DOI: https://doi.org/10.54393/pjhs.v4i01.462

PAKISTAN JOURNAL OF HEALTH SCIENCES

https://thejas.com.pk/index.php/pjhs

Volume 4, Issue 1 (January 2023)

Original Article

Impact of Malocclusion on children studying in Government High Schools in Mardan

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ARTICLE INFO

Key Words:
OASIS (Oral Aesthetic Subjective Impact Scale), QoL (Quality of Life), Mardan

How to Cite:
Qazi, N. ul A. ., Gul, H. ., Ali Shah, S. W. ., Salman Khan, M. ., Afridi, U. ., & Falak, N. . (2023). Impact of Malocclusion on children studying in Government High Schools in Mardan: Impact of Malocclusion on Children. Pakistan Journal of Health Sciences, 4(01). https://doi.org/10.54393/pjhs.v4i01.462

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Received Date: 26th December, 2022
Acceptance Date: 29th January, 2023
Published Date: 31st January, 2023

ABSTRACT

The facial looks have an impact on self-esteem and emotional well-being, playing an important role in social interactions. Changing in these functions will therefore affect the standard of living of children. **Objective:** The purpose of the study was to evaluate the effect of malocclusion on psychological well-being on school going children using the OASIS aged between 13-17 years attending government high schools in Mardan District. **Methods:** This was a Descriptive Cross-Sectional Survey conducted at the government schools of Mardan. It was carried out within a period of six month from December, 2021 till May 2022 after consent from Institutional Review Board (IRB) of Bacha Khan Medical College, Mardan vide No. 39/2021/ERB. The sample was chosen using a random cluster sampling technique with probability related to size. The design effect was taken into account as the cluster sampling approach was applied, and a sample size of 850 was achieved. (600 boys and 250 girl participants were involved respectively from government high schools). **Results:** A total of 850 subjects were included in the study of which there were 600 (70%) males and 250 (30%) were females. The age range was 13-17 years with a mean age 15 years ±1.37 (S.D) years. **Conclusions:** Angle's malocclusion was established in 73.1% of the subjects. The least affected psychologically was normal occlusion with (100%) good psychological well-being followed by Angle's class I malocclusion having good psychological well-being (76.8%).

INTRODUCTION

Quality of life is a concept that includes several realms, such as the subjective recognition of physical, psychological, and social functions as well as a personal sense of well-being [1]. Oral health is pivotal for good quality of life because this may have an influence on nutrition, smile, speech and socialization of children. The facial looks have an impact on self-esteem and emotional well-being, playing an important role in social interactions [2]. Changing in these functions will therefore affect the standard of living of children [1]. Occlusion is defined as "the relationship of the maxillary and mandibular teeth as they are brought into functional contact" and "malocclusion is the state of any deviation from the normal or ideal occlusion", as defined in the Glossary of Orthodontic Terms. Malocclusion is one of the most common problems influencing the human oral cavity after tooth decay, gingivitis and dental fluorosis [3]. Malocclusion is considered a problem related to the maturation of mandibular and maxillary bones during childhood [4]. This type of abnormality can have functional, aesthetic or psycho-social impacts, with a negative effect on the daily life of those affected [5]. Malocclusion can be evaluated as a public health problem, given its high frequency and its capability for prevention and treatment [7]. Malocclusion

DOI: https://doi.org/10.54393/pjhs.v4i01.462

can lead to functional problems, with adverse consequences for dental aesthetics and psycho-social aspects on the lives of children.[7]Children begin early to show their feelings about their dental appearance [8]. It is important to understand that even at an early age, the negative impact of malocclusion can contribute to the search for improved social and emotional aspects of children [9]. People who tolerate less from dental and facial problems are considered socially more efficient and better adjusted intellectually and psychologically [10]. The negative impacts associated with malocclusion can be mainly applicable for children who can develop the target of teasing, name calling and threatening targets. Estimating the negative effect caused by malocclusion supports to track down the requirements of individuals in a society and, therefore, more effectively directs public health steps and strategies for the anticipation and management of these occlusal conditions [11]. The diagnosis and early treatment of people with malocclusion is vital for public health as it has a direct impact on the cost of treatment as preventive and interpersonal orthodontic practices, even if applied in a limited way, can improve occlusion during pre-adolescence and adolescence [12]. Malocclusion managements are usually conceded out during adolescence, when the permanent dentition is erupting [13]. At this specific age, adolescence is also seen as the moment when the specific has started to feel that his / her presence is of great significance and that he / she has acquired the liberty to request or refuse orthodontic management self-sufficiently [14]. Therefore, it is reasonable to assume that among early childhood, constant but untreated malocclusions can have social and psychological effects on the individual's QoL [15]. The influence of oral ailments or complaints on oral health-related quality of life (OHRQOL) can be evaluated using quantitative estimation such as questionnaires. The purpose of the study was to evaluate the impact of malocclusion on psychological well-being on school going children using the OASIS aged between 13-17 years attending government high schools in Mardan District.

METHODS

This was a Descriptive Cross-Sectional Survey conducted at the government schools of Mardan. It was carried out within a period of six month from December, 2021 till May 2022 after consent from Institutional Review Board (IRB) of Bacha Khan Medical College, Mardan vide No. 39/2021/ERB. The sample was chosen using a random cluster sampling technique with probability related to size. The design effect was taken into account as the cluster sampling approach was applied, and a sample size of 850 was achieved. (600 boys and 250 girl participants were included respectively from government high schools). Students who were between 13 – 17 years old and with complete eruption of permanent 1st molar of one arch to permanent 1st molar of another arch were considered in the sample. While children with past history of jaw trauma or who were getting or had received orthodontic treatment including those with tooth Malformation/ tooth discoloration/presence of filling were excluded from the sample. Children with dental anxiety and learning disabilities were also excluded. Students were clinically examined at a school chair following WHO cross infection guidelines. Maxillary and mandibular 1st permanent molar to molar occlusal relationship was directly observed in the mouth of subject and recorded as Class I, Class II (Division I and Division II) and Class III on both sides respectively in the Data Collection sheet. Requirements for examination procedure included a school chair, head torch and disposable instruments. Subject's cheek was retracted and his/her upper 1st molar to lower 1st molar occlusion relation was recorded on both sides. The data collected was computed using the Statistical Package for Social Sciences (SPSS) software for windows (version 26.0). Descriptive statistics in the form of mean, frequencies and rates were computed for the age, gender of the children and malocclusion classes and psychological well-being. Chi square test was used to associate the effect on psychological well-being of malocclusion classes between two genders. p-value of < 0.05 was measured as statistically significant.

RESULTS

A total of 850 subjects were involved in the study of which there were 600 (70%) males and 250 (30%) were females. The age range was 13-17 years with a mean age 15 years ±1.37 (S.D) years. Table 1 shows the gender wise distribution with normal occlusion and malocclusion classes. Chi square test was applied to associate gender difference in malocclusion status of the school children. A highly statistically significant (p-value <0.01) difference was identified.

Malocclusion status	Gender		Total N (%)	p-value
	Male N (%)	Female N (%)		
Normal	188 (31.3%)	41 (16.4%)	229 (26.9%)	<0.01
Malocclusion	412 (68.7%)	209 (83.6%)	621 (73.1%)	
Total	600 (100%)	250 (100%)	850 (100%)	

Table 1: Gender wise distribution between Normal occlusion and Malocclusion

Normal occlusion was found in 229 (26.9%) students; while malocclusion was reported in (621) 73.1% students of the total sample size. A total of 412 (68.7%) male students and 209 (83.6%) female students were found to have any form of malocclusion while a total of 188 (31.3%) male students and 41 (16.4%) female students were having normal occlusion.

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Angle's class I malocclusion had the maximum frequency of 372 (43.8%) followed by normal occlusion 229 (26.9%), class II division 1 88(10.4%), class II division 2 59(6.9%), class III 64(7.5%), Class II subdivision 34 (4%) and Class III subdivision 4(0.5%) cases respectively. A total of 271 (45.1%) male students had class I malocclusion, 55 (9%) had class II division 1, 31(5%) had class II division 2, 29 (4.8%) had class III, 22 (3.6%) had Class II subdivision while 4 (0.7%) had class III subdivision respectively. Similarly, a total of 101 (40.4%) female students had class I malocclusion, 33 (13.2%) had class II division 1, 28 (11.2%) had class II division 2, 35 (14%) had class III, 12 (4.8%) had Class II subdivision respectively while no cases were reported of class III subdivision (Table 2). Highly statistically significant difference was recognized when chi square test was used to associate different Angle's malocclusion types in both genders (p-value <0.01). The overall psychological well-being of the students was good in 600 (70.5%), adequate in 177 (20.8%), and bad in 73 (8.6%), according to the data. The overall percentage of male students with high psychological well-being was 435 (72.5%), whereas the percentages of male students with adequate and bad psychological well-being were 116 (19.3%) and 49 (8.2%), respectively. While 165 (66%) of the female students reported having good psychological health, just 61 (24.4%) and 24 (9.6%) of the female students reported having adequate or poor psychological health. When the chi square test was used to assess psychological well-being between the sexes, a very statistically significant difference was discovered (p-value 0.01) (Table 2).

Malocclusion	Gender		Total N (%)	p-value
	Male N (%)	Female N (%)		
Normal Occlusion	188(31.33%)	41 (16.4%)	229 (27%)	< 0.01
Class I	271(45.2%)	101 (40.4%)	372 (43.7%)	
Class II (Div 1)	55 (9.16%)	33 (13.2%)	88 (10.3%)	
Class II (Div 2)	31 (5.16%)	28 (11.2%)	59 (7%)	
Class III	29 (4.83%)	35 (14%)	64 (7.5%)	
Class II Subdivision	22 (3.66%)	12 (4.8%)	34 (4%)	
Class III Subdivision	4 (0.66%)	0 (00%)	4 (0.5%)	
Total	600 (100%)	250 (100%)	850 (100%)	

Table 2: Gender wise distribution of Angle's Malocclusion among the subjects (N=850)

The overall psychological well-being of the students was good in 600 (70.5%), adequate in 177 (20.8%), and bad in 73 (8.6%), according to the data. The overall percentage of male students with high psychological well-being was 435 (72.5%), whereas the percentages of male students with adequate and bad psychological well-being were 116 (19.3%) and 49 (8.2%), respectively. While 165 (66%) of the female students reported having good psychological health, just 61 (24.4%) and 24 (9.6%) of the female students reported having adequate or bad mental health, respectively (Table 3).

Gender	OASIS Categories			Total N (%)
	Good N (%)	Satisfactory N (%)	Poor N (%)	
Male	435 (72.5%)	116 (19.33%)	49 (8.17%)	600 (100%)
Female	165 (66%)	61 (24.4%)	24 (9.6%)	250 (100%)
Total	600 (70.5%)	177 (20.9%)	73 (8.6%)	850 (100%)

Table 3: Gender-wise distribution of Oral Aesthetic Subjective Impact Scale (OASIS) in participants

DISCUSSION

In this study, out of 850 students had 73.1% of any form of malocclusion, which is in close proximity to the findings of Afzal *et al.*, who observed a frequency of malocclusion in 75% of sample size in Karachi (1880 subjects out of which 710 were males and 1170 were females) [16]. Similarly, Krishnamurthy *et al.*, who observed a prevalence of malocclusion in 71% of students (total sample size of 745 students) in the age group of 8-12 years school going children in Bangalore, India [9]. Gunatissa *et al.*, conducted a study on 802 schools going children in Galle district in Sri Lanka and found out a frequency of 69.5% which is in agreement of this study [17]. Borzabadi-Farahani *et al.*, conducted a study on Five hundred and two Iranian students (253 females and 249 males, aged 11–14 years) were examined and found out a frequency of 77.1% which is agreement to this study [18]. In a study by Asiry, the frequency of malocclusion was found to be 77.3% [19]. He carried out the study on randomly selected schools in Riyadh, Saudi Arabia with a sample size of 1825 Saudis (1007 males and 818 females) having an age group of 12-16 years. Contrary to the results of this study, Marimuthu *et al.*, (sample of 100 school children aged between 13-17 years), Bugaighis *et al.*, (sample size was 343 Lebanese school children aged between 12-17 years), Alhaija *et al.*, (samples of 1003 school going Jordanian subjects aged 13-15 years) reported a higher prevalence 93%, 95.6%, 92% respectively [20-22]. Similarly, studies by Arabiun *et al.*, (sample size was 1338 high school students; 621 boys and 717 girls, aged 14-18 years in Shiraz, Iran) and Mtaya *et al.*, (sample size of 253 pre-school children were examined in Tanzania) reported low frequency of malocclusion i.e., 23.70% and 32.50% respectively [23, 24].

CONCLUSIONS

Angle's malocclusion was found in 73.1% of the subjects. The least affected psychologically was normal occlusion with (100%) good psychological well-being followed by Angle's class I malocclusion having good psychological well-being (76.8%).

Conflicts of Interest

The authors declare no conflict of interest.

DOI: https://doi.org/10.54393/pjhs.v4i01.462

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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