and protrusion of the maxillary incisors.^[14] These malocclusions were created by pressures from the onychophagia habit. The forceful and continuous habit of nail biting causes alveolar destruction in the area of the involved teeth.^[17] A study in north of Iraq found that the proportion of malocclusion that need for highly desirable or mandatory treatment need in female was about 23.2%.^[18]

To the best of our knowledge, no Iraqi study has evaluated the effects of emotional abuse on nail biting or examined its relationship to teeth alignment. Therefore, this study was conducted to determine the relationships between emotional abuse, nail biting and malalignment of teeth.

MATERIALS AND METHODS

A comparative study was conducted among 522 female secondary students aged 13–15 years in Kirkuk, Iraq over four months from November 2022 to February 2023 distributed across different economic and social levels. The ethical approval committee at the College of Dentistry, University of Baghdad approved the study (project no. 684322). Before data gathering, a legal permit was also obtained from the Kirkuk Education Directorate to carry

out the study and to ensure cooperation of their staff and teachers.

Assessment of emotional abuse

The Glaser criteria^[8] were used to assess emotional abuse. This tool consists of 44 questions answered on a Likert scale. The original English version of the emotional abuse questionnaire was translated by experts in English language into Arabic and the number of questions was reduced to 30 using input from psychologists and psychiatrists.^[18,19] As the reliability and validity of this questionnaire needed to be assessed, it was initially administered to (150 female students) and the answers were sent to a group of experts (psychologists and psychiatrists) in the Department of Psychological Research at Baghdad University for review. These experts adjusted the questions to improve compatibility with our community and to be increase the level of students understanding. Ultimately, the number of questions was reduced to 24. Before collecting the data, the students were informed of the nature of the study, told that their data would be kept confidential and only used for scientific research purposes, and that it would not affect their academic evaluations. The students were also given the opportunity to ask any questions at this time. All students were required to have a consent form assigned by their parents, before completing the questionnaire. After collecting the degrees for each case sheet answered by students some answers were given reverse degree and then the final degree obtained for each student. The level of emotional abuse categorized mild if the score on the questionnaire was 24–26, moderate if the score was 27–42 and severe if the score was 43–72. The maximum possible score on the questionnaire was (72) degree for each paper of the questionnaire.

For the assessment of nail biting in groups of study another questionnaire was given to the student and other was sent for their parents. No technical terms or medical terms were used in the questionnaire for the student and parent to avoid a high incidence of uncertainty or no opinion responses. Therefore, simple words and plain language were used in the questionnaires. Questions in a questionnaire were easy and pleasant to answer to encourage respondents to continue and complete the survey.^[20]

Assessment of malalignment

Malalignment of the teeth is measured according to WHO in 1997 which include crowding of anterior teeth from canine to another canine for both upper and lower jaw.^[21]

Scoring for crowding

- Crowding means the space that available to accommodate four incisor teeth is insufficient to be in proper alignment.

- Crowding is not record if the four incisors are in proper alignment but either or both canine tooth are displaced.

Score	Criteria
0	no crowding in both jaw for anterior segment
1	crowding in one jaw for anterior segment
2	crowding in both jaw for anterior segment

Statistical analysis

Data analyses were performed using statistical package for the social sciences v.22 (Chicago, Illinois). For quantitative variables the means, standard errors (SE) were calculated, whereas frequencies and percentages were used for categorical variables. Independent sample *t* tests were used for comparisons between two groups. Pearson’s correlation was used to determine the linear correlation between two quantitative variables. Analysis of variance test was used for a quantitative dependent variable by a single factor (independent) variable. Chi-square was used for analyses of contingency tables between two categorical data when the sample size is large. A difference was considered statistically significant if *P* ≤ 0.05.

RESULTS

The occurrence of child abuse was found to be 100%. Therefore, the total sample was subdivided into child abuse according to Likert Method so the levels of child abuse are mild if degree 24–26 which consist of 50 children with percentage of (9.58%), moderate if degree 27–42 which consist of 392 children with percentage of 75.10%, and

severe if degree 43–68 which consist of 80 children with percentage of 15.32% [Table 1].

Table 2 shows the distribution of sample according to parent’s education level that reveal in mild level of abuse the percentage of mothers that completed secondary school was higher than the percentages of mothers that were completed other level of education (not educated, completed primary schools and college). The same figure was found for the percentage of mothers at moderate level of abuse while at severe level of abuse the percentage of mother that were completed primary school only was higher than the other levels of education; however, the results were not significantly associated. For father education at mild level of abuse the percentage of fathers that were completed college was higher than the percentage of fathers that were completed other level of education, the same figure was found for percentage of fathers education at moderate levels of abuse, whereas at severe level of abuse the percentage of fathers that who completed secondary school was higher than other levels of education and the results were not significantly associated.

The distribution of student with malalignment according to level of abuse is shown in Table 3. Table 3 illustrates that crowding in one arch was with higher occurrence in moderate level of abuse (19.90%) and with lower occurrence was in mild level of abuse (12.00%), whereas the crowding in two arches has the highest occurrence in mild level of abuse than in moderate and severe level of abuse. For total sample the presence of crowding in two arch (21.84%) higher than in one arch (18.58%). however

Table 1: Levels of the emotional abuse scale depending on standard of quarters

Levels	Cutting grades	Raw grade	Grading limits	No.	Percentage
Mild	<27	24–26		50	9.58
Moderate	27–42	40–60		392	75.10
Severe	43–68	>60		80	15.32
Total				522	100

Table 2: Distribution according to abuse level

	Mild		Moderate		Severe		Chi square	P	Total	
	No	%	No	%	No	%			No	%
Mother education										
Not educated	12	11.76	74	72.55	16	15.69	5.184	0.520	102	19.54
Primary school	7	5.00	109	77.86	24	17.14			140	26.82
Secondary school	17	10.90	118	75.64	21	13.46			156	29.89
College or above	14	11.29	91	73.39	19	15.32			124	23.75
Father education										
Not educated	2	3.64	43	78.18	10	18.18	8.173	0.226	55	10.54
Primary school	8	7.84	76	74.51	18	17.65			102	19.54
Secondary school	15	8.93	123	73.21	30	17.86			168	32.18
College or above	25	12.69	150	76.14	22	11.17			197	37.74

Table 3: The distribution of students with teeth malalignment according to level of abuse

	Crowding grade by abuse						Chi square	P	Total	
	Mild		Moderate		Severe				N	%
	No	%	No	%	No	%				
Absent	31	62.00	231	58.93	49	61.25	2.372	0.668	311	59.58
One arch	6	12.00	78	19.90	13	16.25			97	18.58
Two arch	13	26.00	83	21.17	18	22.50			114	21.84

Table 4: The distribution of students according to nail biting by abuse level

	Distribution according to nail biting by abuse						Chi	P	Total	
	Mild		Moderate		Severe				N	%
	No	%	No	%	No	%				
No	29	58.00	175	44.76	26	32.50	9.215	0.056	230	44.15
Present till now	16	32.00	140	35.81	35	43.75			191	36.66
Present but stop	5	10.00	76	19.44	19	23.75			100	19.19

Table 5: Mean of abuse score by nail biting

	Absent		Present till now		Present but stop		F	P
	Mean	SE	Mean	SE	Mean	SE		
Abuse	33.091	0.473	35.545	0.606	35.730	0.814	6.668	0.001

Table 6: Multiple comparisons HochberGt2

Nail biting	Mean difference (I-J)	P value
Absent of habit	Present of habit	0.004
	Present of habit previously but stopped	0.015
Present of habit	Present of habit previously but stopped	0.996

the same table illustrates no significant association between child abuse and malalignment of teeth.

The distribution of sample according to level of abuse by occurrence of nail biting habit is presented in Table 4. Table 4 shows that the percentage of nail biters composed (36.66%) from the total sample. The higher percentage of nail biting occurrence was at severe level of abuse (43.75%) and this percentage of occurrence decrease with decreasing level of abuse and so the lowest percentage of nail biting occurrence was at mild level of abuse (32.00%). however the association between nail biting and abuse condition was not significant.

According to Table 5 there are significant differences in abuse score among nail biting as the occurrence of habit increases with increased severity of abuse. Further analyses using HochberGt2 test shows that the significant difference was found between absent of habit and present of habit. In addition, there is a significant difference between absent of habit and present of habit previously but stopped as shown in Table 6.

The distribution of students with malalignment according to level of abuse by nail biting habit is shown in Table 7. Table 7 shows that the significant association between nail biting and abuse level was found only among students without malalignment of teeth however this association not found among student with malalignment for one arch or two arches.

DISCUSSION

Emotional abuse may be the most damaging form of maltreatment due to causing damage to a child's developing brain affecting their emotional and physical health as well as their social and cognitive development.^[22]

In the present study, a moderate level of emotional abuse was observed most commonly among Iraqi children in Kirkuk. These results agree with a previous Iraqi study^[23] which reported that the percentage of children experiencing severe abuse was higher than that for mild abuse. This may be attributed to difficulties and stress making parents psychologically tired and depressed,

Table 7: Distribution of students according to teeth malalignment by level of abuse related to nail biting habit

Crowding	Nail biting	Crowding grade by abuse						Chi	P
		Mild		Moderate		severe			
		No	%	No	%	No	%		
Absent	Absent	21	67.74	99	43.04	15	30.61	10.740	0.005*
	Present	10	32.26	131	56.96	34	69.39		
One arch	Absent	2	33.33	39	50.00	4	30.77	2.96	0.351
	Present	4	66.67	39	50.00	9	66.67		
Two arch	Absent	6	46.15	37	44.58	7	38.89	0.226	0.893
	Present	7	53.85	46	55.42	11	61.11		

*Significant

which is reflected in children and can affect their mental health.^[24-26] Indeed DYE has previously reported that emotional abuse has moderate positive correlations with depression, anxiety, stress, and neurotic personality.^[22]

Mental health problem was a risk factor of poverty and vice versa that established a cycle.^[27] Low education level was one fundamental factor of the cycle.^[28] The problem caused by low education level did affect not only an individual but also the family.^[29] Levels of formal education could raise the learners'

awareness about themselves and their families' psychological development and well-being.^[30] A study in Iraq found that the education concerns general knowledge and health not only for oral health so the high educational level parents have less effect by oral disease in addition to general health.^[31] Another study found that the parents have got an important role in improving and maintaining the oral health status and behavior of the children because the support of family is crucial in the development of children's habits in relation to health.^[32] In the present study, the level of education of mothers had no obvious effect on level of abuse and there were no high difference on severity of abuse if the mothers were completed high level of education or low level of education whereas the levels father's education had obvious effect on level of abuse because the level of father's education decrease with increasing severity of abuse that mean at mild level of abuse the numbers of fathers that completed college was higher than other levels of education and these results agreed with other studies who showed that fathers with higher education had high rates of participation in any activities with their children because the high level of education motivated fathers to be open and accepting of their children, and the higher education fathers had better plan for supporting their children's career, moral, spiritual, and intellectual development. The father-daughter relationship influences the daughter's future emotional development, especially in her adulthood. A father's education has longitudinal effects on his children's happiness, but a mother's education has no longitudinal effects on her children's happiness.^[33] A good father-daughter relationship is a protective factor that prevents

the daughter from the risk of depression in her academics, career, a social relationships.^[34,35] Therefore, a father's education is essential to fostering a good relationship because it allows the father to know his significant parenting role.^[36,37]

The most striking findings that emotional and behavioral problems are more common in children with nail biting than those without this habit. In the current study, the higher percentage of nail biting occurrence was at severe level of abuse and this percentage of occurrence decreases with decreasing level of abuse and so the lowest percentage of nail biting occurrence was at mild level of abuse; this was in line with other study used. The Strengths and Difficulties Questionnaire (SDQ) revealed that children nail biting is related with higher rates of emotional problems than children without in school age children.^[38] This agrees with a previous Iraqi study on children aged 10–11 years which showed that child abuse was associated with thumb sucking and nail biting, which further suggests that poor oral habits developed to release stress, anxiety, and nervousness.^[39-41] Nail-biting allows children relieve their anxiety, loneliness, and deprivation of safety feeling and love.^[42] Many researchers while explaining the cause of this habitual disorder have referred to psychological and psychiatric issues, and nail biting is suggested to be reflective of underlying psychopathology.^[43] As an explanation for their relationship, early researchers also considered nail biting as a stress-relieving oral habit.^[44]

Oral habits as an important environmental risk factor associated with malocclusion particularly if they extended after preschool age.^[45,46] In the current study the occurrence of two arch crowding in relation to presence of nail biting was higher among severe and moderate levels of abuse than mild level of abuse, and the presence of one arch crowding according to present of nail biting also was higher among severe and moderate level of abuse than mild level of abuse. These results also agree with previous studies.^[47-49]

CONCLUSION

The occurrence of emotional abuse in our community can be considered quite high as moderate and severe levels of

abuse were reported more frequently than mild levels of abuse. It has an effect on nail biting and malalignment of teeth as nail biting was higher in higher level of abuse than lower.

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Conflicts of interest

There are no conflicts of interest.

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