Child Perception Questionnaire for Oral Symptoms of Hypodontia Children

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ABSTRACT

Background: The congenital absence of one or more deciduous or permanent teeth is called hypodontia. It is the most prevalent congenital dental abnormality. Hypodontia could be caused by a number of genetic and environmental factors.
Objectives: The aim of the current study was to find out the impact of hypodontia on oral health and quality of life of children.
Material and Methods: A cross sectional comparative study was carried out on 40 patients suffering from hypodontia and 40 healthy controls in the outpatient department of Nishtar institute of dentistry, Multan. Patients and healthy controls were selected by non-probability convenient sampling technique without any gender discrimination. Age of the selected patients and controls was 11-14 years. Oral health was checked by using dental examination instruments. Urdu Proformas were used for better understanding of children.
Results: Mean age of the study subjects was 11.9 (± 0.94) years with range of 11 to 14 years. There was 36 (45%) male and 44 (55%) female. In our study, maxillary lateral incisor was the most commonly missing tooth. Out of 40 patients suffering from hypodontia, about 37 (92.5%) patients presented with poor oral health, 38 (95%) patients were affected by their condition and 31(77.5%) patients were dissatisfied from their appearance.
Conclusion: Hypodontia had great impact on the quality of life of the children. Patients presented with poor oral health and were highly dissatisfied from their condition.
Keywords: *Hypodontia, oral health, quality of life*

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INTRODUCTION

Hypodontia is defined as "the congenital absence of one or more deciduous or permanent teeth." If six or more teeth are missing, it is called oligodontia. Hypodontia is the most widely reported congenital dental abnormality and occurs as a complicated disease. Absence of deciduous tooth is usually associated with agenesis of succeeding permanent tooth[1]. Hypodontia may occur individually, in association with a disease or with other dental abnormalities. If all teeth are missing, it is called exodontia. It usually occurs in hypohidrotic ectodermal dysplasia[2]. In children and adolescents, lower Quality of life is associated with the domain of functional limitations when posterior teeth were missing; while missing anterior teeth exhibited reduced quality of life on the social and emotional wellbeing domain[3].

The prevalence of hypodontia in general population is 4.6% with no gender predilection[4]. Hypodontia is more common in maxillary teeth than in the mandibular teeth[5]. The most frequently missing tooth is maxillary lateral incisor (excluding third molar) exhibiting a prevalence of 2.1% in general population. Second premolar is absent in 1.9% people[6]. Most of the patients exhibit mild hypodontia with one or two missing teeth. About 10% patients have four or more missing teeth which is also categorized as mild hypodontia. While less than 1% have six or more teeth missing which is considered as severe form of hypodontia[7].

Hereditary and environmental elements are included in the etiology of hypodontia. It occurs due to limited space in the dental arches, physical barriers, destruction of the dental lamina, and functional anomalies of the odontogenic epithelium or the inability of mesenchyme to initiate the process[8, 9]. Hypodontia may be inherited as an autosomal dominant, autosomal recessive or x-linked pattern. Different home box genes involved in the etiology of hypodontia include Msx1, Msx2 and Pax9[10]. The environmental factors causing the hypodontia are drugs, infections, hormonal or metabolic disorders and irradiations[11].

All over the world, many investigations have been conducted about the effects of hypodontia on quality of life of the patients. World Health Organization defined the Quality of life as "individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". Quality of life is multidimensional and is related to Oral health.[12] Oral health is defined as "the standard of oral and related tissues that allows individuals to

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eat, speak and socialize without active disease, discomfort or embarrassment and contributes to general well-being[13]. Oral health related quality of life covers different domains including life and safety of the dentition, absence of pain and discomfort, proper physical functioning, absence of disease or symptoms, emotional well-being related to smile, social functioning, contentment with oral health and without any cultural or social embarrassments related to oral health status.

Quality of life instruments help to assess the psychosocial and physical effects of the disease. Evaluating the effects of disorder on a person may promote communication among children, their parents and dental experts. It determines the effects of poor oral health on the lives of patients and their parent and gives knowledge about the sequlae of the disease on daily basis[14].

MATERIAL AND METHODS

A cross sectional comparative study was carried out on 40 patients suffering from hypodontia and 40 healthy controls in the outpatient department of Nishtar institute of dentistry, Multan from 5 July, 2015 to 25 January 2016. Patients and controls were selected by non-probability convenient sampling technique without any gender discrimination. Patients with other chronic ailments and patients with other dento-facial anomalies were excluded from the study. Patients with mental disorders were also excluded from the study.Age of the study subjects was 11-14 year.

The sample size was calculated by the following formula keeping the confidence level equal to 90% and the margin of error equal to 5%.

$$n = \frac{\left(Z_{1-\alpha/2}\sqrt{2\bar{p}(1-\bar{p})} + Z_{1-\beta}\sqrt{p_1(1-p_1)p_2(1-p_2)}\right)^2}{(p_1-p_2)^2}$$

(Sample Size determination in health studies version 2.0.21 WHO)

P_1 is the anticipated proportion of functional limitation in control group= 0%

P_2 is the anticipated proportion of functional limitation in hypodontia group = 23%

(Kotecha, 2011)

p_1 p_2 is the difference between proportions = 23%

$Z_{1\beta}$ is the desired power of study = 90%

$Z_{1-\alpha/2}$ is the desired level of significance = 5%

n is the calculated sample size in each group = 40

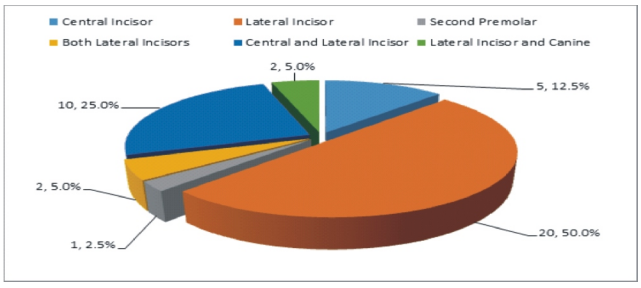
A written informed consent was signed by the participants. Socio-demographic information (name, age, gender, occupation, full address and family history) was obtained by using proforma-I. Urdu Proformas were used for better understanding of children. Child perception questionnaire proforma II for children aged 11-14 years was given to the children and they were asked to complete the proforma. The Child perception questionnaire (CPQ) comprised of seventeen questions allocated into 4 health domains: emotional well-being, social well-being, 5oral symptoms and functional limitation. Sufficient time was given to complete the Proformas and it was comforted that the results would remain confidential. Data was entered and analysed using SPSS 20. Mean and standard deviation was given for quantitative variables like age, etc. Frequencies and percentages were given for qualitative variables like gender, oral clinical changes etc. The data was analysed by applying Chi-Square test and Fisher's exact test. The p-value = 0.05 was considered statistically significant.

RESULTS

Mean age of the patients suffering from hypodontia was 11.8 (± 0.90) years and mean age of healthy controls was 11.9 (± 0.98) with an age range of 3 years. Gender distribution in patients suffering from hypodontia n=19 patients were male while n=21 patients were female with an M: F of 1:1.1and healthy controls n=17 subjects were male and n=23 were females with an M: F of 1:1.3.

Regarding most common missing tooth, Out of n=40 subjects in experimental group, central incisor was missing in n=5 (12.6%), lateral incisor was missing in n=20 (50%), second premolar in n=1 (2.6%), both lateral incisors in n=2 (5%), central and lateral incisor in n=10 (25%), lateral incisor and canine in n=2 (5%).

Graph 1. This graph shows missing teeth in patients



Regarding oral health (CPQ) in patients suffering from hypodontia group, n=0 subjects presented with excellent oral health, n=0 with very good, n=3 (7.5%) with good and n=37 (92.5%) with poor oral health. In control group, subjects presented with excellent oral health were n=6 (15%), with very good n=24 (60%), with good n=10 (25%) and with poor oral health n=0. The group suffering from hypodontia showed significantly different results (p-value < 0.001) as compared to the control group. Regarding condition effect (CPQ), the group suffering from hypodontia showed significantly different results (p-value < 0.001) as compared to the control group. Similarly when we observed (CPQ) appearance satisfaction, group suffering from hypodontia showed statistically significant results (p-value < 0.001) as compared to control group. (Table 1)

DISCUSSION

In the current study, n=19 patients were male while n=21 patients were female with an M: F of 1:1.1. Similar male to female ratio was found by Shafi and his colleagues from India in 2009. They reported a male to female ratio of 1:1.8 in hypodontia patients[15]. While, another study done by Sheena Kotecha and co-workers in Birmingham in 2011 showed different results. They reported a male to female ratio of 2:1[11].

In the current study, mean age of the patients was 11.9 years with an age range of 11 to 14 years. Mean age of the male patients was 11.7 years, while for the females it was 11.9 years. Another study done by Sheena Kotecha and colleagues in Birmingham in 2011 showed similar results. They reported a mean age of 12.6 years with a range of 11 to 14 years[11].

In our study, the most commonly absent tooth was maxillary lateral incisor excluding third molar with a prevalence of 2.1% in general population. Prevalence of absence of second premolars is 1.9%[4]. Most of patients have mild hypodontia with one or two missing teeth. About 10% present with four or more missing teeth which is considered as moderate hypodontia. Whereas, about 1% exhibit severe hypodontia with the absence of six or more teeth[6]. Another study conducted in Finland by Arte and Pirinen in 2004 showed the similar results. In their study, the most frequently absent tooth was maxillary lateral incisor; and after that second premolar[16]. Similar results were found in Sheena Kotecha study done in Birmingham in 2011 that the most common missing tooth was maxillary lateral incisor[11].

Table 1. Comparison of "Child Perception Questionnaire (CPQ) Oral Health" between Patients suffering with hypodontia and healthy controls

Group	Excellent	very good	Good	Poor	Total	p-value
Oral Health (CPQ)						
Patients suffering with hypodontia	0 (0%)	0 (0%)	3(7.5%)	37(92.5%)	40 (100%)	**< 0.001**
Healthy Controls	6(15%)	24(60%)	10(25%)	0 (0%)	40 (100%)	
CPQ Condition Effect						
	Not at all	**Very little**	**A lot**	**Very much**	**Total**	**p-value**
Patients suffering with hypodontia	0 (0%)	1(2.5%)	1(2.5%)	38(95%)	40 (100%)	**< 0.001**
Healthy Controls	40(100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	
CPQ Appearance Satisfaction						
	Satisfied		**Dissatisfied**			
Patients suffering with hypodontia	9 (22.5%)		31 (77.5%)		40 (100%)	**< 0.001**
Healthy Controls	35 (87.5%)		5 (12.5%)		40 (100%)	

The outcomes of oral health (CPQ) showed that in experimental group n=0 subjects presented with excellent oral health, n=0 with very good oral health, n=3 (7.5%) with good oral health and n=37 (92.5%) with poor oral health. In control group, subjects presenting with excellent oral health were n=6 (15%), with very good oral health n=24 (60%), with good oral health n=10 (25%) and with poor oral health n=0. The experimental group exhibited significantly different results (p-value < 0.001) as compared to the control group. Sheena kotecha and co-workers in 2011 also showed similar results. According to their study, 29% of hypodontia patients called the health of their mouth, lips and teeth 'fair' or 'poor'; while in control group only 7% participants called the same. Regarding Patient satisfaction (CPQ), 42% hypodontia patients were dissatisfied with their teeth in contrast to 16.7% subjects of the control group[11]. While in our study, 77.5% hypodontia patients were dissatisfied with their appearance as compared to control group 12.5% with significant p value (< 0.001).

CONCLUSION

Hypodontia has a remarkable effect on the quality of life of an individual. Patients suffering from hypodontia have poor oral health. Their oral condition has a great impact on their life and they are dissatisfied with their appearance.

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Fatima QUA:	Concept and design of study, Collection of data, statistical analysis
Mujtaba M:	Writing of manuscript, critical review of manuscript
Dad W:	Analysis and interpretation of data, statistical analysis
Latif W:	Data collection, bibliography

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.