

Original Article

Knowledge and Practices in Treating Pediatric Patients with Systemic Conditions in Riyadh's Dental Community

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ABSTRACT

It is well known that good dental hygiene is essential for overall health and a higher standard of living. The oral cavity can help raise an early warning since it may be affected by systemic illness and be the source of its symptoms. Using an online survey tool, this longitudinal survey was conducted among dentists and dental students in Riyadh. Participants were approached by Riyadh's dental clinics, hospitals, and institutions, and asked to complete the survey. A total of 381 responses were obtained from the participants, including 28% general practitioners, 72% students/interns, 66% females, and 34% males. Given that most p-values are less than 0.05, the general practitioners exhibit noticeably greater levels of knowledge than the students/intern group. The participants' general level of awareness and knowledge was below average. Students must be taught about the association between uncommon systemic illnesses in children and how they affect their oral health.

Keywords: Pediatric patients, Oral health, Knowledge, Systemic diseases

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Introduction

Oral health issues are far more common in children with systemic disorders than in their healthy counterparts. For the child suffering from such conditions, negligence or any kind of delay in resolving the issue might result in serious sickness. As a result, the pediatric dentist is essential in preventing, treating, and stabilizing oral and dental issues that can seriously impair a child's health and standard of living before, during, and following treatment [1–3].

The balance between a healthy person and a sick person can be thrown off both locally and systemically by the oral microbiota [4]. In the oral cavity, bacteria, fungi, viruses, and protozoa can all exist alone or in combination. These may have a significant interaction with the host and each other, which might result in

either illness or better health. The following are examples of systemic disorders that present with oral symptoms: autoimmune, hematologic, endocrine, and neoplastic processes. Oral abnormalities in children may be linked to viral etiologies like Kawasaki illness or uncommon malignancies like Langerhans cell histiocytosis [5, 6].

It is generally recognized that maintaining oral health is a critical component of overall health and a higher standard of living. The oral cavity may be the source of symptoms of systemic disease and may be impacted by it; therefore, it can help in putting out an early warning. Consequently, it is important that primary care physicians thoroughly examine the oral cavity to make a diagnosis. Patients' dental health is also negatively impacted by these systemic disorders and their treatments, which is why primary care physicians and

dentists should work together more closely. In most cases, teeth and/or gums are affected by severe oral symptoms of systemic illness. The dental staff must thus take great care and safeguards while treating such oral and/or dental symptoms. Additionally, because of the medications a patient may be taking for these conditions, proper care must be provided [7, 8].

As previously said, dentists need to be aware of these signs to treat pediatric patients efficiently. In general, Hong Kong's medical and dentistry students had a positive outlook and an awareness of the need for cooperation between the two professions in raising care and efficacy standards, according to one of the numerous investigations that have been done to gauge awareness [9].

Dentists need to be more aware of their patients' beliefs, preferences, and anxieties to meet their needs [10]. To prepare future dentists for superior practice in pediatric dentistry, their studies must thus include recommendations and procedures [11]. Little ones with asthma produced significantly higher def, DMF rating, and GI mean scores compared to the control groups, with significant asthmatics regularly showing the greatest def and GI rating, Arafa *et al.* [11] determined the relationship between oral health and childhood asthma. A higher GI mean rating was also linked to a significantly higher average salivary calcium level, a lower stimulated salivary flow rate, and a modified salivary pH, according to the salivary study.

Despite its questionable occurrence in systematic evaluations, dental caries is a complex oral disorder that is frequently found in individuals with obesity and diabetes mellitus. Gingivitis, periodontal disease, and dental cavities are related to similar behaviors, such as poor oral hygiene and bad eating habits. Consuming sugary foods and not cleaning your teeth enough might have more detrimental effects on your oral hygiene. Maintaining dental health will stop chronic oral illnesses and improve the outcomes of long-term inflammatory processes. Thus, a multidisciplinary team of medical and dental specialists is required to treat obese and diabetic individuals [12].

Study hypotheses

In comparison with practicing dentists, dental students have a lesser understanding of oral health care for children with systemic disorders.

Aims of the research

- To determine the dentists' and dental students' level of knowledge about the oral health of pediatric patients with systemic disorders.
- To assess how much awareness dentistry students

and dentists possess.

Materials and Methods

Study design

This is a cross-sectional research carried out among dental students and dentists in Riyadh by an online survey.

Study sample

Dental universities, hospitals, and clinics in Riyadh were contacted and participants were demanded to fill up the survey.

Study instrument

The online questionnaire was formed including questions about personal and demographic data followed by questions linked to systemic diseases and their association with oral health in pediatric patients.

Instrument validity and reliability

A pilot study was performed by sending the survey to 20 participants and the data was entered into SPSS version 22 to specify the reliability using Cronbach's coefficient alpha. The validity of the questionnaire was examined by sending it to experienced researchers in REU and changes were made according to their feedback and comments.

Statistical analysis

The gathered data was analyzed using SPSS version 22, where descriptive as well as inferential statistics were performed. Comparisons between groups will be made with the value of significance kept under 0.05 using the chi-square test and correlations were done using Spearman's correlation as the data was not normally distributed.

Results and Discussion

We found that the Cronbach's alpha value for the questionnaire's consistency was 811, indicating high reliability. The power of the sample was also computed, and the result was 0.86, which is also extremely excellent (**Table 1**). There were 381 replies from the participants, with 28% being general practitioners, 72% being students or interns, 66% being female, and 34% being male (**Figures 1 and 2**).

The survey questions and replies are displayed in **Table 2**, along with the corresponding percentages. Notably, only 18.2% of participants said they had a good awareness of the connection between oral health and pediatric systemic disorders. Participants in the study concluded that there was a moderate overall

correlation between dental health and different kinds of systemic disorders. The comparison of survey items by gender is shown in **Table 3**, where most differences were not statistically significant. When asked about the relationship between Down syndrome and oral health, significant comparisons were discovered, with females reporting a stronger correlation than males (P-value = .008). In a similar vein, when asked about the relationship between oral health, heart illness, and asthma, females knew more than males (P-values = .049 and .034, respectively).

Although most of the differences between students/interns and general practitioners were statistically significant, the gender-based comparison

yielded varying results when analyzed alongside participant qualifications. Most of the P-values are less than 0.05, indicating that general practitioners have substantially greater levels of knowledge than the students/intern group (**Table 4**).

Lastly, the connection between qualification and the degree of linkage among different systemic disorders is displayed in **Table 5**. It was anticipated that there would be a positive correlation between the degree of relationship and certification of systemic disease with oral health, as assessed by Spearman's correlation, with an enormous amount (P-value < 0.05). Cronbach's alpha in this study was 0.811.

Table 1. Samples' power

Mean	1.88
Std. deviation	0.72
Sample size	381
Alpha	0.05
Sample mean	1.98
Standard error of the mean	0.04
Critical value	1.94
Beta	0.14
Power	0.86

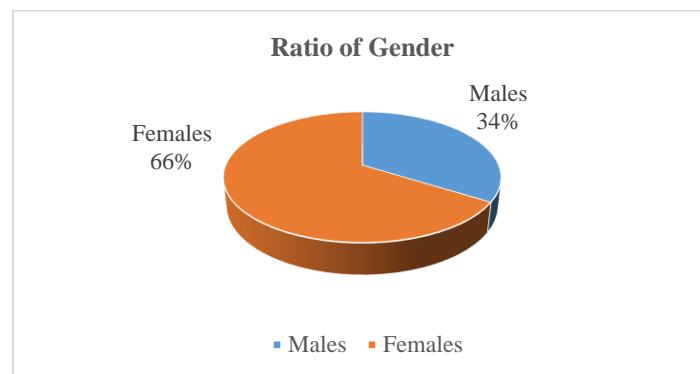


Figure 1. Gender ratio of study participants

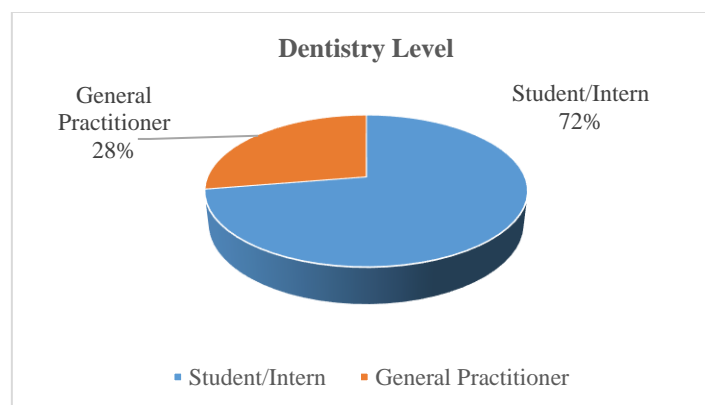


Figure 2. Dentistry levels of study participants

Table 2. Survey questions and their response frequencies by the study participants

Questions of survey	Response frequencies
Your knowledge of pediatric systemic diseases	Low: 29.5% Moderate: 52.6% High: 17.9%
Your understanding of the connection between pediatric systemic diseases and oral health	Low: 27.5% Moderate: 54.2% High: 18.2%
The link between leukocyte disorders and oral health in children	Low: 34.5% Moderate: 46.6% High: 18.9%
The link between papillon-lefèvre syndrome and oral health in children	Low: 38.4% Moderate: 40.8% High: 20.8%
The link between Down's syndrome and oral health in children	Low: 26.8% Moderate: 44.7% High: 28.4%
The link between hypophosphatasia and oral health in children	Low: 36.1% Moderate: 45.3% High: 18.7%
The link between diabetes mellitus and oral health in children	Low: 19.7% Moderate: 47.4% High: 32.9%
The link between hand, foot, and mouth disease and oral health in children	Low: 31.8% Moderate: 46.3% High: 21.8%
The link between Kawasaki disease and oral health in children	Low: 44.5% Moderate: 41.3% High: 14.2%
The link between reiter's syndrome and oral health in children	Low: 46.1% Moderate: 39.7% High: 14.2%
The link between Peutz-Jeghers syndrome and oral health in children	Low: 32.6% Moderate: 46.1% High: 21.3%
The link between gastroesophageal reflux and oral health in children	Low: 35.5% Moderate: 43.4% High: 21.1%
The link between asthma and oral health in children	Low: 25% Moderate: 47.9% High: 27.1%
The link between Cardiac disease and oral health in children	Low: 31.6% Moderate: 44.7% High: 23.7%
The link between epilepsy and oral health in children	Low: 34.2% Moderate: 42.9% High: 22.9%
Do you feel that you require additional knowledge?	Yes: 86.1% No: 13.9%

Table 3. Gender-based comparison of survey responses among study participants

Questions of the survey	Males	Females	P-value
Understanding pediatric systemic diseases	No statistically significant association		.964
Understanding the relationship between pediatric systemic diseases and oral health	No statistically significant association		.788
The impact of leukocyte disorders on oral health in children	No statistically significant association		.827

The impact of papillon-lefèvre syndrome on oral health in children	No statistically significant association	.345
The impact of Down's syndrome on oral health in children	Low: 25% Moderate: 55% High: 20%	Low: 28% Moderate: 39% High: 33% .008*
The impact of hypophosphatasia on oral health in children	No statistically significant association	.079
The impact of diabetes mellitus on oral health in children	No statistically significant association	.088
The impact of hand, foot, and mouth disease on oral health in children	No statistically significant association	.524
The impact of Kawasaki disease on oral health in children	No statistically significant association	.372
The impact of reiter's syndrome on oral health in children	No statistically significant association	.444
The impact of Peutz-Jeghers syndrome on oral health in children	No statistically significant association	.161
The impact of gastroesophageal reflux disease (GERD) on oral health in children	No statistically significant association	.250
The impact of asthma on oral health in children	Low: 20% Moderate: 57% High: 23%	Low: 27% Moderate: 43% High: 29% .049*
The impact of cardiac disease on oral health in children	Low: 32% Moderate: 52% High: 16%	Low: 31% Moderate: 41% High: 27% .034*
The impact of epilepsy on oral health in children	No statistically significant association	.505
Do you feel that you need to gain more knowledge?	No statistically significant association	.274

*Statistically significant (Chi-square test)

Table 4. Comparison of survey responses according to participants' qualifications

Questions of survey	Student/Intern	General practitioner	P-value
Your comprehension of pediatric systemic diseases	Low: 35% Moderate: 51% High: 14%	Low: 16% Moderate: 57% High: 27%	.000*
Your knowledge of how pediatric systemic diseases are connected to oral health.	Low: 33% Moderate: 56% High: 11%	Low: 12% Moderate: 50% High: 38%	.000*
The relationship between leukocyte disorders and oral health in children	Low: 38% Moderate: 48% High: 14%	Low: 26% Moderate: 42% High: 32%	.000*
The relationship between papillon-lefèvre syndrome and oral health in children	Low: 46% Moderate: 39% High: 15%	Low: 19% Moderate: 46% High: 35%	.000*
The relationship between Down's syndrome and oral health in children	Low: 30% Moderate: 47% High: 24%	Low: 29% Moderate: 40% High: 41%	.002*
The relationship between hypophosphatasia and oral health in children	Low: 41% Moderate: 45% High: 13%	Low: 22% Moderate: 46% High: 32%	.000*
The relationship between diabetes mellitus and oral health in children	No statistically significant association		.144
The relationship between hand, foot, and mouth disease and oral health in children	Low: 38% Moderate: 44% High: 18%	Low: 16% Moderate: 52% High: 31%	.000*
The relationship between Kawasaki disease and oral health in children	Low: 51% Moderate: 39% High: 10%	Low: 29% Moderate: 47% High: 25%	.000*
The relationship between reiter's syndrome and oral health in children	Low: 52% Moderate: 37% High: 11%	Low: 31% Moderate: 47% High: 22%	.001*
The relationship between Peutz-Jeghers syndrome and oral health	Low: 38%	Low: 19%	.001*

in children	Moderate: 44% High: 18%	Moderate: 50% High: 30%	
The relationship between gastroesophageal reflux and oral health in children	Low: 39% Moderate: 44% High: 17%	Low: 26% Moderate: 43% High: 31%	.003*
The relationship between asthma and oral health in children	No statistically significant association		.071
The relationship between cardiac disease and oral health in children	Low: 35% Moderate: 46% High: 19%	Low: 22% Moderate: 42% High: 36%	.001*
The relationship between epilepsy and oral health in children	Low: 38% Moderate: 43% High: 20%	Low: 25% Moderate: 44% High: 31%	.015*
Do you feel that additional knowledge is required?	No statistically significant association		.097

*Statistically significant (Chi-square test)

Table 5. Relationship between survey responses and dentistry education level

Questions of survey	Dentistry level
Your comprehension of systemic illnesses in children	r_s : .202* p: .000
Your comprehension of the connection between oral health and pediatric systemic disorders	r_s : .319* p: .000
The link between children's dental health and leukocyte illnesses	r_s : -.184* p: .540
Relationship between children's dental health and Papillon-Lefèvre syndrome	r_s : .279* p: .000
Relationship between children's dental health and Down syndrome	r_s : .169* p: .000
Relationship between children's oral health and hypophosphatasia	r_s : .235* p: .026
Relationship between children's oral health and diabetes mellitus	r_s : .100 p: .052
Relationship between children's dental health and hand, foot, and mouth diseases	r_s : .217* p: .000
Relationship between children's dental health and Kawasaki illness	r_s : .228* p: .000
The link between children's dental health and Reiter's syndrome	r_s : .195* p: .000
The connection between children's dental health and Peutz-Jegher's syndrome	r_s : .195* p: .000
Relationship between children's dental health and gastroesophageal reflux	r_s : .166* p: .001
The link between children's dental health and asthma	r_s : .113 p: .028
Relationship between children's dental health and cardiac disease	r_s : .183 p: .000
Relationship between children's dental health and epilepsy	r_s : .148 p: .004
Do you believe you need additional information?	r_s : .091 p: .077

*Statistically significant (Spearman's correlation)

The current study sought to determine how well-informed dental professionals, including students, were about the connections between oral health and several systemic disorders. Interestingly, prior research has mostly concentrated on the connection between

systemic disorders and overall oral health. Nevertheless, we focused on children, and after checking many reputable databases, we found no prior research of this kind. However, this section of the study will provide a thorough examination of our findings

concerning the body of current literature.

We asked our research participants about numerous systemic disorders in children and their associations with oral health, including heart problems. In terms of overall answers, only 23% identified a strong link between the aforementioned factors. Furthermore, when these replies were examined based on credentials, it was shown that general practitioners had a substantially greater degree of knowledge about this topic, demonstrating that seniority is important while working with these patients. Similar outcomes were found by Pierdant-Pérez *et al.* [13], who assessed dental practitioners' and students' knowledge of how to treat young patients with endocarditis. Senior dental professionals and residents were shown to be more knowledgeable than juniors.

The general level of awareness was low when asked about specific autosomal illnesses and how they relate to oral health. When asked about Down syndrome, a little better response was noted; this might be because the condition is widespread and dentists commonly encounter individuals with it. However, a much-reduced degree of consciousness was seen when questioned about uncommon disorders, including Reiter's syndrome and Papillon-Lefèvre syndrome, which might be the cause of the inadequate knowledge. Increased exposure to these individuals and cases may assist dental practitioners in learning more, which will raise the likelihood that a treatment will be effective [14].

In both adults and children, diabetes mellitus is another illness that has a strong correlation with oral health. Our results showed a positive number when we asked the participants regarding this correlation. Understanding this is crucial given the rising prevalence of DM in Saudi Arabia. According to local research by AlMutairi *et al.* [15], periodontal infections and caries are among the oral health issues associated with diabetes mellitus that are highly prevalent. The oral health domain scores of Saudi Arabian children with diabetes mellitus were significantly higher than those of the control group in the current study. In all, 82% of the participants in this research had at least one of the following self-reported oral health issues: periodontitis, xerostomia, mouth pain, and foul breath.

Study limitations

This research might be enhanced in the future if more data can be gathered in the form of a bigger sample size. Our initial goal was not to compare the ratios of the comparative groups, especially general practitioners and students/interns.

Conclusion

- The participants' general level of awareness and knowledge was below average.
- There was no discernible gender difference.
- Compared to students/interns, general practitioners had noticeably greater levels of expertise.
- Students must be taught about the link between uncommon systemic illnesses in children and how they affect oral health.

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Conflict of Interest: None

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Ethics Statement: None

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