

## Impact of Hypodontia on the Emotional Well-Being and Quality of Life of Children

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### ABSTRACT

**Background and Objective:** The congenital absence of one or more deciduous or permanent teeth is called hypodontia. It is the most common congenital dental anomaly. Hypodontia could be caused by a number of genetic and environmental factors. The aim of the current study was to find out the impact of hypodontia on the emotional well-being and quality of life of children.

**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 translated proformas were used for better understanding of children.

**Results:** Mean age of the patients suffering from hypodontia was 11.8 ( $\pm 0.90$ ) years and mean age of healthy controls was 11.9 ( $\pm 0.98$ ). Family history was positive in 6 (15%) patients suffering from hypodontia and 2 (5%) in healthy controls. Out of 40 patients, about 80% felt irritated, 82.5% felt shy, 82.5% children were worried that what other people think about them, 85% were worried that they were not good looking and 80% were upset.

**Conclusion:** Hypodontia has substantial impact on the emotional well-being and quality of life of the children. Patients were emotionally disturbed and had a poor quality of life.

**KEYWORDS:** Hypodontia, Emotional well-being, Quality of life.

### INTRODUCTION

Hypodontia is defined as “the congenital absence of one or more primary or secondary 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 clinical disease. Absence of deciduous tooth is usually associated with agenesis of succeeding permanent tooth.<sup>1</sup> 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.<sup>2</sup> 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 well being domain.<sup>3</sup>

The prevalence of hypodontia in general population is 4.6% with no gender predilection.<sup>4</sup> Hypodontia is more common in maxillary teeth than in the mandibular teeth.<sup>5</sup> 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.<sup>6</sup> Most of the patients' exhibit mild hypodontia with one or two missing teeth. About 10% patients have four or more missing teeth which are also categorized as mild hypodontia. While less than 1% have six or more teeth missing which is considered as severe form of hypodontia.<sup>7</sup>

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.<sup>8,9</sup> 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.<sup>10</sup> The environmental factors included in the etiology of hypodontia are infections, drugs, metabolic or hormonal disturbances and irradiations.<sup>11</sup>

All over the world, many investigations have been carried out about the effects of hypodontia on the quality of life of patients. The 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 complex and multidimensional and has been shown to be related to oral health.<sup>12</sup> Oral health has been defined as “the standard of oral and related tissues that allows individuals to eat, speak and socialize without active disease, discomfort or embarrassment and contributes to general well-being.<sup>13</sup> Oral health related quality of life covers different domains including life and safety of the dentition, absence of pain and discomfort, appropriate physical functioning, absence of disease or symptoms, emotional functioning related to smile, social functioning, satisfaction with oral health and no social or cultural disadvantages due to oral status.

Quality of life instruments help to assess both the physical and psychosocial impact of the disease. Evaluating the impact of disease on a person can promote communication among patients, parents and the dental experts. It offers an insight to the consequences of adverse oral health conditions on children’s lives and the lives of their families and provides information on the consequences of the problem for the patient on daily basis.<sup>14</sup>

**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 July, 2015 to January 2016. This study was approved by ethical committee and institutional review board of Nishtar institute of Dentistry, Multan. Patients and controls were selected by non-probability convenient sampling technique without any gender discrimination. Patients with other chronic ailments and patients with other

dentofacial 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.

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 17 questions allocated into 4 health domains: oral symptoms, functional limitations, emotional well-being and social well-being. Sufficient time was given to complete the proformas and it was reassured that the results would remain confidential. Data was entered and analysed using SP-SS20.

**STATISTICAL ANALYSIS**

Mean and standard deviation was given for quantitative variables like age, etc. Frequencies and percentages were given for qualitative variables like gen-der, 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 (19 males and 21 females) and healthy controls (17 males and 23 females) was not significant different (P-value = 0.653). In patients suffering from hypodontia, family history was present in 6 (15%) patients while in control group, 2 (5.0%) subjects were found to have positive family history for hypodontia.

**Table-1:** Comparison of Child perception questionnaire between Patients suffering with hypodontia and healthy controls.

Group	Never	Sometimes	Often	Everyday	Total	P-value
<i>CPQ Felt Irritated</i>						
Patients suffering with hypodontia	0 (0%)	5 (12.5%)	32 (80%)	3 (7.5%)	40 (100%)	< 0.001
Healthy Controls	40 (100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	
<i>CPQ Felt Shy</i>						
Patients suffering with hypodontia	0 (0%)	4 (10.0%)	33 (82.5%)	3 (7.5%)	40 (100%)	< 0.001
Healthy Controls	40 (100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	
<i>CPQ Other People Think</i>						

Patients suffering with hypodontia	0 (0%)	3 (7.5%)	33 (82.5%)	4 (10.0%)	40 (100%)	< 0.001
Healthy Controls	40 (100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	
<i>CPQ Worry not Good Looking</i>						
Patients suffering with hypodontia	0 (0%)	2 (5.0%)	34 (85.0%)	4 (10.0%)	40 (100%)	< 0.001
Healthy Controls	40 (100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	
<i>CPQ Been Upset</i>						
Patients suffering with hypodontia	0 (0%)	4 (10.0%)	32 (80.0%)	4 (10.0%)	40 (100%)	< 0.001
Healthy Controls	40 (100%)	0 (0%)	0 (0%)	0 (0%)	40 (100%)	

## DISCUSSION

Congenital absence of one or more primary or secondary teeth is called hypodontia. This cross-sectional study was conducted to investigate the impact of hypodontia on emotional well-being and quality of life in children between ages 11-14 years. Results of the current study were quite comparable with the study done by Kotecha<sup>11</sup> in Birmingham. This study reported a mean age of 12.6 years with a range of 11 to 14 years.<sup>11</sup> Another study performed by Kotecha et al.<sup>15</sup> reported that the mean age of their patients was 13 years. The present study found a statistically significant impact of hypodontia on the emotional well-being and quality of life between the hypodontia group and control group.

In present study, out of 40 patients suffering with hypodontia, 15% patients showed positive family history for hypodontia. While, Kotecha<sup>11</sup> from Birmingham showed that out of 86 patients, 37.2% showed positive family history. Their results were quite different to our results.

A case study was performed in Pakistan by Ahmed et al.<sup>16</sup> showed similar results to the present study. According to their results, patients with hypodontia showed positive family history, poor quality of life, greater dissatisfaction with their facial appearance and lower self-esteem. These genetic dental disorders are not associated with significant mortality; however, there is significant morbidity. The effects on individuals and families should not be underestimated.<sup>16</sup>

Study performed by Laing et al.<sup>17</sup> showed different result from present study. According to their study, hypodontia did not appear to affect the psychosocial status of the patients, however more difficulty in chewing. Study performed by Alsumait et al.<sup>18</sup> showed similar results to the present study. According to their study, about 45% children with more than four missing teeth experienced emotional stress.

## CONCLUSION

It is concluded that Hypodontia adversely affects the emotional well-being of the children. Patients suffering

from hypodontia were dissatisfied with their appearance and had a poor quality of life as compared to normal individuals. Therefore, early management of hypodontia is recommended to improve the quality of life of patients.

## LIMITATIONS OF STUDY

Small sample size, single center study and narrow age group range were the limitations of the current study.

## ACKNOWLEDGEMENT

The authors acknowledge the encouragement extended by the Vice chancellor of University of Health Sciences Lahore and also thankful to all the staff of Behavioral Sciences Department for their technical and logistic support. We are also thankful to all the patients who dedicated their time for the study.

## AUTHOR'S CONTRIBUTION

**FQ:** Conception of work and design.

**MM:** Acquisition of data and substantial contribution and design.

**DW:** Drafting article and receiving critically.

**LW:** Reviewing critically important intellectual content and final approval of version.

## CONFLICT OF INTEREST

None to declare.

## GRANT SUPPORT AND FINANCIAL DISCLOSURE

It was funded by University of health sciences Lahore.

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- Received for publication: 04-01-2019
  - First revision received: 17-05-2019
  - Second revision received: 26-05-2019
  - Accepted for publication: 13-06-2019