Revista Eletrônica
Acervo Saúde
Electronic Journal Collection Health ISSN 2178-2091

Practices of pediatricians and pediatric residents on oral care for patients with hand, foot and mouth disease

Práticas de pediatras e residentes em pediatria sobre os cuidados bucais em pacientes com a doença mão, pé e boca

Prácticas de pediatras y residentes de pediatría sobre el cuidado bucal en pacientes con enfermedad de manos, pie y boca

Cíntia Gonçalves Vimercati Ferreira Pinto[1], Juliany Lima Estefan[2], Marco Orsini[3], Lucio de Souza Gonçalves[1], Dennis de Carvalho Ferreira[1], Luciana Armada[1].

ABSTRACT

Objective: To assess the conduct of pediatricians and pediatric residents in Rio de Janeiro regarding oral care in children with hand, foot and mouth disease (HFMD). **Methods:** Sectional and descriptive study. The sample consisted of Pediatricians and Pediatric residents from Rio de Janeiro. A structured questionnaire guide was applied online with questions on demographic and professional data, information on HFMD and care for oral lesions related to the disease. **Results:** 102 professionals took part in the study, 32.4% of whom were aged between 60 and 69, 83.3% were female and 91.1% had a pediatric degree. The majority (74.5%) treated between 1 and 5 cases of HFMD per month, 91.2% of the professionals gave advice on caring for oral lesions and 94.1% gave advice on diet. It was observed that 56.9% prescribed medication for these lesions, 52.9% of the professionals knew about the low-power lasers, 37 indicated its use and 29.4% referred patients to a pediatric dentist. **Conclusion:** There was a consensus among the participants about the medications prescribed and the general symptoms of HFMD. However, regarding oral lesions, except for dietary guidelines, the responses were varied and some diverged from the literature.

Keywords: Hand, Foot and mouth disease, Oral ulcer, Pediatricians.

RESUMO

Objetivo: Avaliar a conduta dos Pediatras e Residentes em Pediatria do Rio de Janeiro com relação aos cuidados bucais em crianças com a doença mão, pé e boca (DMPB). **Métodos:** Estudo seccional e descritivo. A amostra foi composta por Pediatras e residentes em Pediatria do Rio de Janeiro. Um roteiro de perguntas estruturado foi aplicado online com questões sobre: dados demográficos e profissionais, informações sobre a DMPB e os cuidados com as lesões orais relacionadas à doença. **Resultados:** Participaram do estudo 102 profissionais, sendo 32,4% na faixa etária de 60 a 69 anos de idade, 83,3% do sexo feminino e 91,1% possuíam formação em Pediatria. A maioria (74,5%) atendia entre 1 e 5 casos de DMPB por mês, 91,2% dos

[1] Universidade Estácio de Sá (UNESA), Rio de Janeiro - RJ.
[2] Hospital Federal de Bonsucesso, Rio de Janeiro - RJ.
[3] Universidade Iguaçu (UNIG), Nova Iguaçu - RJ.

Este estudo foi financiado por bolsas da Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ).

SUBMETIDO EM: 2/2025 | ACEITO EM: 3/2025 | PUBLICADO EM: 5/2025

profissionais orientavam sobre cuidados com as lesões orais, 94,1% orientavam sobre a dieta. Foi observado que 56,9% prescreviam medicação para essas lesões, 52,9% dos profissionais possuíam conhecimento sobre o laser de baixa potência, 37 o indicavam e 29,4% encaminhavam para o Odontopediatra. **Conclusão:** Houve um consenso, entre os participantes, sobre as medicações prescritas e sintomas gerais da DMPB. Entretanto, com relação as lesões orais, com exceção das orientações sobre a dieta, as repostas foram variadas e algumas divergentes da literatura.

Palavras-chave: Doença mão, Pé e boca, Úlceras orais, Pediatras.

RESUMEN

Objetivo: Evaluar la conducta de Pediatras y Residentes de Pediatría de Río de Janeiro en relación con el cuidado bucal de niños con Enfermedad de Manos, Pies y Boca (EMPB). **Métodos:** Estudio seccional y descriptivo. La muestra estuvo compuesta por pediatras y residentes en pediatria. Se aplicó una guía de preguntas estructurada en línea, abordando datos demográficos y profesionales, información sobre la EMPB y cuidados de las lesiones bucales relacionadas con la enfermedad. **Resultados:** Participaron en el estudio 102 profesionales, de los cuales el 32,4% tenían entre 60 y 69 años, el 83,3% eran mujeres y el 91,1% tenían formación en Pediatría. La mayoría (74,5%) atendió entre 1 y 5 casos de EMPB por mes, el 91,2% brindó orientación sobre el cuidado de las lesiones bucales y el 94,1% sobre la alimentación. Se observó que el 56,9% prescribieron medicamentos para estas lesiones, el 52,9% tenían conocimientos sobre láseres de baja potencia, 37 los recomendaron y el 29,4% remitieron al Odontopediatra. **Conclusión:** Hubo consenso entre los participantes sobre los medicamentos recetados y los síntomas generales de la EMPB. Sin embargo, en relación con las lesiones bucales, excepto por las orientaciones dietéticas, las respuestas fueron variadas y algunas divergieron de la literatura.

Palabras clave: Enfermedad de manos, Pies y boca, Úlceras bucales, Pediatras.

INTRODUCTION

Hand, foot and mouth disease (HFMD) is a self-limiting viral infection that generally affects children (LIZASOAIN A, et al., 2020), is highly contagious and has a global prevalence (JUSTINO MCA, et al., 2020) and is therefore considered of public health importance.

The etiological agents related to HFMD are enteroviruses, mainly coxsackievirus A16 (CV-A16) and enterovirus 71 (EV-A71) (ZHUANG ZC, et al., 2015). Other pathogens that can lead to the disease are coxsackievirus A6 (CV-A6), coxsackievirus A 10 (CV-A10) (HONG J, et al., 2022). There is a possibility that a recovered individual may develop the disease again due to infection with a serotype different from the previous one (HII YL, et al., 2011).

Transmission can occur via oro-fecal, oral-oral, respiratory secretions and vesicle fluid (NAKAO PH, et al., 2019). It can also occur through contaminated water and objects (LIZASOAIN A, et al., 2020). To avoid transmission, some preventative measures can be taken, such as proper hand hygiene, especially after nappy changes, avoiding sharing personal items, disinfecting surfaces, toys and objects used by the child (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2019). It is very important to keep infected individuals away from school (NAKAO PH, et al., 2019).

HFMD is a common disease in childhood and is usually self-limited, resolving between 7 and 10 days (VENTAROLA D, et al., 2015). The average incubation period is 3 to 5 days (LI XW, et al., 2018). Most authors consider it to occur in children under 5 years of age (XING W, et al., 2008; LUCHS A, et al., 2022), some consider it to occur in children under 10 years of age (VENTAROLA D, et al., 2015; NAKAO PH, et al., 2019). There is a slight predilection for males (VENTAROLA D, et al., 2015; LI J, et al.,2019).

The main clinical manifestations are fever, rashes on the hands, feet or buttocks, vesicles or oral ulcers (LI J, et al., 2019). Dermatological lesions can also be present on the legs, knees, elbows, face and trunk (NAKAO PH, et al., 2019). They are usually characterized as papulovesicular lesions and can also be maculopapular without vesicles (WORLD HEALTH ORGANIZATION, 2011).

Oral ulcers can be painful, making it difficult to swallow food and liquids and can lead to dehydration (GONZALEZ G, et al., 2019), which is the most common complication of HFMD (WORLD HEALTH ORGANIZATION, 2011). The lesions can regress in 5 to 7 days and are preferentially located on the tongue, gums, oral mucosa, uvula and palate (NAKAO PH, et al., 2019).

In general, the diagnosis is confirmed by clinical characteristics such as age, symptoms, type and location of the lesions (NAKAO PH, et al., 2019) and whether there is a history of direct or indirect contact with infected people (LI XW, et al., 2018).

Treatment is symptomatic and may require the use of antipyretics, analgesics, anti-inflammatories and chlorhexidine digluconate. It is important to advise on diet and fluid intake. In the treatment of oral lesions, the use of 2% lidocaine gel can be recommended to help relieve pain (NAKAO PH, et al., 2019). Low-power laser therapy may be indicated, as it helps to control pain, shortening its duration and aiding in the healing of oral lesions, without presenting adverse events (TOIDA M, et al., 2023). The aim of this study was to assess the conduct of pediatricians and pediatric residents in Rio de Janeiro relating to oral care for children with hand, foot and mouth disease.

METHODS

This study was submitted to and approved by the Ethics and Research Committee of Universidade Estácio de Sá (CAAE: 64413022.2.0000.5284 / number: 5.788.376).

A cross-sectional, descriptive study was carried out to find out about the conduct and practice of pediatricians and pediatric residents regarding oral care for children with HFMD. For initial recruitment, the research had the support of the Rio de Janeiro State Pediatric Society (SOPERJ) which sent an email through direct mail to its members so that there would be no access to information that would identify the participants. Subsequently, participants continued to be recruited using the snowball technique, in which participants nominated another pediatrician or pediatric resident to take part (SILVA APMP, et al., 2021), making up a convenience sample.

The inclusion criterion was being a pediatrician or pediatric resident in the state of Rio de Janeiro. Participants responded to a structured questionnaire containing 22 open and closed questions, which was sent via SMS, WhatsApp and/or email. The Free and Informed Consent Form was signed digitally, and the structured questionnaire was completed online using the Google Forms® platform (California, USA).

Initially, the questionnaire asked for registration data. After this, the questions focused on the general care of patients with HFMD and, finally, the care of these children's oral health. The responses were automatically sent to the researcher in charge. The data obtained was generated by conversion in Google Forms® itself, forming a database. All analyses were carried out using the Statistical Package for Social Science (SPSS), version 21.0 (IBM, Armonk, NY, USA). Qualitative variables were expressed as categories with absolute and relative frequency distribution [n (%)], while quantitative variables were expressed as mean (standard deviation).

RESULTS

The study population comprised 102 participants, with a mean age of 52.54 years (standard deviation = 13.05), predominantly female. Most of the individuals had completed a residency in pediatrics, with an average time working in this specialty of 27.62 years (standard deviation = 13.15). Regarding place of practice, participants could tick more than one option, with private practice being the most frequent (**Table 1**).

Table 1 - Description of participants' demographic data, training and place of work.

Categories/Variables	N	%
Gender		
Female	85	83,3
Male	17	16,7
Age in decades		
20-29	7	6,9
30-39	11	10,8
40-49	20	19,6
50-59	26	25,5
60-69	33	32,4
≥ 70	5	4,9
Education		
Incomplete residence	9	8,8
Complete residence	40	39,2
Specialization	32	31,4
Master's degree	8	7,8
Doctorate	13	12,7
Year of residence (incomplete residence)		
First year	1	11,1
Second year	3	33,3
Third year	4	44,4
Not informed	1	11,1
Time working in pediatrics		
0-5	5	5,3
6-10	8	8,4
11-15	7	7,4
16-20	10	10,5
21-25	7	7,4
26-30	10	10,5
31-35	13	13,7
36-40	17	17,9
41-45	14	14,7
46-50	2	2,1
≥ 50	1	1,1
Not informed	1	1,1
Place of work		
Family clinic/Health center	19	17,6
Private practice	64	59,3
Public hospital	56	51,9
Private hospital	35	32,4
Private clinic	12	11,1

Source: Pinto CGVF, et al., 2025.

Regarding HFMD, most of them treated between 1 and 5 cases a month. When asked if they indicated treatment for this disease, the majority responded yes, mainly in cases of fever and/or pain, and the most frequently prescribed medicines are analgesics and antipyretics. It should be noted that these two questions were open-ended (**Table 2**).

Table 2 - Description of data relating to questions about the HFMD.

Categories/Variables	N	%
Mean number of HFMD cases/month		
None	5	4,9
1-5	76	74,5
6-10	16	15,7
11-15	4	3,9
≥ 15	1	1,0
Indication of treatment		
Yes	83	81,4
No	19	18,6
Situation in which medication is prescribed		
Fever	94	86,2
Pain	93	85,3
Skin lesions	8	7,3
Oral lesions	8	7,3
Difficulty in swallowing food	2	1,8
Medicines prescribed		
Analgesic	92	90,2
Antipyretic	86	84,3
Anti-inflammatory	15	14,7
Antihistamine	3	2,9
Corticoid	1	1,0

Source: Pinto CGVF, et al., 2025.

When questioned about the oral lesions of HFMD, it was observed that most of the doctors gave advice on specific care for the oral cavity. Oral hygiene with filtered water was the most frequently recommended, followed by hydrogen peroxide. The majority also gave advice on diet, especially in relation to the temperature and consistency of the food offered and recommended that acidic and salty foods be avoided (**Table 3**).

When asked about specific medications for oral lesions, just over half of the participants prescribed them, with topical corticosteroids being the most common, followed by antifungals, topical herbal ointments and topical anesthetics. Approximately half of the participants knew about the application of low-power laser to control the pain of these oral lesions, 37 of whom advised carers of its benefits and only 30 of whom referred the child to a pediatric dentist (**Table 3**). In **Table 3**, the questions about oral hygiene guidance, diet and medications prescribed for oral lesions could have been responded by more than one participant, as they were open questions.

Table 3 - Description of data relating to questions about oral lesions.

Categories/Variables	N	%
Guidance on caring for oral lesions		
Yes	93	91,2
No	9	8,8
Guidance on tooth brushing		
Normal	26	25,5
Modified	69	67,6
Not carried out	2	2,0
No guidance	5	4,9
Guidance on oral hygiene		
No guidance	10	9,3
Filtered water	62	57,4
Hydrogen peroxide	16	14,8
Aluminium hydroxide mixed with lidocaine	1	0,9
Mouthwash	1	0,9
Fluoride-free paste	2	1,9
Sodium bicarbonate	5	4,6
Nystatin	1	0,9
Regular toothpaste	3	2,8
Chlorhexidine	2	1,9
Guidance on diet		
Yes	96	94,1
No	6	5,9
Guidance offered on diet		
Avoid acids	40	37,0
Liquid and/or paste feeding	45	41,7
Room temperature or cold food	66	61,1
Avoid condiments	12	11,1
Avoid salt	39	36,1
Offer sweet foods	5	4,6
Avoid citrus fruits	6	5,6
Avoid irritating foods	5	4,6
Increase water supply	4	3,7
Restrict carbohydrates	2	1,9
According to acceptance	8	7,4
Specific medication for oral lesions		
Yes	58	56,9
No	44	43,1
Medications prescribed for oral lesions		
Topical anesthetics	12	11,8
Topical corticosteroids	21	20,6
Antifungal	14	13,7
Laser	1	1,0
Mixture of aluminium hydroxide, nystatin and lidocaine	2	2,0
Children's antiseptic	2	2,0
Topical herbal ointments	13	12,7
Oral analgesic	3	2,9
Hydrogen peroxide	1	1,0
Sucralfate	1	1,0
B-complex vitamins	1	1,0
Vitamin C	1	1,0
Topical antibiotic	6	5,9
Sodium bicarbonate	1	1,0
Systemic antibiotic	1	1,0
Knowledge of laser		
Yes	54	52,9
No	48	47,1
Guidance on laser use		
Yes	37	68,5
No	17	31,5
Referral to pediatric dentist		
Yes	30	29,4
No	72	70,6

Source: Pinto CGVF, et al., 2025.

DISCUSSION

The aim of this study was to assess the knowledge and conduct of pediatricians and pediatric residents regarding oral care for children with HFMD, since they are the first professionals to see patients (GONZALEZ G, et al, 2019).

The total of 102 participants responded a structured questionnaire online on the Google Forms® platform. No studies with a similar methodology were found on the subject. There was a predominance of female participation, as in the studies that assessed pediatricians' knowledge of children's oral health (FREIRE MCM, et al., 2000; BALABAN R, et al., 2012). The 2023 medical demography found that pediatrics in Brazil is the second medical speciality with the highest percentage of women (75.6%), which explains why females were prevalent (SCHEFFER MC, et al., 2023). In this study, the average age was 52.54 years, which is higher than that found in other studies (FREIRE MCM, et al., 2000; BALABAN R, et al., 2012; SCHEFFER MC, et al., 2023).

Most of the participants in this study had some level of training in pediatrics (91.1%), as in the studies by Alanzi A, et al. (2023) and Alrashdi M, et al. (2021). As for master's and doctoral degrees, in Balaban R, et al. (2012), 18.7% and 9.3% respectively, and in this study, 7.8% and 12.7% had them.

This unprecedented study is of great relevance because the number of cases of HFMD has been increasing, given that on 24 May 2023, the Brazilian Ministry of Health published TECHNICAL NOTE No. 16/2023-CGCIEVS/DEMSP/SVSA/MS providing information on the disease, precisely because of the increase in the number of municipalities with outbreaks of this disease (MINISTÉRIO DA SAÚDE, 2023). This is not a compulsorily notifiable disease, but it is important that in cases of outbreaks, when 2 or more cases are diagnosed in the same locality, notification is made. In this study, most of the participants treated at least 1 case of HFMD per month, which cannot be considered an outbreak, but shows that HFMD has been diagnosed frequently.

According to the World Health Organization (2011), the main symptoms of HFMD are fever, rash, mainly on the palms and soles, but also on the buttocks, knees and elbows, and oral ulcers. There was a consensus among the survey participants about the general symptoms of HFMD, with the majority prescribing medication in cases of fever and pain.

As the treatment is symptomatic, the main medications cited in this study were analgesics, antipyretics and anti-inflammatories. These data corroborate the studies by LI XW, et al. (2018), which is a Chinese Guideline carried out by a committee of experts on HFMD from the Chinese National Health Commission, and by NAKAO PH, et al. (2019), who carried out a literature review on HFMD.

Most participants in this study reported having some guidance on caring for oral lesions, which is necessary because they are painful and can make it difficult to swallow both food and liquids (GONZALEZ G, et al., 2019). In the present study, most of the participants advised tooth brushing. It should be emphasized that maintaining proper oral hygiene is important for the healing of lesions (CHIANG CP, et al., 2019; KOBEROVÁ R, et al., 2020). Hygiene should be carried out as usual, gently, using a toothbrush and dental floss (SIEGEL MA, 2002). Some authors recommend using dentifrices without sodium laryl sulphate (LSS) (MONTEGOMERY-CRANNY JA, et al., 2015; ALLI BY, et al., 2029; SÁNCHEZ J, et al., 2020; MILIA E, et al., 2022). The use of LSS-free toothpastes by patients with recurrent aphthous stomatitis significantly reduces the number of lesions, frequency of episodes, duration and pain of the lesions (ALLI BY, et al., 2019). The use of soft toothbrushes and alcohol-free mouthwashes are also recommended (SÁNCHEZ J, et al., 2020).

Regarding products that can be used to help with oral hygiene, most participants indicated the use of filtered water for oral hygiene, but no studies were found that compared its benefits with ordinary water. The application of 0.5% hydrogen peroxide solution helps with pain relief and healing, which reinforces this indication, which was the second most frequent (SÁNCHEZ J, et al., 2020). Chlorhexidine gluconate 0.12% is among the main recommendations (MONTGOMERY-CRANNY, et al., 2015; NAKAO PH, et al., 2019; CHIANG CP, et al., 2019; KOBEROVÁ R, et al., 2020), as it can protect ulcers from bacterial infection and aid healing (CHIANG, et al., 2019), but few participants signaled this response in this study.

In order to minimize discomfort when eating, it is recommended that the diet be liquid and/or pasty, at a cold temperature, avoiding acidic, sour, spicy and hot foods and increasing hydration (NASSEF C, et al., 2015; NAKAO PH, et al., 2019; YU H, et al., 2020). These data corroborate the findings of the current study, where the main dietary recommendations were food eaten at room or cold temperature, liquid and/or paste, and avoidance of acidic and salty foods. In addition, a syringe can be used to help with food and liquid intake (NASSEF C, et al., 2015) and carbonated drinks should be avoided (MILIA E, et al., 2022). In our study, few participants mentioned they gave the patients advice on the need to increase water intake. This is worrying since dehydration is one of the main complications in mild cases of HFMD (WORLD HEALTH ORGANIZATION 201).

Regarding the medications prescribed for oral lesions of HFMD, Koberová R, et al. (2020) indicate the topical use of anesthetics for painful lesions that prevent the child from eating and hydrating, antiseptics to prevent secondary infections and pain relief, and corticosteroids. Milia E, et al. (2022) recommend the topical use of corticosteroids, analgesics and antibiotics. For Montgomery-Cranny JA, et al. (2025), there is no consensus on the treatment of aphthous stomatitis in children. Among the topical medications cited by the authors to facilitate eating and tooth brushing are oral antiseptics of 0.2% chlorhexidine gluconate, ointments with active ingredients of carmellose and hyaluronate, topical analgesics with 0.15% benzidamine hydrochloride or 5% lidocaine. The use of topical corticosteroids can be indicated to help reduce inflammation, healing and the formation of new lesions in patients who have not responded to analgesic medication. According to Chiang CP, et al. (2019) topical corticosteroids are the most used drugs in mild and moderate cases of recurrent aphthous stomatitis, and the systemic use of these drugs may be necessary in severe cases. The authors also mention the use of analgesics, antibiotics and topical anti-inflammatories. In situations where oral candidiasis develops, it is necessary to use antifungals such as nystatin oral solution. In addition to these medications, Sánchez J, et al. (2020) indicate the use of sucralfate suspension, as this creates a protective barrier on the lesions and helps with pain relief and healing.

The medications that most of the participants in this study prescribe for oral lesions of HFMD are among those indicated by the aforementioned studies, with the exception of antifungals. These medications should only be used when oral candidiasis is associated with it (CHIANG CP, et al., 2019).

The use of low-power laser therapy has a significant effect on reducing the severity of lesions when used to treat oral mucositis in children (ALQAHTANI SS e KHAN SD, 2022). The laser shows a similar or superior response to the use of topical corticosteroids (SÁNCHEZ J, et al., 2020) and promotes immediate pain relief and rapid healing (AGGARWAL H, et al., 2014 REDMAN MG, et al., 2022).

In the clinical study by Bardellini E, et al. (2020) on the use of photobiomodulation therapy in recurrent aphthous stomatitis lesions in children compared to placebo, statistically significant results were obtained in the reduction of lesion size with the use of the 645 nm wavelength diode laser and in the reduction of pain, erythema and epithelialization time with the use of 810 nm. The authors emphasized that the use of lasers has an analgesic and anti-inflammatory effect and improves healing.

Huo X, et al. (2021) compared the effect of 810 nm diode laser therapy with the use of 0.1% triamcinolone acetonide and found that the laser promoted a significant reduction in pain between the 1st and 3rd day of treatment, while on the 7th day there was no difference. Immediately after the first laser application there was a significant reduction in pain intensity, but the same was not observed in relation to healing.

Although the findings in the literature show that the use of low-power laser has excellent results in relieving pain and reducing the healing time of these lesions, only half of the participants in this study had this knowledge and of these, not all of them advised the responsible of the children's guardians on the benefits of using this instrument. In addition, the laser has been shown to be superior at controlling pain when compared to topical corticosteroids, which were the medication most prescribed by the participants for oral lesions (SÁNCHEZ J, et al., 2020; HUO X, et al., 2021). The pediatric dentist is the professional who usually applies this therapy, but less than a third of the participants referred their patients. It is believed that this data reflects a weakness in the interdisciplinary treatment of HFMD patients and shows the need to draw up an ideal treatment protocol as well as adequate training for professionals.

The study was limited by its sample size, which was lower than the sample calculation. However, it was sufficient to verify the diversity of professionals' management of oral HFMD lesions and the need for further studies to create a treatment protocol. The limited number of previous studies was also a limiting factor.

CONCLUSION

There was a consensus among the pediatricians and pediatric residents who took part in this study about the medications prescribed and the general symptoms of HFMD. However, regarding oral lesions, except for dietary guidelines, the responses were very varied and some even differed from the literature. It is known that treatment must be individualized for each patient. However, it is important to create guidelines that allow for better management of these lesions, as well as expanding the use of low-power laser therapies and determining the situations in which referral to a pediatric dentist is necessary.

ACKNOWLEDGEMENTS

This study was supported by grants from Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ).

REFERENCES

1. AGGARWAL H, et al. Efficacy of low-level laser therapy in treatment of recurrent aphthous ulcers - a sham controlled, split mouth follow up study. Journal of Clinical and Diagnostic Research, 2014; 8: 218-221.
2. ALANZI A, et al. Pediatricians' Knowledge of Children's Oral Health: A National Survey. International Dental Journal, 2023; 73: 463-469.
3. ALLI BY, et al. Effect of sodium lauryl sulfate on recurrent aphthous stomatitis: A systematic review. Journal of Oral Pathology & Medicine, 2019; 48: 358–364.
4. ALQAHTANI SS, Khan SD. Management of oral mucositis in children. European Review for Medical and Pharmacological Sciences, 2022; 26: 1648-1657.
5. ALRASHDI M, et al. Oral Health Knowledge Gaps and Their Impact on the Role of Pediatricians: A Multicentric Study. International Journal of Environmental Research and Public Health, 2021; 18: 10237.
6. BALABAN R, et al. Knowledge of paediatricians regarding child oral health. International Journal of Paediatric Dentistry, 2012; 22: 286-291.
7. BARDELLINI E, et al. Photobiomodulation therapy for the management of recurrent aphthous stomatitis in children: clinical effectiveness and parental satisfaction. Medicina Oral Patologia Oral Cirurgia Bucal. 2020; 25: e549-553.
8. BRASIL. Ministério da Saúde. Nota Técnica Nº 16/2023-CGCIEVS/DEMSP/SVSA/MS. Disponível em: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/notas-tecnicas/2023/sei_ms-0033506310-nota-tecnica.pdf. Acessado em: 3 de julho de 2023.
9. CHIANG CP, et al. Recurrent aphthous stomatitis e etiology, serum autoantibodies, anemia, hematinic deficiencies, and management. Journal of the Formosan Medical Association, 2019; 118: 1279-1289.
10. FREIRE MCM, et al. Conhecimentos, atitudes e práticas dos médicos pediatras em relação à saúde bucal. Pesquisa Odontológica Brasileira, 2000; 14: 39-45.
11. GONZALEZ G, et al. Enterovirus-Associated Hand-Foot and Mouth Disease and Neurological Complications in Japan and the Rest of the World. International Journal of Molecular Science, 2019; 20: 5201.
12. HII YL, et al. Short Term Effects of Weather on Hand, Foot and Mouth Disease. PLoS One. 2011; 6: e16796.
13. HONG J, et al. Changing epidemiology of hand, foot, and mouth disease in China, 2013-2019: a population-based study. The Lancet Regional Health - Western Pacific, 2022; 20:100370.
14. HUO X, et al. Effect of different treatments on recurrent aphthous stomatitis: laser versus medication. Lasers in Medical Science, 2021; 36: 1095-1100.
15. JUSTINO MCA, et al. Atypical hand-foot-mouth disease in Belém, Amazon region, northern Brazil, with detection of coxsackievirus *A6.* Journal of Clinical Virology, 2020; 126: 104307.

16. KOBEROVÁ R, et al. Recurrent Aphthous Stomatitis in Children: A Practical Guideline for Paediatric Practitioners. Acta Medica (Hradec Králové), 2020; 63: 145–149.
17. LI J, et al. The surveillance of the epidemiological and serotype characteristics of hand, foot, mouth disease in Neijiang city, China, 2010-2017: A retrospective study. PLoS One, 2019; 14: e0217474.
18. LI XW, et al. Chinese guidelines for the diagnosis and treatment of hand, foot and mouth disease (2018 edition). World Journal of Pediatrics, 2018; 14: 437-447.
19. LIZASOAIN A, et al. Hand-foot-and-mouth disease in uruguay: Coxsackievirus A6 identified as causative of an outbreak in a rural childcare center. Journal of Medical Virology, 2020; 92: 167-173.
20. LUCHS A, et al. Coxsackievirus A6 strains causing an outbreak of hand-foot and-mouth disease in Northeastern Brazil in 2018. Revista do Instituto de Medicina Tropical de São Paulo, 2022; 21: 64: e16.
21. MILIA E, et al. Recurrent aphthous stomatitis (RAS): guideline for differential diagnosis and management. European Journal of Paediatric Dentistry, 2022; 23: 73-78.
22. MONTGOMERY-CRANNY JA, et al. Management of recurrent aphthous stomatitis in children. Dent Update, 2015; 42: 564–572.
23. NAKAO PH, et al. Doença mão-pé-boca no atendimento odontopediátrico. Archieve of Health Investigation, 2019; 8: 825-831.
24. NASSEF C, et al. Hand-foot-and-mouth disease: a new look at a classic viral rash. Current Opinion in Pediatrics, 2015; 27: 486-491.
25. REDMAN MG, et al. Low-level laser therapy for oral mucositis in children with cancer. Archives of Disease in Childhood, 2022; 107: 128–133.
26. SÁNCHEZ J, et al. Recurrent Aphthous Stomatitis. Actas Dermo-sifiliográficas (Engl Ed), 2020; 111: 471-480.
27. SCHEFFER MC, et al. Associação Médica Brasileira [Internet]. Radar da Demografia Médica no Brasil; 2023. Disponível em: https://amb.org.br/wp-content/uploads/2023/02/DemografiaMedica2023_8fev-1.pdf. Acessado em: 3 de julho de 2023.
28. SIEGEL MA. Diagnosis and management of recurrent herpes simplex infections. The Journal of American Dental Association, 2002;133(9):1245-9.
29. SILVA APMP, et al. Dental students' biosafety knowledge and practices regarding COVID-19. Research, Society and Development, 2021; 10: 14.
30. SOCIEDADE BRASILEIRA DE PEDIATRIA. Departamento Científico de Dermatologia. Departamento Científico de Infectologia. Síndrome Mão-Pé-Boca. 2019. Disponível em: https://www.sbp.com.br/fileadmin/user_upload/_22039d-DocCient_-_Sindrome_Mao-Pe-Boca.pdf. Acessado em: 3 de julho de 2023.
31. TOIDA M, et al. Usefulness of Low-Level Laser for Control of Painful Stomatitis in Patients with Hand-Foot-and-Mouth Disease. Journal of Clinical Lasers Medicine & Surgery, 2023; 21: 363–367.
32. VENTAROLA D, et al. Update on hand-foot-and-mouth disease. Clinics in Dermatology, 2015; 33: 340–346.
33. WORLD HEALTH ORGANIZATION. Regional Office for the Western Pacific. A guide to clinical management and public health response for hand, foot and mouth disease (HFMD). Manila: WHO Regional Office for the Western Pacific. 2011. Disponível em: https://apps.who.int/iris/handle/10665/207490. Acessado em: 3 de julho de 2023.
34. XING W, et al. Hand, foot, and mouth disease in China, 2008–12: an epidemiological study. The Lancet Infectious Disease, 2014; 14: 308-318.
35. YU H, et al. Diagnosis and treatment of herpangina: Chinese expert consensus. World Journal of Pediatrics, 2020; 16: 129-134.
36. ZHUANG ZC, et al. Epidemiological Research on Hand, Foot, and Mouth Disease in Mainland China. Viruses, 2015; 7: 6400-6411.