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Oral health–related quality of life among groups of foundling and delinquent children in comparison with mainstream children

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ABSTRACT

Aim: This study envisages understanding about the Oral Health-Related Quality of Life (OHRQoL) among groups of foundling and delinquent children and compares them with mainstream children in Riyadh, Saudi Arabia.

Method: This is a cross-sectional, observational study of a group of foundling and delinquent children aged 11 to 14 years, in care houses in Riyadh, Saudi Arabia, and mainstream school children. Variables measured for each group were demographic data (age, gender), subjective oral health condition, and OHRQoL. An interview-based questionnaire was used for collecting the relevant data. The questionnaire was divided into four parts, oral symptoms, functional limitations, emotional well-being, and social well-being, with each response scored as per the following codes: (0) never, (1) once or twice, (2) sometimes, (3) often, and (4) every day. The top possible score for the total scale was 144, and the lowest was 0. A comparison group of mainstream school children was recruited from public schools. Data were analysed using SPSS version 25.0 statistical software, and one-way ANOVA was used for the analysis of data when three levels or more were categorical, and the response was numerical. A chi-square test was used to assess the correlation between any two categorical variables.

Results: Out of the total 99 children, 33 were delinquents, 33 were foundling, and 33 were mainstream children included as a comparative group in the study. It was noted that the delinquents compared to the

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other children had significantly higher scores in accordance with the data collected, with a mean overall score of 30.61 compared to the score for foundling, which was 19.48, and mainstream children had a meager score of 9.18. Individual factors such as the oral symptoms, functional limitations, and emotional and social well-being were scored separately, with delinquents having the highest scores and mainstream children the least.
Conclusions: Health, including oral health, is a right everyone is equally subjected to, and while the concept of OHRQoL is relatively new, delinquents and foundling are definitely subjected to poorer standards in terms of their oral hygiene, on-time treatment, and diagnosis, which further deteriorates their quality of life.

Keywords: *delinquents; foundling; oral health–related quality of life.*

INTRODUCTION

According to the definition of health constituted by the World Health Organization, "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity."[1] So, while health is an expansive concept, oral health even now remains poorly restricted to the oral cavity and does not aptly consider the impact that good oral health has on the overall health and quality of life of an individual.[2] Hence, focusing upon a much-overlooked aspect of dentistry, the oral health-related quality of life (OHRQoL) measurement constitutes a silent revolution that ensures inclusivity of dental care as a part of one's general well-being.[3] It is defined as "a multidimensional construct that reflects (among other things) people's comfort when eating, sleeping, and engaging in social interaction, their self-esteem, and their satisfaction concerning their oral health."[4] It considers one's measure of function as in one's mastication and speech, one's appearance, and self-esteem as a part of the psychological factor, and one's social sphere, involving intimacy, communication, and the experience of pain and discomfort.[5] While the appraisal of an individual's oral health status has commonly been restricted to the clinical indicators of disease, acknowledging socio-dental factors in oral epidemiology aids in documenting the full impact of oral disorders.[6–8]

Children are subjected to various oral and orofacial disorders, ranging from dental caries to orofacial clefts and malocclusions, which disproportionately impact their physical and cognitive functioning, psychosocial well-being, and language development.[9] Hence, several indices have been precisely fabricated to assess the OHRQoL for children and adolescents, which include the early childhood oral health impact scale (ECOHIS), the child perceptions questionnaire (CPQ), the child oral impacts on daily performances (C-OIDP), and the child oral health impact profile (COHIP).[10] So while oral diseases seriously impair quality of life, the extent of the damage is governed by the children and parents' socioeconomic characteristics, education, and environment.[11,12] Thus, it can be hypothesized that the pattern of oral disease and quality of life would substantially differ between mainstream children and those abandoned by their parents, subjected to juvenile centers, or those who live in orphan homes.[13] A thorough search of relevant literature revealed no publications that have conducted studies to measure the OHRQoL of foundling or delinquent children in Saudi Arabia because of a shortage of researchers investigating the association between oral health and quality of life among Saudi children. The study

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thereby aims to assess OHRQoL among foundling and delinquent children groups and compare them with mainstream children in Riyadh, Saudi Arabia.

MATERIALS AND METHODS

The research proposal was submitted to the Institutional Review Board of King Saud University and approved with Number E-19-3797. This is a cross-sectional, observational study of a group of foundling and delinquent children in care houses in Riyadh, Saudi Arabia, and mainstream schoolchildren. Variables measured for each group were demographic data (age, gender, etc.), subjective oral health condition, and OHRQoL. Legal guardians were requested to sign an informed consent form before their child was recruited for the study; the children's oral consent was also obtained and documented. An interview-based questionnaire was used to collect information for several sections (demographics, subjective general health, subjective general health behaviors, subjective oral health, and subjective oral health behaviors). Information for the OHRQoL section was collected using the Arabic-translated questionnaire to determine the frequency of oral health–related impacts on children 11–14 (CPQ11–14). This questionnaire was initially developed in Toronto, Canada by Jokovic et al.[13] The CPQ11–14 aims to measure the effect of oral health on different aspects of a child's life. This questionnaire was validated for use in the Arabic language and is divided into four health parts: oral symptoms (6 questions), functional limitations (9 questions), emotional well-being (9 questions), and social well-being[14] (12 questions). This questionnaire was fabricated to gain in-depth insights into the extent of these impacts regarding the children's oral health, including their teeth and mouth, in the last 3 months; each response was scored with zero being never, one being once or twice, two being sometimes, three being often, and four being every day. The total response code scores for the 36 questions gave us a general evaluation of the extent to which each child's oral status affects his or her quality of life. The top possible score for the total scale was 144, and the lowest was 0. The sum of the response codes for questions in each subscale gave a total score for each of the four parts. The questionnaire was filled out during an interview with the child by the principal investigator. A comparison group of mainstream school children was recruited from public schools. The children were from the same age group, and the same measures or indicators were applied. The data were collected by an examiner (the principal investigator). The questionnaire was piloted to assess the clarity and feasibility of a sample of 10 mainstream children who were not included in the study. For the foundling and delinquent children, the data were collected at each of the children's care homes, and examination was conducted in a regular chair with a penlight and disposable dental examination kit. For the comparison group of mainstream school children, the data were collected in a chair in daylight using a penlight and a disposable dental examination kit.

Inclusion Criteria

- All foundling and delinquent children attending care homes
- Mainstream school children (comparison group)
- Aged from 11 to 14 years
- Children willing to participate and able to respond to the study

Exclusion Criteria

- Children above 14 years
- Children below 11 years
- Children unable to participate and respond to the study due to mental or physical disability

Statistical Analysis

Data were analyzed using SPSS version 25.0 statistical software (IBM Inc., Chicago, IL, USA). Descriptive statistics such as frequency, percentage, mean, SD, tables, and graphs were used to

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describe data. One-way ANOVA was used for data when three levels or more were categorical, and the response was numerical. A chi-square test was used to assess the correlation between any two categorical variables. A P-value less than 0.05 was considered significant. At alpha 0.05 with 92% power and effect size 0.4, the total sample size was at least 30 for each group.

RESULTS

Out of the total sample of 99 children, 33 were delinquents, 33 were foundlings, and 33 were mainstream children included as a comparative group in the study. It was noted that the delinquents, compared to the other children, had significantly higher scores according to the data collected. Table 1 depicts the overall score for oral health-related quality of life of the children in Riyadh, where delinquents had a mean score of 30.61 and foundlings had a score of 19.48. The mainstream children had a meager score of 9.18. Upon assessment of oral symptoms in Table 2, we can see that the delinquents had a mean score of 6.45, which is on par with their findings under functional limitations in Table 3. There was not much difference in scores for oral symptoms between the foundlings and the mainstream children, which was in contrast to more foundling children subjected to functional limitation (4.18) compared to mainstream children (1.30). Table 4 reviewed the emotional well-being of children. The delinquents were more prone to emotional trauma (9.24) than their counterparts (foundling: 4.27, mainstream children: 0.06). Social well-being, the fourth component of the questionnaire, yielded higher mean scores among the delinquents (8.45) and the foundlings (6.18), which were more significant compared to the mainstream children (3.82). The over all mean scores of study population was summarised in Figure 1.

DISCUSSION

Oral diseases often diagnosed in children (commonly dental caries, orofacial clefts, malocclusion,

TABLE 1. Overall Scores of Using Oral Health–related Quality of Life among the Study Population, Descriptive One-way Anova.

		N	**Mean**	**Std. Deviation**	**P-value**	**95% Confidence Interval for mean**		**Foundling**	**Delinquent**	**Mainstream**
						Lower bound	**Upper bound**			
Total_ OHRQoL score	Foundling	33	19.48	24.339	0.000*	10.85	28.12	1.000	0.094	0.064
	Delinquent	33	30.61	17.704		24.33	36.88	0.094	1.000	0.000
	Mainstream	33	9.18	7.346		6.58	11.79	0.064	0.000	1.000

OHRQoL, oral health–related quality of life.

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TABLE 2. Overall Scores of Using Oral Symptoms Scores among the Study Population, Descriptives One-way Anova.

		N	Mean	Std. Deviation	P-value	95% Confidence Interval for mean		Foundling	Delinquent	Mainstream
						Lower bound	Upper bound			
Total score (Oral symptoms)	Foundling	33	4.85	4.810	0.034*	3.14	6.55	1	0.277	0.675
	Delinquent	33	6.45	3.527		5.20	7.71	0.277	1.000	0.008
	Mainstream	33	4.03	2.744		3.06	5.00	0.675	0.008	1.000

**Significant.*

TABLE 3. Overall Scores of Using Functional Limitation of Life Scores among the Study Population, Descriptive Using One-way Anova.

		N	Mean	Std. Deviation	P-value	95% Confidence Interval for mean		Foundling	Delinquent	Mainstream
						Lower bound	Upper bound			
Total score (Functional limitation)	Foundling	33	4.18	6.939	0.001*	1.72	6.64	1.000	0.305	0.071
	Delinquent	33	6.45	5.386		4.54	8.36	0.305	1.000	0.000
	Mainstream	33	1.30	2.099		0.56	2.05	0.071	0.000	1.000

**Significant.*

TABLE 4. Overall Scores of Using Social Well-being Scores among the Study Population, Descriptives One-way Anova.

		N	Mean	Std. Deviation	P-value	95% Confidence Interval for mean		Foundling	Delinquent	Mainstream
						Lower bound	Upper bound			
Total score (Social well-being)	Foundling	33	6.18	8.727	0.036*	3.09	9.28	1.000	0.480	0.386
	Delinquent	33	8.45	7.080		5.94	10.97	0.480	1.000	0.011
	Mainstream	33	3.82	5.335		1.93	5.71	0.386	0.011	1.000

**Significant.*

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TABLE 5. Overall Scores of Using Emotional Well-being Scores among the Study Population, Descriptives One-way Anova.

		N	Mean	Std. Deviation	P-value	95% Confidence Interval for mean		Foundling	Delinquent	Mainstream
						Lower bound	Upper bound			
Total score (Emotional well-being)	Foundling	33	4.27	7.046	0.000*	1.77	6.77	1.000	0.006	0.005
	Delinquent	33	9.24	5.512		7.29	11.20	0.006	1.000	0.000
	Mainstream	33	0.06	0.348		−0.06	0.18	0.005	0.000	1.000

**Significant.*

and/or fractured teeth) damage the physical appearance, function, emotional development, and social interactions of children, limiting or hampering their growth and intellectual development.[11,15,16] Hence, good oral health becomes a critical need owing to its multifaceted influence on one's life. As delinquents and foundling children, this particular target population is innately prone to neglect.[17] Therefore, a thorough understanding and epidemiological data are essential for appraising one's awareness of the importance of oral health relating to the quality of life of these children.[4,5,8]

Kumar et al.[18] had similar findings, with a score of 3.83 for oral symptoms, 3.9 for emotional well-being, and 4.1 for social well-being among children with no parents, which could be attributed to the fact that many of them were previously street children or from broken or damaged families and suffered from poor parenting, making them more vulnerable to malnutrition, communicable and infectious disease, and poor oral health. A study performed by Piovesan et al.[19] associated the socioeconomic status of a child with their oral health and related quality of life, reporting a CPQ overall mean score of 20.9, a score of 6.8 for oral symptoms, 6.0 for functional limitations, 5.9 for emotional well-being, and 3.0 for social well-being. The delinquents' poorer scores in our study were linked to their lower socioeconomic status, which led to material deprivation and poor individual lifestyle decisions. Deprived individuals are more likely to engage in deleterious behaviors than their more affluent counterparts, subjecting them to more excellent oral health–related problems than mainstream children.[19]

A similar study[20] was conducted among Nigerian school children, with a total score of 23.44. Oral symptoms were scaled at 5.27, functional limitations at 4.77, emotional well-being at 6.30, and social well-being at 7.10, who were poorer than the mainstream children in the present study but better than other delinquents and foundlings, possibly because of better parental supervision. Specific individual characteristics, education, and standards

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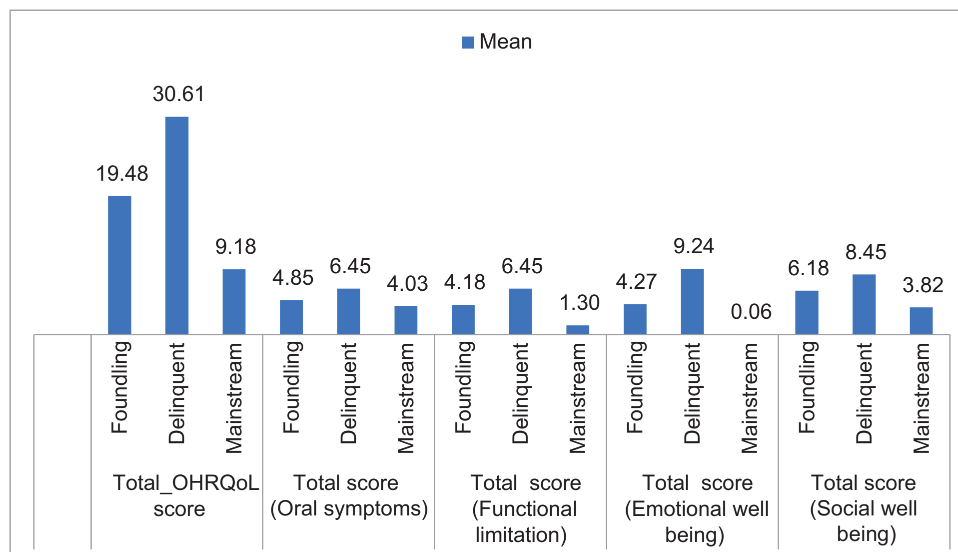

FIGURE 1. Overall mean scores of the study population.

of reference may affect health and welfare ratings.[20] Sun et al.[21] narrowed down factors affecting the OHRQoL for children aged 12 years and concluded that the males were more prone to oral symptoms than their female counterparts. However, considering that females are usually more sensitive and conscious regarding their health, they scored higher concerning emotional well-being (adjusted OR = 1.89 and 0.67). The mother's educational qualification greatly impacted the child's CPQ scores. Also, better education levels had a much more positive influence on the quality of life (adjusted OR = 0.45 and 0.37), proving that the delinquents, especially those in and out of juvenile centers, have substandard education levels and awareness and are neglected, leading to a poor OHRQoL.[21] Nevertheless, another study reported that delinquents and foundlings who were less aware of their oral health had poorer oral hygiene practices, were more afraid of a dental setup or dentist, consumed sugary foods more frequently, and had worse scores for OHRQoL ($P < 0.05$). Their father's education levels positively impacted the scores ($\beta = -0.9$, $P = 0.014$), and children from higher-income families had statistically better social well-being ($P = 0.015$).[22] A South Indian study by Ahuja and Ahuja[23] to determine the influence of socioeconomic status and home environmental factors on OHRQoL in children concluded that children in lower socioeconomic classes, especially the upper lower and lower-middle classes, had higher scores compared to others ($P < 0.05$) and that children of single parents, with siblings, staying in smaller homes with multiple family members, going to government schools and in proximity to family members with a habit of consuming alcohol or tobacco had poorer scores. These findings supported the status of the present study and another study conducted among Canadian children.[24] The study aimed to shed light and provide meaningful insights on their current situation, seeking the attention of health policymakers, NGOs, public health dentists, and orphan homes to reform and enhance existing policies and services, leading to their inclusivity and appraisal of oral health. The management of caries lesions in deprived children is essential; otherwise, it might impact their quality of life.[25] A recent Libyan study reported that untreated caries lesions in children impact the quality of their

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lives. The authors also noted that social disparities are linked with children's caries experience.[26] The management of carious lesions in children will help in their well-being.

Dental treatment under general anesthesia is a feasible option for uncooperative children, and this mode of administration will provide a single-visit solution for such children.[27] A Brazilian study[28] reported a negative association between child caries experience and quality of life (Brazilian ECOHIS, B-ECOHIS) among the mothers. Similar findings were evident with the present study, which compared foundling and delinquent children with mainstream children; however, the results were not comparable. An Italian study[29] used I-ECOHIS,[29] the Brazilian research used B-ECOHIS,[28] and the Thai study used Thi-ECOHIS.[30] Whereas in the present study, the authors used a validated A-ECOHIS[14] for the assessment. While the concept of OHRQoL is relatively contemporary, the current study envisages putting forward some eye-opening insights on the poor oral health and even poorer quality of life among delinquents and foundlings.[5–7] Although oral health is not the top priority for the majority of the mainstream families, and these target groups are particularly subject to constant neglect, lack of awareness and inadequate appraisal regarding their oral hygiene, and timely prognosis and treatment of oral diseases and competent preventive measures, which should be the need of the hour.

CONCLUSION

This study manages to highlight the grievance that help influence health policymakers, NGOs, juvenile facilities, public health dentists, and orphan homes to step up and enhance their policies and services targeting this population through initiatives such as oral health camps, routine check-ups, promoting oral health awareness via educational sessions, and independent funds set aside for their betterment.

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CONFLICTS OF INTEREST

The authors declare no potential conflicts of interest.

SOURCE OF FUNDING

None.

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