

## EFFECTS OF EDUCATIONAL ATTAINMENT ON DENTITION STATUS IN SOCIOECONOMICALLY DEPRIVED POPULATION OF KARACHI

<sup>1</sup>TAQI MOHAMMAD

<sup>2</sup>ASAAD JAVAID MIRZA

<sup>3</sup>SYED MOHAMMAD JAHANGIR

### ABSTRACT

*The objective of this study was to evaluate the relationship between educational attainment and dentition status.*

*A cross sectional survey was conducted. The total number of participants in this study was 408. The subjects of age 15 years to 65 years were included in this survey. To record subjects own educational attainment, education level was divided into levels which are Primary school (1-5 grade), Middle (6-8 Grade), Secondary or High school (9-10 Grade), Higher Secondary and highly educated which include Tertiary School (Bachelors). To record dentition status, DMFT index was used. The DMFT score of 0 indicates minimum risk of caries, DMFT score between 1-4 indicates moderate risk of decay and DMFT score greater than 4 indicates high risk of dental decay. The data was collected through intra oral examination of subjects.*

*The test indicates that association exists between level of education and DMFT scores. However, the strength of association is not very strong. The correlation value for spearman's rho was (.116) and (P= .01).*

*The impact of poor oral health in low educated people can be reduced by the developing policies related to building healthy public policy, strengthening community actions, and developing personal skills. To improve the knowledge, attitudes and oral health of people with low educational status, it is necessary to increase the oral health promotion activities.*

**Key Words:** Oral health; Education, Caries.

### INTRODUCTION

Health of people is strongly influenced by the social and economical environment in which they live.<sup>1</sup> There is a set of 'common' elements acknowledged as impacting and influencing our health and wellbeing. The social determinants of health identified by the Dahlgren and Whitehead's are Healthy living conditions (including access to food, water and sanitation), education, literacy and health literacy, stress, early life, social exclusion, employment & unemployment, age, sex and heredity factors, culture, racism, discrimination, access to information and appropriate health care, social supports and access to transport.<sup>2</sup>

Education improves the ability to make choices regarding occupation or level of income which have impact on our health and life style across our life span.<sup>2</sup> Therefore, Education and literacy are ranked as a key determinant of health along with other social determinants of health.<sup>3</sup> The health care researchers and professionals are concerned about the association of education and health.<sup>3</sup> According to the E Lahelma, the aim of education is to gain knowledge and other non- material resources that can improve health and life style.<sup>4</sup>

Oral health is an integral part of general health.<sup>5</sup> Education has shown an important contribution towards oral and general health.<sup>6</sup> Paulander et al. state that the educational attainment can be used for the prediction and risk assessment of caries.<sup>7</sup> The higher the educational attainment the better informed subjects are about oral cavity hygiene and oral diseases.<sup>7</sup> It is observed that oral health education is effective in reducing plaque and gingivitis.<sup>8</sup>

Pakistan is the 9th most populous country of the world.<sup>9</sup> The literacy rate of Pakistan is 54.9 %.<sup>9</sup> In Pa-

<sup>1</sup> Assistant Professor Community Dentistry, Mohammad Bin Qasim Medical and Dental College, Karachi

<sup>2</sup> Department of Restorative Dentistry, College of Dentistry, Almajma University, Saudi Arabia

<sup>3</sup> Department of Restorative Dentistry, Liaquat College of Medicine and Dentistry, Karachi

**Corresponding Author:** dr.muhammadtaqi@yahoo.com

**Received for Publication:** January 31, 2014

**Revision Received:** February 10, 2014

**Revision Accepted:** February 15, 2014

kistan children have to contribute to family income due to which it is impossible for many parents to educate children.<sup>10</sup> Factors like these have led to low literacy rate and child labor.<sup>10</sup> Adult population in Pakistan have unmet oral needs.<sup>10</sup> Half of the decayed teeth presents in adults of age 35-44% has not been restored while more than 90 % of the treatment provided is tooth extraction.<sup>11</sup> On the other hand, high prevalence of caries has been reported in adults of age 60 and above.<sup>11</sup> However, it also observed that variation in caries prevalence exists according to the time and area.<sup>11</sup> The prevalence of caries in developed countries is declining but in developing world prevalence is still high.<sup>11</sup> This is the first study which has been done in Karachi to assess effects of literacy level on the dentition status of Karachites. The objective of this paper is to evaluate the effects of educational attainment on dentition status. In addition to this, it will help in understanding the dental treatment needs of the subjects with different back grounds.

## METHODOLOGY

A cross sectional survey was conducted in outpatient department of Mohammad Bin Qasim Medical and Dental College Hospital (MBQDC) which is situated in periphery of Karachi where low-income people come for free dental treatment. The ethical approval to conduct this research was taken from MBQDC ethical committee. The written consent was achieved from subjects to be included in study. The questionnaire was designed to gather data regarding education level and DMFT scores of patients. The subjects were questioned about their age, gender, and educational status. The attributes of the subjects that were essential for the selection include, subject of age above 15 years, subject must have minimum educational attainment, and subject must be a resident of Karachi. The attributes due to which subjects were excluded are subject without educational attainment, subjects with mental illness and disabilities; subject not a resident of Karachi. A written consent was achieved from the subjects to be included in this study. They were explained about the aim of the study and about its non-invasiveness.

The intra oral examination was done by the trained dental surgeons. The level of education in Pakistan's schooling system is divided into Primary, Middle, Secondary, Higher Secondary and post secondary.<sup>12</sup> To record the individual educational attainment, an ordered table was designed which have 6 variable ranging from Primary school (1-5 grade), Middle (6-8 Grade), Secondary or High school (9-10 Grade), Higher Secondary (Intermediate), Tertiary School (Bachelor's). The subjects were divided into 4 different age groups ranging from Adolescence<sup>13-19</sup>, Early Adult hood (20-39), Middle Adult hood (40-59), Advance adult hood (60+).

To record dental decay, DMFT index was used. The DMFT score of 0 indicates minimum risk of caries,

DMFT score between 1-4 indicates moderate risk of decay and DMFT score greater than 4 indicates high risk of dental decay. The M component of DMFT index is used for missing teeth due to caries or any other reason in subjects of age 30 years and over.

## RESULTS

The SPSS version 17 was used to perform statistical analysis. The description of study population is shown in Table 1. The highest number of subjects with DMFT score of more than 4 has primary level of education as shown in Table 2. On the other hand, subjects with higher educational attainment DMFT score of more than 4 is lower as compared to subjects with primary level of education as shown in Table 2. In addition, age was also compared with DMFT score as shown in Table 3.

The P value was set at 0.05. The spearman correlation test was applied to investigate the association between the 2 variables Levels of education and DMFT scores of the subjects. The test indicates that association exists between level of education and DMFT scores. However, the strength of association is not very strong. The correlation value for spearman's rho was (.116) and (P= .01).

## DISCUSSION

The aim of this paper is to evaluate the effect of educational attainment on dentition status. The findings in this study show that low educational attainments can negatively effects dentition status. In addition, the results show that more subjects with moderate DMFTS score had tertiary level of education and higher secondary education which can be due to several reasons such as unemployment, low income and access to oral health care services. Similarly, Spencer states that pattern of social characteristics such as low socio-economic status based on parental or self education, occupation or income is associated with more dental decay.<sup>13</sup> According to the recent studies low income group have 5 times more likely to have poor oral health.<sup>14</sup> Findings in this paper demonstrates that oral health inequalities exist in subjects with low educated and also in educated subjects in Pakistan.

The similar study was conducted in Finland which assesses the relationship between education level and several oral health outcomes in Finnish adults. Our findings that low educated people have poor oral health replicates the finding of survey conducted by Bernabe et al.<sup>15</sup> However, there are differences in criteria used by our study and Finish adult study to record the oral health status. In our study we have used DMFT scale to record oral health status on the other hand Oral health was indicated by edentulousness, perceived oral health and levels of dental caries and periodontal disease in Finnish adults.

TABLE 1: STUDY POPULATION DESCRIPTION

Level of education	Frequency	Percent	Female	Male
Primary school	124	30.4	54	70
Middle (6-8 grade)	33	8.1	18	15
Secondary (9-10 Grade)	44	10.8	26	18
Higher Secondary	94	23.0	45	49
Tertiary education	113	27.7	66	47
Total	408	100.0	209	199

TABLE 2: DMFT SCORES OF SUBJECTS WITH DIFFERENT EDUCATIONAL ATTAINMENT

Level of education	Low	1-4 Moderate	More than 4 High	Total
Primary school (1-5 grade)	15	45	64	124
% in DMFT score	34.1%	23.3%	37.4%	30.4%
% in level of education	12.1%	36.3%	51.6%	100%
<b>Middle (6-8 grade)</b>	<b>3</b>	<b>17</b>	<b>13</b>	<b>33</b>
% in level of education	9.1%	51.5%	39.4%	100.0%
% in DMFT score	6.8%	8.8%	7.6%	8.1%
<b>Secondary (9-10 Grade)</b>	<b>6</b>	<b>18</b>	<b>20</b>	<b>44</b>
% in level of education	13.6%	13.6%	40.9%	100.0%
% in DMFT score	9.3%	45.5%	11.7%	10.8%
<b>Higher Secondary</b>	<b>7</b>	<b>50</b>	<b>37</b>	<b>94</b>
% in level of education	7.4%	15.9%	53.2%	100.0%
% in DMFT score	39.4%	25.9%	21.6%	23.0%
<b>Tertiary education</b>	<b>13</b>	<b>63</b>	<b>37</b>	<b>113</b>
% in level of education	11.5%	55.8%	32.7%	100.0%
% in DMFT score	29.5%	32.6%	21.6%	27.7%

TABLE 3: DMFT SCORES OF DIFFERENT AGE GROUPS

DMFT Score	Adolescence (13-19)	Early Adult hood (20-39)	Middle Adult hood (40-59)	Advance adult hood (60+)	Total
Low	10	28	5	1	44
	2.5%	6.9%	1.2%	.2%	10.8%
1-4 Moderate	22	123	40	8	193
	5.4%	30.1%	9.8%	2.0%	47.3%
More than 4 High	11	83	60	17	171
	2.7%	20.3%	14.7%	4.2%	41.9%
Total	43	234	105	26	408
	10.5%	57.4%	25.7%	6.4%	100.0%

Clinical study was conducted in Turkey which assesses the oral and dental health status of hemodialysis (HD) and peritoneal dialysis (PD) patients on the basis of educational status. The criterion used for evaluating the oral health status was DMFT similar to our criteria. Our findings that low educated people have poor oral health replicates the finding of cross

sectional survey conducted by Bayraktar et al.<sup>16</sup> The Higher DMFT index values were assessed in the lower educated and high school levels in peritoneal dialysis patients. Moreover, study results shows that patients, who were found to be in a higher educational level, are more caring for their oral health.<sup>16</sup>

Another study was conducted in Greece which evaluates the changes caused by the socioeconomic trends on the oral health knowledge and attitudes among Greek males undergoing military training. Our findings that high educated people have much better knowledge of oral health replicates the finding of longitudinal study survey conducted by Athanasios et al.<sup>17</sup> The difference exists between the criteria used to assess the knowledge towards oral health. The questionnaire is designed to assess the knowledge and attitude towards oral health but no practical oral examination was conducted. In our study, oral examination was conducted and knowledge was assessed on the basis of the oral health status.

Methodological limitation of self reported data does exist in this study because self-reported data is limited by the fact that it rarely can be independently verified. In addition descriptive study cannot provide the temporal relationship between level of education and oral health status. To determine the cause and effect experimental research is required. Further research should include the factors in consideration such as employment status and smoking. Non smokers were found to have more teeth as compared to smokers.<sup>18</sup>

## CONCLUSION

This shows that people with low levels of education have less knowledge towards oral health and have high number of missing, filled and decayed teeth. The impact of poor oral health in low educated people can be reduced by the developing policies related to building healthy public policy, strengthening community actions, developing personal skills. To improve the knowledge, attitudes and oral health of people with low educational status, it is necessary to increase the oral health promotion activities. Similarly, Watt and Sheiham suggested that oral health promotion seeks sustainable improvements in oral health and reduces the inequalities through actions directed at the determinants of oral health.<sup>19</sup> The association of social and economic factors and oral health is established but more work is required to understand the key issue in health such as what causes inequalities in oral health.

## REFERENCES

- 1 Wilkinson R, Marmot M, editor. Social determinants of health: the solid facts. 2nd ed. Copenhagen. World Health Organization 2003.
- 2 South Australian Council of Social Service. The social determinants of health [internet]. 2008 [cited 2012 January]. Available from: [http://www.sacoss.org.au/online\\_docs/081210%20Social%20Determinants%20of%20Health%20Report.pdf](http://www.sacoss.org.au/online_docs/081210%20Social%20Determinants%20of%20Health%20Report.pdf)
- 3 Kickbusch I. Health literacy: Addressing the health and education divide. Health Promotion International. 2001; 16(3): 289-296.
- 4 Lahelma E, Martikainen P, Laaksonen M, Aittomäki A. Pathways between socioeconomic determinants of health: A research report. J Epidemiol Community Health [Serial online]. 2004; 58: 327-332. Doi: 10.1136/jech.2003.011148
- 5 World Health Assembly. Oral health: action plan for promotion and integrated disease prevention [internet]. 2007 [cited 2012 January]. Available from: [http://apps.who.int/gb/ebwha/pdf\\_files/EB120/b120\\_r5-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/EB120/b120_r5-en.pdf)
- 6 Kotzer D, Lawrence H, Clovis B, Matthew D. Oral health-related quality of life in an aging Canadian population. Health and Quality of Life Outcomes. 2012; 10 (50); 1-12.
- 7 Paulander J, Axelsson P, Lindhe J. Association between level of education and oral health status in 35-, 50-, 65- and 75-year-olds. J Clin Periodontol. 2003; 30: 697-704.
- 8 Sushanth V, Krishna M, Suresh A, Prashant G, Chandu G. A peer group approach model of oral health promotion among orphans at Puduchery, South India. J Int Soc Preventive and Community Dentistry. 2011; 1( 2); 71-75.
- 9 Unicef Pakistan. Statistics [homepage on the Internet]. Unicef; [updated 2010 March 2]. Available from: [http://www.unicef.org/infobycountry/pakistan\\_pakistan\\_statistics.html#0](http://www.unicef.org/infobycountry/pakistan_pakistan_statistics.html#0)
- 10 Shah M, Darby M, Bauman D. Improving oral health in Pakistan using dental hygienists. Int J Dent Hygiene. 2011; 9; 43-52.
- 11 Abdullah S, Sadia H, Maxood A. Dental caries status in 6-9 years old children. Pakistan Oral & Dental Journal. 28(1); 107-112.
- 12 UNESCO. The education system in Pakistan: Assessment of the national education census [internet]. 2007 [cited 2012 January]. Available from: <http://www.teachereducation.net.pk/files/sa4.pdf>
- 13 Australian Health Policy Institute. Narrowing the inequality gap in oral health and dental care in Australia [internet]. 2008. [cited 2009 September 10]. Available from: [http://www.menzieshealthpolicy.edu.au/other\\_tops/pdfs\\_hpa/spencernarrowing.pdf](http://www.menzieshealthpolicy.edu.au/other_tops/pdfs_hpa/spencernarrowing.pdf)
- 14 Timiş T, Dănilă I. Socioeconomic status and oral health. The Journal of Preventive Medicine. 2005; 13 (1-2); 116-121.
- 15 Bernabé E, Suominen AL, Nordblad A, Vehkalahti MM, Hausen H, Knuuttila M, Kivimäki M, Watt RG, Sheiham A, Tsakos G. Education level and oral health in Finnish adults: evidence from different lifecourse models. J Clin Periodontology. 2011; 38; 25-32.
- 16 Bayraktar G, Kurtulus I, Kazancioglu R, Bayramgürler I, Cintan S, Bural C, Besler M, Trabulus S, Issever H, Aysuna N, Ozkan O, Yildiz A. Effect of educational level on oral health in peritoneal and hemodialysis patients. International Journal of Dentistry. 2008; 09; 1-5.
- 17 Zavras A, Vrahopoulos T, Souliotis K, Silvestros S, Vrotsos I. Advances in oral health knowledge of Greek navy recruits and their socioeconomic determinants. BMC Oral Health. 2002; 2(4); 1-9.
- 18 Buhlin K, Barany P, Heimburger O, Stenvinkel P, Gustafsson A. Oral health and proinflammatory status in end stage renal Patients. Oral Health Prev Dent. 2007; 5(3); 235-244.
- 19 Watt R, Sheiham A. In equalities in oral health: a review of evidence and recommendations for actions. British Dental journal. 1998; 187; 6-12.