

SELF REPORTED IMPACTS OF ORAL HEALTH ON QUALITY OF LIFE AMONGST 11-14 YEARS OLD SCHOOL CHILDREN OF LAHORE, PAKISTAN

¹MUHAMMAD UMAIR DASTGIR BHATTI, BDS, MSC

²MUHAMMAD ASLAM CHAUDHARY, BDS, MDS

³SYED AKTHAR HUSSAIN BOKHARI, BDS, MCPS

ABSTRACT

Oral diseases have considerable impact on quality of life. The impacts of oral health on quality of life may be quantified. No study has been carried out in Pakistan to quantify the impact of oral health on quality of life in children.

The aim of this study was to quantify the impacts of oral health on quality of life in 11-14 year-old school children in Lahore, Pakistan.

A cross sectional self reported questionnaire based survey was conducted in six randomly selected schools of Lahore District. A standardized validated Child Perception Questionnaire CPQ₁₁₋₁₄ (short form) with two incorporated questions regarding "global rating of oral health" and "effects of oral health on life overall" was administered to the six hundred and thirty three school children aged 11-14 years from the randomly selected schools. The data entry and analysis was carried out using SPSS version 15.0

The response rate was 91%. Ninety four percent participants reported some form of impact of oral health on their quality of life. A statistically significant relationship was found between impacts on quality of life and global rating of oral health, effects of oral health on life overall ($p=0.000$).

This study has shown that oral health has an impact on quality of life in children aged 11-14 years from Lahore, Pakistan.

Key words: *Impacts of oral health on quality of life, Child Perception Questionnaire, QOL, Oral health, CPQ 11-14, School children*

INTRODUCTION

Oral diseases have considerable impact on quality of life. Regardless of race, sex, geographic location, culture, oral diseases cause pain and suffering and effect the physical, mental, social and functional well-being of individuals. Peterson and colleagues proposed that oral diseases, although preventable, are the fourth

most expensive diseases to treat in most industrialized countries.¹ Even if taken into account separately, dental diseases have impacts on individual's physical, psychological, social, emotional and functional well-being.

Dental caries has been demonstrated to be the most common chronic childhood disease.² According to

¹ Department of Public Health Dentistry and Periodontology, Faculty of Dentistry, The University of Lahore, Pakistan

² Department of Oral Surgery, Faculty of Dentistry, The University of Lahore, Pakistan

³ Department of Public Health Dentistry and Periodontology, Faculty of Dentistry, The University of Lahore, Pakistan

Correspondence: Dr Muhammad Umair Dastgir Bhatti, 64 A/1 Street 17 Cavalry Grounds Extension Lahore Cantt Pakistan. Phone: 0092423006458100, 00924236605000, Email: umairbhatti@doctor.com

reports published by the WHO^{3,4}, dental caries remains a major public health problem in most industrialized countries affecting 60-90% of school children and a vast majority of adults. In China the prevalence of dental caries in children at age 5 is 76.6%.⁵ In Great Britain the prevalence of caries is 39.6% in 5 year old children.⁶ Although a decline in caries has been seen in most industrialized countries, it poses considerable challenges to the non-established market economy (non-EME) countries.⁷ In most non-EME countries the access to services is limited and teeth are often left untreated or extracted because of pain or discomfort⁷, restricting activities in schools, at work and at home and causing millions of school and work hours to be lost each year all over the world. Moreover, the psychological impacts of these diseases often significantly diminish the quality of life.⁷

According to Sheiham et al⁸, any disease should be considered a public health problem, if it fulfils the following criteria;

- It should have an impact on quality of life
- It should have a high prevalence or should be life threatening.
- The knowledge to cure and prevent disease should be present
- It should be feasible to apply this knowledge
- The cost to individual and society should be great and the resources should be made available i.e. there should be political will to tackle the disease.

An overview of the criteria for dental caries amongst children in Pakistan suggests that: dental caries is prevalent in children in Pakistan.⁹ The cost to treat caries is high and prevention is surely desirable keeping in view that Pakistan is a non established market economic country. The knowledge to treat and prevent caries is available which is feasible to apply.¹⁰ In Philippines, where 97% of schoolchildren aged 6 years have dental caries—a program that combined the promotion of daily hand washing with soap, tooth brushing with subsidized fluoride toothpaste, and twice-yearly deworming, is proving effective, affordable, and sustainable at US \$0.56 per child per year.¹⁰ The resources can also made available for such actions as demonstrated in Nepal where advocacy for affordable fluoride tooth paste resulted in 26% decline in caries and a 90% increase in availability of affordable fluoride

toothpaste.¹¹ Currently there is no evidence about the possible impact of dental caries on quality of life of children in Pakistan. No study has been carried out yet in Pakistan to quantify the self reported impacts of oral health on quality of life in children.

METHODOLOGY

This study was a self reported questionnaire based survey which followed a cross sectional research design conducted in six schools in Lahore, which is one of the most central and largest cities of Pakistan and the capital of Punjab province. The six randomly selected schools consisted of three private, two public and one mosque school. All children of grades 5th to 8th in the six selected schools were included in the study.

The data were collected using a validated standardized Child Perception Questionnaire CPQ (11-14) previously used and validated through studies.^{12,13} The Child Perception Questionnaire CPQ 11-14 short form (8 questions) was selected for this study because it was found to be robust, simple to understand and suitable for population based studies in children.¹⁴ This questionnaire consisted of two questions each from four dimensions of impacts of oral health on quality of life i.e. oral symptoms, functional wellbeing, psychological wellbeing and emotional wellbeing. Two questions i.e. one related to Global self rating of oral health and one related to overall well being were added and finally the eight questions from the short form of CPQ 11-14 were added at the end.

Data for all public and private schools in Lahore district was obtained from the Punjab education sector reforms programme¹⁵ (Monitoring and Evaluation Unit, Ministry of Education, Government of Punjab). The data had comprehensive details of all schools, total number of children within each school and the location of these schools. A multistage random sampling technique was then adopted which consisted of following stages:

- At the first stage a random selection between Lahore city and Lahore cantt from the data of Lahore district was made.
- Once Lahore city was selected the second hierarchy of structure was considered i.e. the union councils. Out of 150 union councils, one union council was randomly selected for the study. This was done using a random number technique to get a mean number which was the union council selected.

- The third and final stage was to randomly select the schools for study from within the schools of the selected union council.
- An inclusion criterion was set for the study. Only schools which were middle schools containing the children of interest, with over two hundred and seventeen children and located within the selected union council were included in the study. Children aged 11-14 years i.e. within grades 5 – 8 from these schools were the unit of interest.
- After formulating a list of public and private schools (middle schools) in the selected union council, three public, two private and one mosque school was randomly selected.

The questionnaire was translated into national language Urdu to facilitate the study subjects. Back translation was done to increase the internal validity of the study. For this study four voluntary survey managers were used from Lahore, Pakistan. Survey Managers visited one of the schools before the actual survey and did the piloting for the study by administering the Urdu versions of questionnaire to twenty children aged 11 – 14 years. It was found that the questionnaire was easy to understand and could be independently completed by children without difficulty. The teams then visited the six schools selected for the study on 10th and 11th April 2009 for collection of data.

One hundred copies of the Urdu and one hundred of the English version of the questionnaire were kept as spares.

After completion the questionnaires, the responses were coded as numeric in order to facilitate the data entry. Data was then recoded in order to carry out analysis. The process of data analysis involved the following steps;

1. The responses related to global rating of oral health were recoded into three categories i.e. excellent, good and poor. Similarly the responses related to effect of oral health on life overall were recoded into three categories i.e. no effect, some effect and very much.
2. The eight responses to the four dimensions of measuring impacts of oral health on quality of life, i.e. oral symptoms, functional limitation, emotional well-being and social well-being were recoded into two categories i.e. fewer impacts

(below mean) and more impacts (above mean) based on the distribution which came out to be normal. These responses were then combined together to form a composite impact on quality of life scale which were then grouped as fewer impacts or more impacts.

3. The responses to two questions related to the individual dimensions of measuring impacts of oral health on quality of life i.e. oral symptoms, functional limitations, emotional well-being and social well-being were recoded into three categories, i.e. no impacts, one (one question out of the two questions was answered positively i.e. having one impact), both (two questions answered positively i.e. having both impacts).
4. After recoding, the next step was the reporting of the frequency of responses related to global rating of oral health, effect of oral health on life overall and individual dimensions of measuring impacts of oral health on quality of life, which were reported in the form of tables and text.
5. The next step was to analyze the association between different variables. This analysis was carried out by analyzing the relationship between impacts on quality of life composite and other variables i.e. global rating of oral health and effects of oral health on life overall using the chi square test and results were reported.

RESULTS

Total number of children aged 10-15 years in the selected schools was six hundred and thirty three. The number of children who successfully completed the questionnaire was five hundred and seventy four, a total response rate of 91%. The 9% drop out was due to absence from school.

Global rating of oral health and effect of oral health on life overall

Table 1 describes the frequencies of global rating of oral health and effect of oral health on life overall.

The table shows that 44.6% children reported their oral health as being excellent and 31.5% rated their oral health as poor. In case of the effect on oral health on life overall, almost 62% reported no effect on life and

TABLE 1: FREQUENCIES OF GLOBAL RATING OF ORAL HEALTH AND EFFECT OF ORAL HEALTH ON LIFE OVERALL

Q1. Would you say the health of your teeth, lips, jaws and mouth is?	
<u>Global rating of oral health</u>	
	n (%)
Excellent	256 (44.6%)
Good	137 (23.9%)
Poor	181 (31.5%)
Q2. How much does the condition of your teeth, lips, jaws or mouth affect your life overall?	
<u>Effect of oral health on life overall</u>	
	n (%)
Not at all	355 (61.8%)
Some	129 (22.5%)
Very much	90 (15.7%)

15.7% reported that their oral health affect their lives very much.

Oral symptoms, Functional limitations, Emotional and Social well-being

Table 2 describes the frequencies of four dimensions of measuring impacts of oral health on quality of life i.e. oral symptoms, functional limitations, emotional well-being and social well-being.

The key findings of the table are that 50.9% of children reported both oral symptoms (bad breath and sticking of food). Both questions for functional limitation (Hot and cold sensation and problem in biting firm food), emotional well-being (frustration and being upset) and social well-being (avoided smiling in front of other children and other children asking questions about teeth) were reported positively by 35.7%, 39.5% and 25.6% children respectively. 38.7% children reported no impacts on quality of life in terms of their social well-being.

The composite impacts of oral health on quality of life

Histogram 1 (Fig 1) reports the distribution of composite impacts on quality of life.

Histogram 1 (Fig 1): Distribution of composite impacts on quality of life

According to this histogram the impacts range from zero i.e. no impact reported up to eight i.e. all

TABLE 2: FREQUENCIES OF FOUR DIMENSIONS OF MEASURING IMPACTS OF ORAL HEALTH ON QUALITY OF LIFE

Q3. In the past <u>three months</u> how often have you had bad breath?	
Q4. In the past <u>three months</u> how often have you had food stuck in or between your teeth?	
<u>Oral symptoms</u>	
	n (%)
None	89 (15.5%)
One	193 (33.6%)
Both	292 (50.9%)
Q5. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often has it been difficult to chew firm foods?	
Q6. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often has it been difficult to drink/eat hot or cold foods?	
<u>Functional limitation</u>	
Non	159 (27.7%)
One	210 (36.6%)
Both	205 (35.7%)
Q7. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often have you felt irritable or frustrated?	
Q8. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often have you been upset?	
<u>Emotional well-being</u>	
None	157 (27.4%)
One	19 (33.1%)
Both	227 (39.5%)
Q9. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often have you avoided smiling or laughing when around other children?	
Q10. In the past <u>three months</u>, because of your teeth, lips, mouth or jaws, how often have other children asked you questions about your teeth, lips, jaws or mouth?	
<u>Social well-being</u>	
None	222 (38.7%)
One	205 (35.7%)
Both	147 (25.6%)

eight impacts reported. The mean value of impacts for the sample was 4.43 (95% CI 4.24 to 4.61). Two hundred and eighty one children (49%) reported up to four impacts out of possible eight impacts on combined scale of quality of life. Two hundred and ninety three chil-

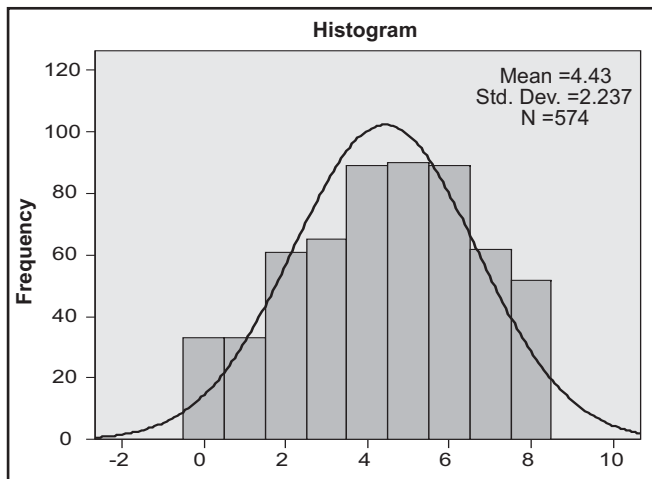


Fig 1: Distribution of Composite Impacts on quality of life

dren (51%) have reported more than four impacts. Ninety Four (94%) percent children reported some form of impact of oral health on quality of life.

Association between Impacts on the composite quality of life and other variables

Table 3 describes the relationship of impacts on the composite quality of life with global rating of oral health and effect of oral health on life overall.

TABLE 3: ASSOCIATION OF IMPACTS ON THE COMPOSITE QUALITY OF LIFE WITH GLOBAL RATING OF ORAL HEALTH AND EFFECT OF ORAL HEALTH ON LIFE OVERALL

Impacts on the composite quality of life			
Variables	More impacts	Fewer impacts	Significance
<u>Global rating of oral health</u>			
Excellent	90 (35.2%)	166 (64.8%)	0.000
Good	76 (55.5%)	61 (44.5%)	
Poor	127 (70.2%)	54 (29.8%)	
<u>Effects of oral health on life overall</u>			
Not at all	147 (41.4%)	208 (58.6%)	0.000
Some	89 (69.0%)	40 (31.0%)	
Very much	57 (63.3%)	33 (36.7%)	

The table reports that the quality of life composite is strongly related to the global rating of oral health and effect of oral health on life over all. It shows that 70.2% participants who have reported more impacts of oral health on their quality of life have also rated their global oral health as poor. As compared to this only 29.8% of participants who have reported fewer impacts of oral health on quality of life have reported more their

global rating of oral health as poor. The table also suggests that 63.3% of participants who have reported more impacts of oral health on quality of life have reported effect of oral health on life overall as very much. As compared to this only (36.7%) of the participants who have reported fewer impacts of oral health on their quality of life have reported that effect of oral health on life overall is very much. Both of these differences were found to be statistically significant ($p=0.000$).

DISCUSSION

The results of the study confirm that oral health has impacts on quality of life of children. This finding was similar to that of previous studies conducted in Canada¹⁶, United Kingdom¹⁷, Cambodia¹⁸ and Brazil¹⁹ which confirmed that oral health has impact on quality of life of children in these populations.

The study also confirms that impact on quality of life is strongly related with global rating of oral health and effects of oral health on life overall. This means that the children who have reported more impacts of oral health on quality of life have rated their global oral health as poorer and have reported more effects of oral health on life overall as compared to the children who have reported fewer impacts. This finding was similar to previous studies conducted in various countries of the world i.e. Brazil, where a significant association between CPQ11-14 scores (impact on quality of life) and the global rating of oral health and overall well-being was found in a sample of two hundred and ten school children²⁰, United Kingdom where a strong correlation was found between impacts on quality of life and the global oral health rating. Impact on life overall was also significantly related to the impacts on quality of life²¹.

The uniqueness of this study is as follows:

Firstly, no study has been conducted before in Pakistan to establish the impacts of oral diseases of quality on life which is a key factor i.e. "missing link" in deciding if oral diseases are a public health problem and require a public health solution, keeping in view the criteria proposed by Sheiham⁸ i.e. prevalence, impact on quality of life, knowledge to cure, feasibility to apply the knowledge, high cost to individual and society and political will. Previous work shows that oral diseases are prevalent in Pakistan but the impacts of oral diseases have not been established. Secondly, the validated short form of the CPQ11-14 questionnaire used in this study to quantify the impacts of oral health

on quality of life had not been used previously in cross sectional studies even though recommended for use¹⁴. This study is amongst the first to adopt the robust short form. The study also suggests that an Urdu version of CPQ 11-14 (short form) can be used in children in Pakistan for assessing the impacts of oral health on quality of life, subject to further development and research.

Future research should firstly focus on the development and validation of the Urdu version of short form of CPQ 11-14 questionnaire in this age group as its other versions have been validated for use in other countries e.g. Brazil²⁰, where the Brazilian version of short form of CPQ 11-14 was developed and validated for use in children. Research should also be conducted by focusing on other age groups e.g. adults to find out the impacts on oral health on their quality of life. There is evidence that oral diseases are prevalent amongst adults as well but no study has reported the impacts that the oral conditions i.e. periodontal disease, oral cancer, have on the quality of life of adults. If future studies can demonstrate that conditions like periodontal disease and oral cancer have impacts on quality of life of adults then these results will help in advocating for the integration of oral health into general health and will also contribute to advocacy for developing an oral health plan for Pakistan. Watt et al²² suggested that oral health promotion seeks sustainable improvement in oral health and reduces inequalities through actions directed at the determinants of oral health. An essential component of this approach is multidisciplinary action which utilizes a range of comprehensive strategies. Therefore the focus should be on oral health promotion in order to overcome the inequalities in oral health and to reduce the burden of oral diseases.

CONCLUSIONS

From this cross sectional study of 11-14 years old school children from Lahore, Pakistan, it can be concluded that:

- Oral health has impacts on quality of life in children from Lahore, Pakistan.

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