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Original Article

Dentistry Section

Impact of Dental Disorders and its Influence on Self Esteem Levels among Adolescents

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ABSTRACT

Introduction: Self esteem is more of a psychological concept therefore, even the common dental disorders like dental trauma, tooth loss and untreated carious lesions may affect the self esteem thus influencing the quality of life.

Aim: This study aims to assess the impact of dental disorders among the adolescents on their self esteem level.

Materials and Methods: The present cross-sectional study was conducted among 10 to 17 years adolescents. In order to obtain a representative sample, multistage sampling technique was used and sample was selected based on Probability Proportional to Enrolment size (PPE). Oral health assessment was carried out using WHO type III examination and self esteem was estimated using the Rosenberg Self Esteem Scale score (RSES). The descriptive and inferential analysis of the data was done by using IBM SPSS software. Logistic and linear regression analysis was executed to test the individual association of different independent clinical variables with self esteem.

Results: Total sample of 1140 adolescents with mean age of 14.95 ±2.08 and RSES of 27.09 ±3.12 were considered. Stepwise multiple linear regression analysis was applied and best predictors in relation to RSES in the descending order were Dental Health Component (DHC), Aesthetic Component (AC), dental decay {(aesthetic zone), (masticatory zone)}, tooth loss {(aesthetic zone), (masticatory zone)} and anterior fracture of tooth.

Conclusion: It was found that various dental disorders like malocclusion, anterior traumatic tooth, tooth loss and untreated decay causes a profound impact on aesthetics and psychosocial behaviour of adolescents, thus affecting their self esteem.

Keywords: Dental caries, Malocclusion, Tooth loss

INTRODUCTION

Adolescence is a transitional stage of physical and psychological human development, closely associated with the teenage years. The vast majority of the world's adolescents (88 percent) live in developing countries. India constitutes approximately 243 million adolescents, which forms the quarter of the country's population [1]. Adolescents in contrast to children [2] or adults [3] appear to be characterized more by the absence than by the presence of class gradients in health.

Oral health has a substantial effect on people's general health and well being. Oral health in adolescent patient is recognized as having distinctive needs [4] due to a potentially high caries rate, increased risk for traumatic injury, an increased aesthetic desire and awareness and unique social and psychological needs [5].

Social psychology is affected by the physical appearances, self concept and social acceptance of individuals. It is being claimed that one major constituent of self concept is self esteem [6]. Self esteem can be understood as sum of one's self confidence, self worth and self respect [4,7]. The individual's health along with other influencing factors play a vital role in building the self esteem dimension. Oral health being an integral part of general health can also influence the level of self esteem, which has been widely recorded with help of RSES.

During the adolescence the facial features and appearance plays a major role towards self perceived appearance [8,9]. Among adolescents social relationship is directly dependent on physical attractiveness [10] hence aesthetic alteration can have a direct impact on self esteem and ultimately quality of life [11,12]. However, there are very limited studies which provide us with an evidence to suggest that self esteem is enhanced after orthodontic treatment [13,14]. As self esteem is more of a psychological concept therefore, even the common dental disorders like dental trauma, tooth loss and untreated carious lesions may affect the self esteem which may further influence the quality of life of an individual.

As adolescence is a foundation stone for further avenues in life, thus, this study aims to assess the impact of dental disorders among the adolescents on their self esteem level.

MATERIALS AND METHODS

The present study was conducted among 10 to 17 years adolescents in cross-sectional design for which the ethical clearance was obtained from Ethical Review Board of Surendera Dental College and Research Institute, Sriganganagar. The required cluster of adolescent population was targeted from the children enrolled in various schools; written consent was taken from the administrators of the selected schools and the guardians of the students for the research.

In order to obtain a representative sample, multi-stage sampling technique was used, for which the Srigangangar city was divided into four different zones (i.e., north, south, east and west) in first stage. Later, four wards were selected randomly from each zone. From each selected ward a school was selected based on PPE size making the initial number of selected school to 16. According to PPE, the probability of schools to be considered in the study depend on the total strength of the children; schools with higher enrolment had better chances of inclusion in the study. Out of 16 total schools, two schools refused to participate, giving an initial school participation rate of 87.5%. To ensure that the sample remained representative

for the population, an appropriate replacement of the schools was done.

Oral health assessment was carried out among a total of 1784 students aged 10 to 17 years from the selected schools. Among them 1245 students were diagnosed with either of the dental disorders such as dental caries, dental trauma, missing teeth and malocclusion, were further send an invitation consisting of written consent for participation in the next segment of the present study. The selected students who could not obtain the parental consent or undergoing orthodontic treatment or suffering from systemic ailments were excluded from the study. Considering the exclusions final sample size was 1140, that went through a detailed intraoral examination followed by questionnaire related to self esteem. Intraoral examination was performed by two calibrated examiners. WHO type III examination was carried out under natural light using mouth mirrors and sharp probes [15]. The intra oral examination comprised of:

a) All maxillary and mandibular anterior teeth from canine to canine were examined for traumatic injury using a modified version of Ellis's classification [16].

b) Number of missing teeth, location of missing teeth (maxillary and/or mandible), and zone of missing teeth to be replaced (masticatory and/or aesthetic) were examined. The aesthetic zone was defined as incisors, canines and 1st premolars in the upper jaw and incisors and canines in the lower. The masticatory zone was defined as the 2nd premolars and the 1st and 2nd molars in the upper jaw and both premolars and 1st and 2nd molars in the lower jaw [17].

c) Number, location (maxillary and/or mandible) and zone of untreated carious lesion (masticatory and/or aesthetic) was examined using WHO criteria [18].

d) Index of Orthodontic Treatment Need (IOTN) index [19] was used for assessment of malocclusion. Both the Dental Health Component (DHC) and the Aesthetic Component (AC) of the IOTN were recorded by the author who had previously been calibrated in the use of the IOTN. The DHC of the IOTN ranks malocclusions according to the severity of various occlusal traits into five grades. Grades 1 and 2 represent no or little need, Grade 3 a borderline need, and Grades 4 and 5 a definite need for treatment. The AC of the IOTN consists of 10 coloured photographs with different levels of dental attractiveness ranked from the most attractive (Grade 1) to the least attractive (Grade 10). Grades 1–4 represent no or little aesthetic need, Grades 5-7 borderline aesthetic need, and Grades 8–10 definite aesthetic need for orthodontic treatment [20].

To ensure the diagnostic reliability, the process of calibrating the two examiners for the clinical conditions was conducted by a Gold Standard examiner before the main study was carried out. The training session consisted of evaluating 30 adolescents, for diagnosing and recording dental disorders (dental trauma, tooth loss, untreated carious lesion or malocclusion). The inter examiner Kappa values of 0.95 and 0.89 were obtained for the two examiners. After the intra oral examination, the RSES was distributed among the students with a prior detailed description of the inventory in regional language for better understanding. The RSES scale [21] consists of 10 items regarding self esteem. Each item was rated on a 4-point response scale, 1 being 'strongly agree' and 4 'strongly disagree'. Five items were positively worded (item 1, 3, 4, 7, 10), and 5 were negatively worded (item 2, 5, 6, 8, 9). The scores for the positively worded items were inversed in the analysis so that a score of 1 ('strongly agree') was set to 4. Addition of the item scores gave an overall score from 10-40; with higher score indicating higher self esteem [22].

STATISTICAL ANALYSIS

The descriptive and inferential analysis of the data was done by using IBM SPPSS. Statistics Windows, Version 20.0. (Armonk, NY: IBM Corp). Logistic and linear regression analysis was executed to test the individual association of different independent clinical variables with self esteem. The effect of each independent variable was assessed adjusting for that of all others in the model.

RESULTS

The [Table/Fig-1] depicts the distribution of descriptive and clinical characteristics of 1140 subjects with mean age of 14.95. Mean RSES score among adolescent subjects was found to be 27.09. While evaluating means RSES score in males and females, it was found to be 25.16 and 29.02 respectively (not shown in table). A total of 172 subjects had trauma in their anterior teeth, among these most of them had Ellis class 1 trauma (11.2%). Maxillary teeth loss (4.30%) was found to be more as compared to mandibular with most them falling in the category of aesthetic zone (4.04%). Untreated carious lesions were maximum in masticatory zone of mandibular region as compared to maxillary. While evaluating malocclusion through DHC and AC component need for treatment was required by 649 and 608 respectively.

[Table/Fig-2] represents Stepwise multiple linear regression analysis, which was executed to estimate the linear relationship between RSES and various independent variables, which revealed that the best predictors in the descending order was DHC, AC, Decay (aesthetic zone), Decay (masticatory zone), Tooth loss (aesthetic zone), Tooth loss (masticatory zone), Anterior fracture of tooth. IOTN DHC level

Variables	N (%)
GENDER	
Male	496 (43.5)
Female	644 (56.5)
ANTERIOR TRAUMATIC TOOTH	172 (15.09)
Ellis class 1	128 (11.2)
Ellis class 2	40 (3.5)
Ellis class 3	4 (0.4)
TOOTH LOSS	80 (7.02)
TOOTH LOSS LOCATION	
Maxillary	49 (4.30)
Mandible	31 (2.72)
ZONE OF TOOTH LOSS	
Masticatory	34 (2.98)
Aesthetic	46 (4.04)
UNTREATED CARIOUS LESION	568 (49.82)
DECAY LOCATION	
Maxillary	208 (18.25)
Mandible	516 (45.26)
DECAY ZONE	
Masticatory	497 (43.60)
Aesthetic	84 (7.37)
IOTN* (DHC)**	
Little need	507 (78.12)
Borderline need	112 (17.25)
Definite need	30 (4.62)
IOTN (AC)***	
Little need	524 (86.18)
Borderline need	37 (6.08)
Definite need	47 (7.73)
RSES (Mean ± SD)	27.09 ± 3.12
AGE (Mean ± SD)	14.95 ± 2.08

[Table/Fig-1]: Descriptive and clinical variables of subjects.
*-Index of orthodontic treatment need, **-Dental Health Component, ***-Aesthetic Component

Model	R	R^2	Adjusted R^2	SE	R^2 Change	p
1	0.59	0.41	0.41	3.72	0.40	*0.001*
2	0.62	0.45	0.45	3.74	0.05	*0.04*
3	0.68	0.53	0.53	3.77	0.06	*0.001*
4	0.71	0.57	0.57	3.78	0.07	*0.02*
5	0.78	0.67	0.67	3.81	0.06	*0.001*
6	0.83	0.74	0.74	3.84	0.08	*0.01*
7	0.86	0.78	0.78	3.85	0.10	*0.01*

[Table/Fig-2]: Multiple linear regression model for RSES.
1. Predictors: Dental health component (DHC)
2. Predictors: DHC, Aesthetic component (AC)
3. Predictors: DHC, AC, Decay (Aesthetic zone)
4. Predictors: DHC, AC, Decay (Aesthetic zone), Decay (Masticatory zone)
5. Predictors: DHC, AC, Decay (Aesthetic zone), Decay (Masticatory zone), Tooth loss (Aesthetic zone)
6. Predictors: DHC, AC, Decay (Aesthetic zone), Decay (Masticatory zone), Tooth loss (Aesthetic zone), Tooth loss (Masticatory zone)
7. Predictors: DHC, AC, Decay (Aesthetic zone), Decay (Masticatory zone), Tooth loss (Aesthetic zone), Tooth loss (Masticatory zone), Anterior fracture of tooth

explained 40.1% of the variance in the model and the cumulative variance provided by all the predictors {(DHC, AC, Decay (aesthetic zone), Decay (masticatory zone), Tooth loss (aesthetic zone), Tooth loss (masticatory zone), Anterior fracture of tooth} was 78%.

DISCUSSION

Self esteem of a person can be understood as a capability to accept the worthiness of oneself. It is recognized to play a critical role in one's mental health and psychopathology such as symptoms of depression [23]. However, there is still lack of knowledge towards how individuals evaluate themselves, especially an adolescent [24]. Adolescence is a crucial stage of life in which prevention from both current impairment and future illness is possible. Thus, by understanding the probable risk factors one can identify adolescent who might need an early intervention, which will help in development of a productive adulthood. Thus, this study aims to identify the impact of dental disorders i.e., malocclusion, anterior traumatic tooth, tooth loss and untreated decay on self esteem of adolescents using RSES. Among the many devices the self report version of the RSES is most widely used measure to access self esteem, globally [21]. In addition; the RSES displays a transparent one dimensional factor structure [25].

RSES scale levels was found to be more in females than males which was in agreement with the study of Birkeland K et al., [26]. These results could be accepted as females placed themselves at the more attractive end of the scale and place more emphasis on their looks than males, which was in line with another study conducted by Alhaija ESA et al. [27].

The results of this study showed a significant association between self esteem and perceived dental aesthetics, as individuals who perceived themselves as 'less attractive' have presented with lower self esteem scores than those who saw themselves as 'attractive'. This implies that self esteem might be affected by self perceived aesthetics. Similar results were seen by Claudino D and Traebert J [8] and Badran SA [4] while study by Sheikh A et al., does not support any association between malocclusion and self esteem [28], this might be because severe malocclusions are better recognized by person.

It was seen in the present study, from the multivariate analyses that though DHC and AC component of IOTN has maximum impact on self esteem but other dental disorder like decay in tooth, tooth loss and anterior fracture of tooth also had potential influence on self esteem of the study population.

Decayed teeth and tooth loss have substantial effect on quality of life and even the well being of the person. Present study shows a significant influence of decayed teeth and tooth loss on self esteem. Authors, feel that the dental caries has impact on overall health of a person. Pain in oral cavity can affect speaking ability, eating, sleeping, swallowing and the altered appearance, leading to undermine self esteem. Similarly, missing teeth can interfere with chewing ability, diction, and aesthetics. Low self esteem related to tooth loss can lead to inability to socialize, perform work and daily activities [29]. According to the authors, abnormalities in the aesthetic zone, affects adolescent psychosocially, which, in turn, may reduce their self esteem.

Anterior teeth fractures can affect the individuals' oral aesthetics. Facial and dental attractiveness represents an important element of quality of life [11]. Due to easy viewing in comparison to the back teeth, trauma in anterior teeth easily lead to dissatisfaction, with oral aesthetics. Individuals who perceive themselves as having poor oral aesthetics have low self esteem.

While interpreting the outcome of this study, authors came across certain limitations that the cross-sectional design of the study prevents establishing any concrete relationship between dental disorders towards self esteem. According, to authors for establishing a substantial relationship between dental disorders and self esteem, studies with longitudinal design are advocated in order to have a better understanding regarding the post treatment effects on the psychological concept of this age group with special needs.

LIMITATION

As the study is mainly based on adolescent reports, responses to the questionnaire may have been influenced by whatever else was on the participants' mind at the time the question was asked. Further, it is possible that individual participant replies are influenced by response style and that the same response bias is at work in each person's answers to the respective questions, leading to an over or underestimation of the contribution of oral health to self esteem.

CONCLUSION

Dis-satisfaction with dental appearance is a strong predictor for low self esteem. It was found that various dental disorders like malocclusion, anterior traumatic tooth, tooth loss and untreated decay cause a profound impact on aesthetics and psychosocial behaviour of adolescents thus, affecting their self esteem.

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