

The influence of socioeconomic status on oral health-related quality of life among Syrian children with cleft lip, or palate, or both

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ABSTRACT

الأهداف: الاستقصاء عن تأثير الحالة الاقتصادية الاجتماعية (SES) على نوعية الحياة المرتبطة بصحة الفم (OHRQoL) لدى الأطفال السوريين المصابين بشق الشفة و/أو قبة الحنك.

الطريقة: أجريت دراسة مقطعية عرضانية ضمت 96 طفلاً من الأطفال المصابين بشق الشفة و/أو قبة الحنك المراجعين لقسم طب أسنان الأطفال، جامعة دمشق، سوريا خلال الفترة من أبريل 2010 حتى مايو 2011م، وبعد استبعاد الأطفال المصابين بالاضطرابات العقلية والأطفال العاجزين عن السمع أو النطق، أكمل 87 طفلاً النسخة العربية لاستبيان تقييم نوعية الحياة المرتبطة بصحة الفم (COHRQoL - 36 سؤالاً)، والمؤلف من أربعة محاور (الأعراض الفموية، الوظائف الفموية، الحالة العاطفية، الحالة الاجتماعية). تم تقييم الحالة الاقتصادية الاجتماعية SES بواسطة 5 أسئلة، وبناءً على إجابات تلك الأسئلة قُسمت إلى ثلاثة مستويات (جيد، متوسط، سيء). تم استخدام اختباري كاي مربع والأونوف لإجراء التحليل الإحصائية.

النتائج: أظهر مجموع المحاور الأربعة للاستبيان وكلاً من محور الأعراض الفموية ومحوري الخلتين العاطفية والاجتماعية فروقاً جوهرية بين الأطفال المصابين بالشق المنتسبين إلى المستويات الثلاثة للحالة الاقتصادية الاجتماعية ($p < 0.05$)، وكان أطفال المستوى المنخفض هم الأكثر قلقاً والأكثر تغيباً عن المدرسة والأكثر تجنباً للنشاطات الاجتماعية.

خاتمة: أظهرت الدراسة الحالية أن انخفاض المستوى الاقتصادي الاجتماعي يؤثر سلباً على نوعية الحياة المرتبطة بصحة الفم لدى الأطفال المصابين بشق الشفة و/أو قبة الحنك. وقد يحتاج الأطفال المنتسبون إلى المستوى الاقتصادي المنخفض إلى دعم نفسي واجتماعي خاص.

Objectives: To investigate the impact of socioeconomic status (SES) on the oral health-related quality of life (OHRQoL) among Syrian children with cleft lip, or palate, or both (CL/P).

Methods: A cross-sectional study was carried out at the Pediatric Dentistry Department, Damascus University, Damascus, Syria from April 2010 to May 2011. After excluding subjects with mental disorders, dumb and/or deaf, as well, 87 cleft-children have completed the Arabic version of the Child Oral Health-Related Quality of Life Questionnaire (COHRQoL, 36-item) that was divided into 4 different domains (Oral Symptoms, Functional Limitations, Emotional Well-Being, Social Well-Being). The SES was measured by 5 questions, and based on those questions, it was divided into 3 categories (high, moderate, low). The chi square test, and ANOVA test were used to perform statistical analysis.

Results: Overall, the 4 COHRQoL domains, and each Oral Symptoms, Emotional Well-Being, and Social Well-Being domain separately showed significant differences between cleft-children in different SES levels ($p < 0.05$). Children that belonged to a low level of SES were more worried than the others, and they also have lost more school lessons, and avoided social activities.

Conclusion: We found that the decrease of SES can affect negatively the OHRQoL among children with CL/P. Low SES cleft-children may require special psychological and social support.

Saudi Med J 2013; Vol. 34 (2): 181-186

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Received 28th November 2012. Accepted 6th January 2013.

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Disclosure. The authors have no conflict of interests, and the work was not supported or funded by any drug company.

Cleft lip and palate, the most common of the craniofacial anomalies occur in approximately one in 1000 newborns in the United States.¹ The World Health Organization (WHO) provided a definition of health as a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity,² and in response to that definition, researchers in the medical field considered health as a multi-dimensional concept.³ Quality of life (QoL) was defined by WHO as a perception of person attitude in life according to the community value systems in which they live, and in relation to their aims, expectations, criteria, and fears.⁴ Over the past few decades a new concept, oral health-related quality of life (OHRQoL) has been found, and despite its relatively recent emergence, it has significant effects on the clinical practice of dentistry, and also in dental research.⁵ The OHRQoL term has great importance in promoting oral health care, so it should be the basis of any program aimed to develop oral health,⁶ that led the WHO to consider OHRQoL concept as an essential part of the international oral health program.⁷ Cleft lip and palate will have a correspondingly greater impact on QoL as it has permanent, obvious, and visible effect on the face appearance throughout life.⁸ Many studies have reported the increased risk of oral cleft among birth, in association with a decrease on the socioeconomic status (SES).⁹⁻¹² High SES reflected positively on the individuals,¹³ and there is an urgent need to understand the role of SES in behavioral health in children with oral clefts.¹⁴ The current study aimed to investigate the impact of SES on OHRQoL among Syrian children with cleft lip, or palate, or both (CL/P).

Methods. Samples and study design. A cross-sectional study was carried out at the Pediatric Dentistry Department, Damascus University, Damascus, Syria from April 2010 to May 2011 after an approval was obtained from the local ethics committee prior to the commencement of the study, and informed patient consent was received from all study participants. Evaluation of SES was performed among all subjects, so 96 children were included with CL/P attending the Pediatric Dentistry Department at Damascus University for therapeutic or consulting reasons, however assessment of OHRQoL has required the ability of answering verbal questions by the child, which made us exclude cleft subjects with mental disorders, and who cannot hear nor speak, so we can collect data regarding OHRQoL among 87 cleft-children.

Data collection. The SES was assessed by 5 questions, which clarified educations of both father and

mother, occupations of father and mother, and monthly family income. Basing on those questions, the SES was divided into 3 categories (high, moderate, and low).^{9,10} In addition, SES assessment was enhanced through face-to-face interview with every child's parents. The Arabic version of COHRQoL is a reliable and valid questionnaire for use in countries which use Arabic as a spoken language, it was designed for use with children and teenagers. The COHRQoL consists of 36-item, encompassing 4 domains: Oral Symptoms (6 questions); Functional Limitations (9 questions); Emotional Well-Being (9 questions); and Social Well-Being (12 questions). This questionnaire was translated into Arabic, professionally revised twice, and translated back into English for verification by Brown and Al-Khayal,¹⁵ then it was applied in Saudi Arabia, and showed acceptable validity and reliability there; consequently authors have recommended that Pediatric dentists in Arabic-speaking countries can use this questionnaire for assessing their patients' OHRQoL. In the current study, the ability of hearing and speaking in children, was required since the COHRQoL questionnaire was not presented as written questions and children have been asked directly, and they have answered themselves without any interruption by parents.

Data analysis. Statistical analysis was performed using the Statistical Package for Social Sciences for Windows version 17 (SPSS Inc, Chicago, IL, USA). Each question of the COHRQoL domains was scored on a 2-point scale (1 = 'Yes', 0 = 'No'). Then scores for each domain was calculated by summing the response codes to their questions.¹⁶ The data between the 3 SES levels was compared with chi square test in each question of COHRQoL, however scores on all subscales were compared between and within groups using the ANOVA test. Statistical significance was set at $p < 0.05$ and confidence levels at 95%.

Results. According to their level of SES, 96 children (52 males, 44 females) aged 6-14 with CL/P were divided into 3 levels: 13 (13.5%) cleft-children belonged to high SES; 38 (39.6%) belonged to moderate SES level; and 45 (46.9%) belonged to low SES level after excluding children with mental disorders, and children who do not have the ability to hear or speak. The OHRQoL was assessed among 87 cleft-children. Statistically significant differences between the 3 SES levels were reported in the overall 4 OHRQoL domains scores ($p=0.000$), and in each Oral Symptoms ($p=0.006$), Emotional Well-Being ($p=0.006$), and Social Well-Being domain as well ($p=0.000$), however the overall scores of Functional Limitations domain did not show differences between

the 3 SES categories ($p=0.244$) as shown in **Table 1**. In the assessment of Oral Symptoms domain items, there were statistically differences between the 3 SES levels in 2 questions, first of them related to gingival bleeding ($p=0.003$), which increased in low SES level individuals as shown in **Table 2**, and also food caught between/in teeth showed significant difference between the 3 SES categories ($p=0.002$) (**Table 2**). No differences between the 3 SES categories were demonstrated in all items of the Functional Limitations domain as shown in **Table 3**. Regarding the Emotional Well-Being domain items, statistically differences were found in 3 questions (numbers 16, 23, and 24). As shown in **Table 4**, we reported that cleft-children belonging to the low SES level were more irritable and frustrated than their peers belonging to the high level ($p=0.009$), who show also less worry regarding their health ($p=0.046$), and their differences ($p=0.007$) than the children belonging to the other SES levels. On assessment of the Social Well-Being domain items (**Table 5**) statistically significant differences were found in 5 questions (numbers 25, 29, 34, 35, and 36), it was noticed that low SES patients

have lost more lessons in school ($p=0.000$), and they also avoided social activities ($p=0.001$), in case the SES was low children were teased because of their injuries ($p=0.000$), and isolated by other peers ($p=0.000$), and they have received more questions regarding their jaws/teeth ($p=0.010$).

Discussion. The Faculty of Dentistry at Damascus University was chosen to carry out the present research as there is no specialist center for oral clefts in Syria, and most cleft patients received dental attention in this institution. Examination of the SES of children with CL/P may prove to be an important first step in understanding the nature of social interaction problems in those children. Many studies have focused on the relation between SES and OHRQoL in healthy children, however there is no recent studies covering the interactions between the SES and OHRQoL among children with oral clefts. This present study has focused on the interaction between the SES and the OHRQoL among oral cleft subjects. As there are no common criteria for the demonstration of low SES, the investigation of the role of SES in orofacial clefting become more difficult.¹⁷ Many studies have determined the SES by 5 questions (paternal and maternal education, paternal and maternal occupation, and family income), and the SES was divided according to those questions into 3 levels (high, moderate, and low).^{9,10} In the current study, assessment of SES was enhanced by interviewing the child's parents on the previous 5 questions.

Regarding the OHRQoL measure, Eckstein et al¹⁸ have found after performing a literature review that there are 2 OHRQoL measures, first of them is: Child Oral Health Impact Profile (COHIP); and the second is Child Oral Health Quality of Life (COHRQoL).

Table 1 - The relation between the overall scores of COHRQoL, and the overall for each domain of COHRQoL, and the 3 levels of SES using the ANOVA test.

OHRQoL domains	F	P-value
Oral Symptoms (6 questions)	5.412	0.006*
Functions Limitations (9 questions)	1.433	0.244
Emotional Well-Being (9 questions)	5.408	0.006*
Social Well-Being (12 questions)	14.825	0.000*
COHRQoL (36 questions)	11.707	0.000*

*Correlation is significant at 0.05 level. F - represent the value of ANOVA test, COHRQoL - Child Oral Health-Related Quality of Life Questionnaire, SES - socioeconomic status

Table 2 - The relation between the Oral Symptoms domain items, and the 3 levels of SES using the chi square test.

N	Oral Symptoms domain	Reply	SES levels			Total	P-value
			High	Moderate	Low		
1	Pain in the teeth, lips, jaws, and mouth?	Yes	8 (61.5)	23 (65.7)	28 (71.8)	59 (67.8)	0.745
		No	5 (38.5)	12 (34.3)	11 (28.2)	28 (32.2)	
2	Bleeding gums?	Yes	1 (7.7)	9 (25.7)	21 (53.8)	31 (35.6)	0.003*
		No	12 (92.3)	26 (74.3)	18 (46.2)	56 (64.4)	
3	Mouth sores?	Yes	4 (30.8)	9 (25.7)	19 (48.7)	32 (36.8)	0.109
		No	9 (69.2)	26 (74.3)	20 (51.3)	55 (63.2)	
4	Bad breath?	Yes	5 (38.5)	18 (51.4)	23 (59.0)	46 (52.9)	0.428
		No	8 (61.5)	17 (48.6)	16 (41.0)	41 (47.1)	
5	Food caught between/in the teeth?	Yes	11 (84.6)	17 (48.6)	33 (84.6)	61 (70.1)	0.002*
		No	2 (15.4)	18 (51.4)	6 (15.4)	26 (29.9)	
6	Food stuck to the roof of the mouth?	Yes	7 (53.8)	23 (65.7)	27 (69.2)	57 (65.5)	0.101
		No	6 (42.2)	12 (34.3)	12 (30.8)	30 (34.5)	

* Correlation is significant at 0.05 level, N - represents question number, n - number of respondents, SES - socioeconomic status

Table 3 - The relation between the Function Limitations domain items, and the 3 levels of SES using the chi square test.

N	Function Limitations domain	Reply	High	SES levels			Total	P-value
				Moderate	Low	n (%)		
7	Breathing through the mouth?	Yes	9 (69.2)	28 (80.0)	34 (87.2)	71 (81.6)	0.334	
		No	4 (30.8)	7 (20.0)	5 (12.8)	16 (18.4)		
8	Longer to eat?	Yes	4 (30.8)	15 (42.9)	21 (53.8)	40 (46.0)	0.313	
		No	9 (69.2)	20 (57.1)	18 (46.2)	47 (54.0)		
9	Trouble sleeping?	Yes	2 (15.4)	6 (17.1)	4 (10.3)	12 (13.8)	0.681	
		No	11 (84.6)	29 (82.9)	35 (89.7)	75 (86.2)		
10	Difficulty chewing firm foods: apple, corn/steak?	Yes	9 (69.2)	21 (60.0)	28 (71.8)	58 (66.7)	0.549	
		No	4 (30.8)	14 (40.0)	11 (28.2)	29 (33.3)		
11	Difficulty to open your month wide?	Yes	1 (7.7)	4 (11.4)	11 (28.2)	16 (18.4)	0.099	
		No	12 (92.3)	31 (88.6)	28 (71.8)	71 (81.6)		
12	Difficulty to say any words?	Yes	9 (69.2)	28 (80.0)	34 (87.2)	71 (81.6)	0.334	
		No	4 (30.8)	7 (20.0)	5 (12.8)	16 (18.4)		
13	Difficulty to eat food you like?	Yes	5 (38.5)	16 (45.7)	20 (51.3)	41 (47.1)	0.708	
		No	8 (61.5)	19 (54.3)	19 (48.7)	46 (52.9)		
14	Difficulty to drink with a straw?	Yes	3 (23.1)	8 (22.9)	10 (25.6)	21 (24.1)	0.957	
		No	10 (76.9)	27 (77.1)	29 (74.4)	66 (75.9)		
15	Difficulty drinking/eating hot/cold foods?	Yes	3 (23.1)	13 (37.1)	15 (38.5)	31 (35.6)	0.587	
		No	10 (76.9)	22 (62.9)	24 (61.5)	56 (64.4)		

N - represents question number, SES - socioeconomic status, n - number of respondents

Table 4 - The relation between the Emotional Well-Being domain items, and the 3 levels of SES using the chi square test.

N	Emotional Well-Being domain	Reply	High	SES levels			Total	P-value
				Moderate	Low	n (%)		
16	Irritable/frustrated?	Yes	6 (46.2)	23 (65.7)	34 (87.2)	63 (72.4)	0.009*	
		No	7 (53.8)	12 (34.3)	5 (12.8)	24 (27.6)		
17	Felt unsure of yourself?	Yes	3 (23.1)	12 (34.3)	15 (38.2)	30 (34.5)	0.600	
		No	10 (76.9)	23 (65.7)	24 (61.5)	57 (65.5)		
18	Shy/embarrassed?	Yes	6 (46.2)	23 (65.7)	28 (71.8)	57 (65.5)	0.242	
		No	7 (53.8)	12 (34.3)	11 (28.2)	30 (34.5)		
19	Concerned with other people think?	Yes	5 (38.5)	12 (34.3)	23 (59.0)	40 (46.0)	0.087	
		No	8 (61.5)	23 (65.7)	16 (41.0)	47 (54.0)		
20	Worried that not as good looking as others?	Yes	4 (30.8)	18 (51.4)	24 (61.5)	46 (52.9)	0.153	
		No	9 (69.2)	17 (48.6)	15 (38.5)	41 (47.1)		
21	Upset?	Yes	6 (46.2)	20 (57.1)	29 (74.4)	55 (63.2)	0.119	
		No	7 (53.8)	15 (42.9)	10 (25.6)	32 (36.8)		
22	Nervous/ afraid?	Yes	5 (38.5)	16 (45.7)	26 (66.7)	47 (54.0)	0.093	
		No	8 (61.5)	19 (54.3)	13 (33.3)	40 (46.0)		
23	Worried less healthy than other people?	Yes	4 (30.8)	19 (54.3)	27 (69.2)	55 (57.5)	0.046*	
		No	9 (69.2)	16 (45.7)	12 (30.8)	32 (42.5)		
24	Worried that he/she is different from other people?	Yes	3 (23.1)	24 (68.6)	27 (69.2)	47 (62.1)	0.007*	
		No	10 (76.9)	11 (31.4)	12 (30.8)	40 (37.9)		

*Correlation is significant at 0.05 level, N - represents question number, SES - socioeconomic status, n- number of respondents

In the present study, the COHRQoL was preferred to be used due to its reliability and validity for using in Arabic-speaking countries (like Syria) that has been proven by Brown and Al-Khayal in Saudi Arabia.¹⁵ As the overall 4 domains of OHRQoL showed significant difference between the 3 levels of SES, the SES has obvious effect on the QoL in subjects with CL/P, and children that to each level of SES have different response

toward OHRQoL domains. The overall scores of Oral Symptoms domain showed significant differences between the 3 levels of SES, and the gingival bleeding happened in less frequencies in cleft children belonging to the high SES level that can be explained by the increase of gingival problems when the SES reduction, this finding regarding gingival lesions is in agreement with Rasool et al in Pakistan.¹⁹ As well, the study of

Table 5 - The relation between the Social Well-being domain items, and the 3 levels of SES using the chi square test.

N	Social Well-Being domain	Reply	SES levels			Total	P-value
			High	Moderate	Low		
			n (%)				
25	Missing school?	Yes	5 (38.5)	20 (57.1)	35 (89.7)	60 (69.0)	0.000*
		No	8 (61.5)	15 (42.9)	4 (10.3)	27 (31.0)	
26	Had hard time paying attention in school?	Yes	4 (30.8)	12 (34.3)	21 (53.8)	37 (42.5)	0.153
		No	9 (69.2)	23 (65.7)	18 (46.2)	50 (57.5)	
27	Had difficulty doing your homework?	Yes	5 (38.5)	11 (31.4)	23 (59.0)	39 (44.8)	0.052
		No	8 (61.5)	24 (68.6)	16 (41.0)	48 (55.2)	
28	Not want to speak/read loud in class?	Yes	5 (38.5)	14 (40.0)	24 (61.5)	43 (49.4)	0.125
		No	8 (61.5)	21 (60.0)	15 (38.5)	44 (50.6)	
29	Avoid taking part in activities like sports, clubs, and so forth?	Yes	0 (0.0)	2 (5.7)	13 (33.3)	15 (17.2)	0.001*
		No	13 (100)	33 (94.3)	26 (66.7)	72 (82.8)	
30	Not want to talk to other children?	Yes	0 (0.0)	3 (8.6)	9 (23.1)	12 (13.8)	0.058
		No	13 (100)	32 (91.4)	30 (76.9)	75 (86.2)	
31	Avoided smiling/laughing when around other children?	Yes	1 (7.7)	5 (14.3)	11 (28.2)	17 (19.5)	0.162
		No	12 (92.3)	30 (85.7)	28 (71.8)	70 (80.5)	
32	Not want to spend time with other children?	Yes	0 (0.0)	5 (14.3)	10 (25.6)	15 (17.2)	0.088
		No	13 (100)	30 (85.7)	29 (74.4)	72 (82.8)	
33	Argued with other children or your family?	Yes	7 (53.8)	26 (74.3)	29 (74.4)	62 (71.3)	0.322
		No	6 (46.2)	9 (25.7)	10 (25.6)	25 (28.7)	
34	Teased/called names by other children?	Yes	5 (38.5)	28 (80.0)	36 (92.3)	69 (79.3)	0.000*
		No	8 (61.5)	7 (20.0)	3 (7.7)	18 (20.7)	
35	Left out by other children?	Yes	2 (15.4)	18 (51.4)	32 (82.1)	52 (59.8)	0.000*
		No	11 (84.6)	17 (48.6)	7 (17.9)	35 (40.2)	
36	Asked questions by other children about teeth?	Yes	8 (61.5)	30 (85.7)	37 (94.9)	75 (86.2)	0.010*
		No	5 (38.5)	5 (14.3)	2 (5.1)	12 (13.8)	

*Correlation is significant at 0.05 level, N - represents question number, SES - socioeconomic status, n - number of respondents

Sayegh et al²⁰ has reported clear association between social class and gingivitis. Food caught between teeth was observed in high proportion in both high and low SES levels in comparing with moderate level, and it could be related to untreated dental caries, which may increase with a decrease of SES, and the study of Ferro et al²¹ has found that SES is still a predictor for dental decay. Overall, the Function Limitations domain beside its items did not show any significant differences between the 3 SES levels, and that can be due to the sever effect of CL/P on the oral functions,⁸ like problems with speech,²² mouth breathing that may be resulted by occlusion malformation,^{1,22} or by difficulty to breathing through the nose among children with oral cleft,²⁴ and other functional conditions, such as the difficulty to eat food that may be related to the dental anomalies, which is very common in cleft subjects,^{1,22} all these factors lead to great significant negative impacts on Function Limitations domain for all cleft children regardless of their SES. Overall Emotional well-being domain showed significant differences between the 3 SES categories, and cleft children belonging to the low level of SES were more anxious and depressed than those belonging to the other SES levels, they were worried about their

health, and they also concerned about how the others look at them. In addition, overall Social Well-Being domain presented dramatic differences between the 3 SES levels, hence the response of children toward society differs according to their SES, cleft children belonging to low SES class had received more teasing questions about their jaws/teeth. Moreover, we observed that they highly lost school lessons in comparison with other children belonging to other SES levels, this result could be justified by the questions and teasing received, which made them unwilling to go to the school in order to avoid embarrassing situations and questions, or it may occur due to the reduction of parental education, which lead, in turn, to the lack of attention of child education by his/her parents.

Avoiding activities by cleft children belonging to low SES level could also be related to financial reasons, which may discourage them doing some costly social activities, and in this context Wehby et al,¹⁴ have reported that lower SES may remarkably increase behavior-related problems among subjects with oral cleft, while the higher SES was associated with reduction of aggressive and oppositional behavior. As OHRQOL has not been previously assessed in Syria among children with

CL/P, our findings have provided the initial basis for developing future oral health program among those children according to their SES levels.

One of the limitations of this study is that cleft children who had other disabilities, such as dumb, deaf, and children with learning disability were excluded because they needed another method to assess their OHRQoL, which is affected seriously, otherwise methods used in the current study, that maybe the assessment questionnaire of OHRQoL should be answered by child's parents, or by experts in cases like that. Additionally, the assessment of oral health status, if conducted in all cleft subjects could provide an explanation of the decrease of the Oral Symptoms domain among children belonging to low SES.

In conclusion, the reduction of the SES had a strong negative impact on the OHRQoL among Syrian children with CL/P. Cleft subjects belonging to low level of SES are at risk to develop more emotional and social problems, and they may require special psychological and social support, in addition to their need to enhance oral health.

Acknowledgment. *The authors gratefully acknowledge the children who had cleft lip and/or palate, and their families for their cooperation. Special thanks to Dr. Rania Soudan for her great help and support.*

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