Original Article:

The relationship between the prevalence of dental space infections in Pediatric patient and parents' awareness

Fatema Akhter[1], Mohammed Malik Afroz[2], Leena Abdullah Alamri[3], Asma Naeem Alshami[4], Tahsinul Haque[5], Rawa Kamal Abdelrahim[6]

Abstract:

Background: The facial spaces in head and neck are the potential spaces between the various layers of fascia normally filled with loose connective tissue and bounded by anatomical barriers, usually of bone, muscle or facial layers. ***Objective:*** To evaluate the level of knowledge and awareness about space infection among pediatric patients and their parents in Riyadh, KSA which can lead to seeking early help. ***Results:*** A total of 102 children (56 girls, 46 boys; mean age from 2-12 years) visited Dar al Uloom hospital since January 2019. Most of the patients (51 cases) were children aged 6–9 years. It has been observed that majority of 10-12 years old children noticed pain first (58.3%) followed by abscess drainage (25%) whereas, large number of 2-5 years old children noticed pain as the first option (66.7%) followed by swelling (26.7%). Further, a greater number of 6-9 years old children noticed pain (80.4%) followed by swelling (7.8%). These results suggest that the association of the first symptom observed by the child with different age groups was found to be significant. ***Conclusion:*** In our study, the most common age group of pediatric patient infected with space infection was from 6-9 years, and the most common source of infection was caries. The level of education does not affect the awareness. It was observed that the symptoms of space infection were first noticed by the child, and it was due to the lack of early visits to the dentist. Hence, there is a need of increased awareness of the parents towards space infection and its potential risk.

Keywords: Dental space infection; Awareness of dental space infection; Pediatric patients' awareness to dental space infection.

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Introduction:

Oral infection can originate in the dental pulp and extend through the root canals of the tooth into the periapical tissue, or it may originate in the superficial periodontal tissues and subsequently disperse through the bone, later it may perforate the outer cortical bone and spread in various tissue spaces or discharge onto a free mucous membrane. The facial spaces in the head and neck are the potential spaces between the various layers of fascia normally filled with loose connective tissue and bounded by anatomical barriers, usually of bone, muscle, or facial layers. Dental problems in pediatric patients visiting the hospital in Riyadh region of Saudi Arabia

1. Fatema Akhter, Department of Surgical and Diagnostic Sciences, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, mstfatima@dau.edu.sa
2. Mohammed Malik Afroz, Department of Surgical and Diagnostic Sciences, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, mohammedma@dau.edu.sa
3. Leena Abdullah Alamri , House Surgeon, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, Alamrileena1@outlook.com
4. Asma Naeem Alshami, House Surgeon, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, Asmaalshami68@gmail.com
5. Tahsinul Haque, Department of Preventive Sciences, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, mdhaque@dau.edu.sa
6. Rawa Kamal Abdelrahim, Department of Preventive Sciences, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, r.kamal@dau.edu.sa

Correspondence: Dr. Fatema Akhter**,** Department of Surgical and Diagnostic Sciences, College of Dentistry, Dar Al Uloom University, Riyadh, KSA, mstfatima@dau.edu.sa

often ranges between pain, abscess discharge and swelling. The early involvement of oral tissue spaces among the children is due to the small jaw size and the presence of underlying developing permanent teeth, which causes the spread of infection in the surrounding tissue spaces [1]. Since dental caries is a primary cause for the above complaints, a caries risk assessment has been carried out by many researchers and primary cause has been attributed to the lack of awareness among the general population towards the dental problems[2-4]. Some of the parents have also visited to the other specialists for the dental infection due to lack of information to/about the working domains of the dental specialists.

It is a well-known fact that dentistry is considered as an emerging field in the gulf region and the awareness of the general population towards the working domains of the dentist needs to be ascertained among the general population of Saudi Arabia and in particular major city like Riyadh. Similar to many developed countries where dental care is insured and parents are given basic knowledge during their child's first dental visit, apart from the mass training process, Saudi Arabia has also got a similar procedure. However, most walk-in patients tend to report with the complaint rather than for a general check-up. This may be due to the lack of awareness of the parents and the children towards the dental problem or lack of time with the parents to understand the complaint of the child and take him to the dentist. In KSA, mass school education programs have been introduced within the curriculum to bring awareness among the children[5]. But it has often been theoretical due to the lack of sufficient dental camps in schools organized by dental hospitals or dental universities. In this study, we attempted to ascertain the awareness of the parents and their children about the space infection of dental origin and its adverse role. Therefore, the aim of the study was to evaluate the level of knowledge and awareness about space infection among pediatric patients in Riyadh region and, to investigate how much parents of children are aware of space infection and its complications apart from seeking help for their child's complaint.

Methodology:

A Questionnaire was distributed to the target pediatric patients and their parents visiting the Dar Al Uloom university dental school and hospital to evaluate the level of knowledge and awareness of these patients towards dental caries and space infection The patients who have already been treated with history of pain and space infection from the year 2019 were also included in this study.

Inclusion criteria:

Children from age of 2 years to 13 years and their parents were the target population in this study.

Exclusion criteria:

The following exclusion criteria were used: children who were mentally unstable; children with syndromes related to teeth and oral structures; and parents who were not willing to give the feedback.

Sample size:

102 patients and their parents have been contacted in person or through a telephonic conversation to fill in the questionnaire.

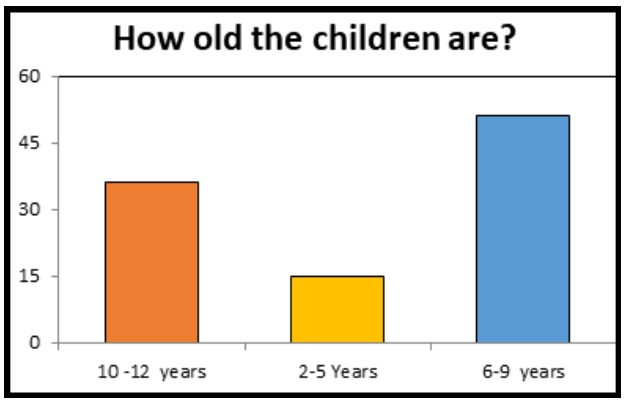
Ethical clearance: This study does not require an ethical clearance as the patients and their parents were only be questioned through an approved questionnaire process.

Results:

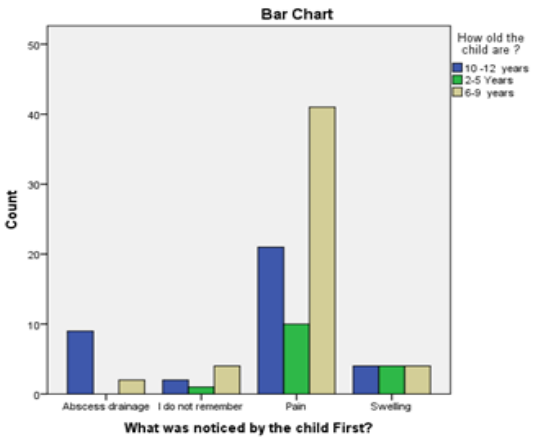
A total of 102 children (56 girls, 46 boys; mean age from 2-12 years) visited Dar al uloom university dental college and hospital since January 2019. Most of the patients (51 cases) were children aged 6–9 years as seen in Bar chart 1A. It has been observed that majority of 10-12 years old children noticed pain first (58.3%) followed by abscess drainage (25%) whereas, large number of 2-5 years old children noticed pain as the first option (66.7%) followed by swelling (26.7%). Further, a greater number of 6-9 years old children noticed pain (80.4%) followed by swelling (7.8%) as expressed in Bar Chart 1B. These results suggest that the association of the first symptom observed by the child with different age groups was found to be significant. It is worth to mention that the patients have reported to the hospital within 12 hours of onset of swelling related to space infection.

We also found that majority of male children (80.4%) and female children (48.2%) visited dentist for relieving the pain only and, subsequently home remedy and medication from pharmacy were the treatment of their choice as mentioned in Bar Chart – 1C. Importantly, the association of the relieving factor observed by the children with different gender was also found to be significant. Most of the patients felt that the reason for swelling was related to the caries but very few are aware that it is related to the abscess formation as can be ascertained from Bar Chart – 1D. This indicates the lack of awareness

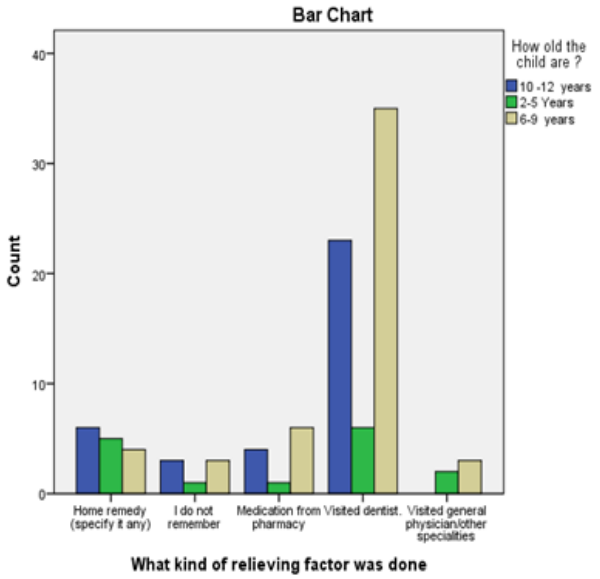
towards the reasons for swelling in the oral cavity and the study group has caries as a main understandable factor. Furthermore, the present study has shown that, among Bachelor degree (BA, BS, AB, etc.) (56.2%), High school diploma or equivalent (60%) and no schooling completed, or less than 1 year educated parents, it was perceived that the symptoms of space infection were first noticed by the children's "Mother". On the other hand, among the parents who have completed Grades 1-8 (76.7%) and Master degree (88.2%), our study has shown that the symptoms of space infection were first noticed by the child himself/herself as mentioned in Bar Chart – 1E. This indicates that parents with higher education are able to impart the awareness and knowledge better to the children hence making them aware of the symptoms and outspoken to the complaints felt by them. Secondly, parents with higher education are aware that it can lead to some complication later but not sure about what this complication can be, hence there is overall lack of information regarding the complications of space infection.



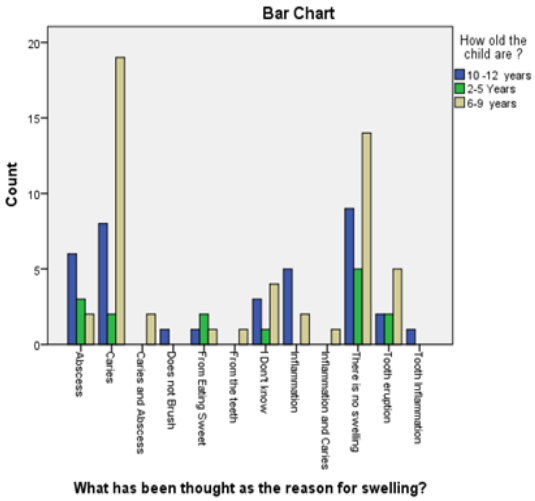
Bar Chart 1A – describe the age of the children enrolled in the study



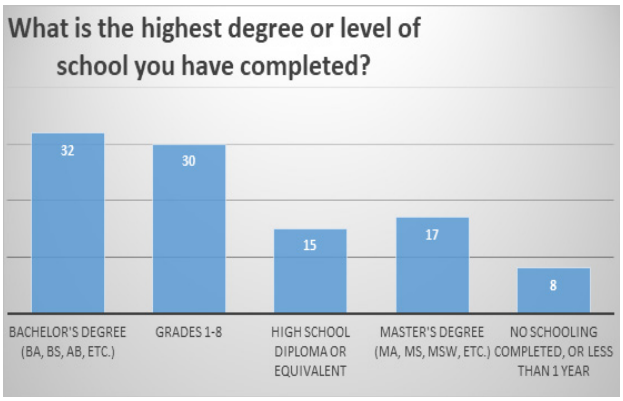
Bar Chart – 1B – Show the chief complaint reported by the patient



Bar Chart – 1C – The relieving factor used by the child before coming to dental clinic



Bar Chart – 1D – Describes the reasons thought by them as a cause for space infection



Bar Chart 1E – Show the education level of parents involved in the study

Discussion:

The maintenance of healthy primary teeth is important for the overall oral child's development [1]. Parents and family members are expected to be the first doctors and care givers hence their knowledge regarding childcare and children's health habits, hold a long-term importance in determining the oral health status of a child. They are considered the key persons in achieving the best oral health outcomes and assuring well-being for children in society at large. Therefore, evaluating the level of knowledge and awareness of these parents towards dental caries and space infection among dental patients visiting Dar Al Uloom university dental school and hospital was considered as a goal to understand the awareness of society towards these common dental lesions. It has been observed that the symptoms of space infection were first noticed by the child's "mother" suggesting high family values and tradition, whereas, among Grades 1-8 (76.7%), Master's degree (MA, MS, MSW, etc.) (88.2%) educated parents, the symptoms were first noticed by the child himself/herself indicating the high value given by the society towards education and a higher level of confidence among the children of the educated parents. A similar pattern was seen among the parents in other population suggesting the importance of education. Among various lesions, pyogenic or facial infections are typically odontogenic in nature which, if left untreated, propagate to other deep facial spaces, which may contribute to additional problems, like respiratory obstruction, decrease in neutrophil count, empyema, and sepsis to name a few [6-8].

Our present study has shown that the majority of children aged 10-12 years noticed pain first (58.3%) followed by abscess drainage (25%) suggesting their level of awareness, while a large number of children aged 2–5 years noticed pain as the first option (66.7%) followed by swelling (26.7%) indicating the lack of space in the jaw owing to the presence of unerupted permanent tooth crypt leading to early space infection rather than abscess drainage. A greater number of 6–9-years-old children noticed pain (80.4%) followed by swelling (7.8%) rather than an abscess drainage which can be attributed to the age of mixed dentition. Hence, the association of the first symptom observed by the child with different age groups were found to be significant. This finding holds an explanation to the timely anatomic growth among the population which is related to most developed countries [9-11]. Further, we also found that the majority of male children (80.4%) and female children (48.2%) visited the dentist for relieving the pain indicating the awareness of population to visit the specialist for the dental treatment or facial swelling. Furthermore, the association of relieving factor among male and female-children were found to be significant and, this finding indicated that the pattern of treatment does not differ based on the gender in agreement with previous studies [12-15]. Since the children are often scared to visit a doctor, the parent's role has been found to be skeptical in taking their children to the concerned specialist and depending on the parents knowledge and awareness, dentist could be the first specialist to be consulted for the space infection. Further, the parents' understanding of child psychology to differentiate between an excuse and actual complaint plays a key role in prognosis.

There appears to be a need for promoting more treatment camps among the population since there are walk-in patients with life-threatening diseases like space infection, which is not seen in advanced countries. The availability of the dentist is not an issue, as was relevant from the questionnaire. The dental treatment is not covered in most of the insurance programs run by the government which can be considered as a hindrance factor for patients routine walk in to the dental office. The parents often visit to the pediatrician and routinely ask them to check the teeth of their children rather coming to the dentist as a routine walk in. Our study highlights the lack of awareness to the space infection and its complications among the general population however, a more detailed analysis can be done regarding the concepts of insurance coverage and general government guidelines framed for early detection of dental caries in different parts of the world.

Conclusion:

In our study, the most common pediatric patients infected with space infection caused by dental caries are from 6-9 years old. The level of education does not affect the awareness. It has been observed that the symptoms of space infection were first noticed by the child himself/herself, and it was due to the lack

of early visits to the dentist. Hence, it is necessary to take proper initiative for increasing the awareness of the parents towards space infection and its potential risks.

In this regard, we suggest that it is in need to conduct more community services frequently in the school and common community areas which can lead to early diagnosis of the oral diseases and further educating the community regarding the importance of oral health and its proper care. There should be a proposal to include the routine dental visit within the requirements of insurance renewals or general programs like immunization charts in order to ensure that the population does not fail to visit the dental office to avoid these complications.

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