

## Importance of public awareness of hand hygiene and the spread of hand-foot-mouth disease



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### ABSTRACT

It is known that hygiene is a determining factor for the health area, becoming an important marker of social inequality and its habit is responsible for the prevention of infectious diseases such as hand-foot-mouth disease, caused especially in children, but may also affect adults. Therefore, this article aims to discuss the relationship of hand hygiene against

the contamination of hand-foot-mouth disease in children and the importance of raising public awareness to prevent its spread. The methodology was based on a Literature Review, where a bibliographic search was performed in the Google Scholar and SciELO databases, where the following descriptors were used: "hand-foot-mouth"; "spread of disease"; "personal hygiene", "child health" and "hand hygiene". In view of the selected descriptors, 30 studies were identified, which went through a screening process where 20 articles were selected, according to the eligibility criteria, for the accomplishment of the present study. It was observed that with prevention and control measures it can reduce the numbers of infected people, as well as prevent the disease from getting worse, so it is extremely relevant to discuss the subject, both by health professionals and academics as well as by the entire local community, in order to prevent this disease from causing greater damage to the individuals present.

**Keywords:** hand, foot and mouth, spread of disease, personal hygiene, child health, hand hygiene.

## 1 INTRODUCTION

Hand hygiene (HH) is a globally recognized practice as a primary measure and is extremely important in the control of healthcare-related infections. For this reason, it has been considered as one of the several pillars of infections in health services, and the safety of patients during these services depends, however, on the frequent careful hand hygiene of multiple health professionals. (ANVISA, 2020)

"Hand hygiene" is a universal term, which refers to any action of sanitizing hands to prevent the transmission of microorganisms and consequently prevent the population and health professionals from acquiring HAI. According to the National Health Surveillance Agency – Anvisa, the term



comprises simple hygiene, antiseptic hygiene, antiseptic rubbing 2 of the hands with alcoholic preparation. (MINISTRY OF HEALTH, 2013)

Throughout the periods of the history of society, religious beliefs and practices came to cleanliness and religiosity. In each historical epoch it is feasible to relate the definition of hygiene with the present sociocultural and philosophical context, as, for example, in certain societies people kept themselves clean to present themselves pure in the eyes of the gods, and not for hygienic reasons, as the modern conception of this concept. (LAROCCA, MARQUE, 2005)

It is necessary to guide the population about the hand-foot-mouth disease, which is a contagious viral infection where its transmission unfolds precisely because of the lack of hygiene, very common during the summer period, which mainly affects children, although it can also manifest itself in adults, it is more common during childhood and there may be complications if not treated correctly. (WHO, 2022)

Thus, this article aims to discuss the importance of raising the awareness of the population regarding hygiene and the dissemination of the hand-foot-mouth disease in children, in order to promote the control of the disease and avoid its possible aggravation.

## 2 METHODOLOGIES

The present study refers to a literature review with a qualitative approach to the proposed theme. A bibliographic survey was carried out in the following databases: Google Scholar, SciELO, PUBMED and websites of the Ministry of Health, where the selection was made from the descriptors: "hand, foot and mouth"; "spread of disease"; "personal hygiene"; "child health".

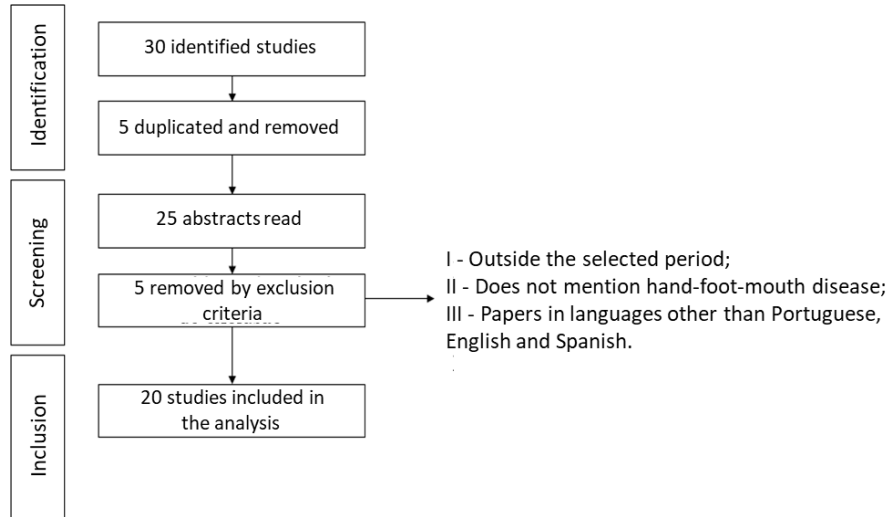
The inclusion criteria were: to be a study published in the period from 1999 to 2022, to target children up to twelve years of age and who have already had the hand-foot-mouth disease, the importance of the Unified Health System in this hygiene scenario and texts that addressed the importance of hygiene in the control of this disease, which may be publications in English and Portuguese. On the other hand, the exclusion criteria were: articles outside the stipulated period, scientific papers that are not related to the proposed theme and in other languages.

## 3 RESULTS AND DISCUSSIONS

Taking into account the inclusion and exclusion criteria proposed for the present study, 30 articles were selected. The stages of evaluation and obtaining the works used are illustrated in Figure 1. Table 1.0 describes the articles used in the article, according to author, country, year, type of study and objective.



Figure 1



Source: prepared by the authors

Table 1.0

AUTHOR/YEAR/COUNTRY	TYPES OF STUDY	GOAL
Santos, Goncalves. 2021, Brazil	Qualitative literature review	The objective is to improve the training of the student who can work with the students with instructional pedagogical material with technical demonstrations of the procedures proposed here.
Markus. 2020, Brazil.	Case report	the objective of drawing attention to more severe pictures of the disease and the need for greater attention by the pediatrician of signs of severity that can even lead to death.
Mortari, et al. 2018, Brazil	Literature review	This document provides guidance on the etiology, epidemiology, clinical picture, diagnosis, treatment, control measures and management of BPD outbreaks, in order to support the actions of health care professionals and epidemiological surveillance in the state of São Paulo.
Nakao, et al. 2020, Brazil	Literature review	The objective of this article is to present the aspects of this viral disease that is present nowadays describing the etiology, epidemiology, outbreaks, symptoms and comorbidities, diagnosis, prevention and treatment of the clinical entity known as hand-foot-mouth disease.
Larocca. Select. 2005, Brazil	Literature review	The objective of this work is to analyze the formation of the first concepts about Hygiene as a form of health planning by the public sector and the use of this conception as an instrument for structuring society.
Dos Santos. 2022, Brazil	Literature review	Hand hygiene is considered the single most important action in the control of infections in health services. However, the lack of adherence of health professionals to this practice is a reality that has been observed over the years



		and has been the object of studies in various parts of the world.
Almeida. 2013, Portugal	Book	The main objective of this investigation is to analyze how scientific knowledge reached the common citizen, using the generalist press as the main source and vehicle for the dissemination of the cognitive repertoire of the time.
WHO. 2022, Brazil	Site	Hand-foot-mouth disease is a contagious disease caused by the Coxsackie virus of the enterovirus family that normally inhabits the digestive system and can cause stomatitis (a kind of canker sores that affects the mucous membrane of the mouth).
ANVISA. 2020, Brazil	Site	The hands are considered the main tools of the professionals who work in the health services, because it is through them that they perform their activities. The safety of patients in these services depends, therefore, on the careful and frequent hand hygiene of these professionals.
Lacen. 2018, Brazil	Epidemiological surveillance	The epidemiology center, through the Division of Surveillance of Communicable Diseases of the Paraná State Department of Health, emphasizes guidelines and conducts in the face of outbreaks of Hand-foot-mouth Syndrome (SMPB).
Usihealth. 2020, Brazil	Site	The hands are the main routes of transmission of viruses and bacteria and therefore the main gateway of diseases into our body. Correct and frequent hand hygiene is essential to prevent the development of various diseases.
Fiocruz. 2022, Brazil	Site	Universality is one of the fundamental principles of the Unified Health System (SUS) and determines that all Brazilian citizens, without any type of discrimination, have the right to access health actions and services.
Calegari. 2017, Brazil	Site	The SUS is much larger and more comprehensive than one imagines and, in some respects, quite different from the image of a giant and inefficient program.
Calili. et al. 2021, Brazil	Systematic Review	The hand-foot-mouth syndrome is considered a highly contagious disease that affects children under five years of age, because at birth, babies do not have antibodies.
Lugo and Krogstad. 2016, USA	Literature review	Enteroviruses cause a wide variety of diseases with neurological, respiratory, skin and gastrointestinal findings. The purpose of this review is to clarify changes in the classification of enteroviruses, provide information on recent outbreaks of the disease, and summarize progress in the treatment and prevention of these infections.



World Health Organization. 2011	Book	Hand-foot-mouth is a common infectious disease caused by a group of enteroviruses, including Coxsackievirus A16 (CA16) and Enterovirus 71 (EV71). Infection with EV71 is of particular concern as it can cause severe illness in children, sometimes resulting in death.
Bernier et. al. 2001, Belgium	Literature review	Onychomadesis and/or onycholysis is a newly recognized complication in the course of viral infections that present clinically as hand, foot, and mouth disease, and because of mild forms, is probably underestimated.
Lementz and Mancini. 2000, USA	Literature review	Foot-and-mouth disease (HFMD) is a contagious enteroviral infection that occurs mainly in children and is characterized by a vesicular palmoplantar eruption and erosive stomatitis.
Mendonça. 2018, Brazil	Site	Spaces shared by many children and the lack of hygiene habits are essential factors for the spread of viruses. The disease known as hand-foot-mouth is a contagious disease, caused mainly by the Coxsackie virus of the enterovirus family.
Estrada and Lazcano. 1999, Mexico	Literature review	Avoid inappropriate treatments, especially with antibiotics and primarily due to the history of respiratory conditions and/or abdominal pain, as well as the presentation of fever, considering the etiology.

#### 4 HYGIENE AND BASIC HEALTH

Hand hygiene is considered the single most important action in the control of infections in health services. However, the lack of adherence of health professionals to this practice is a reality that has been noticed over the years and has been the object of studies in various parts of the world. The simple use of soap and water can reduce much of the microbial population present on the hands and, in most cases, end the chain of disease transmission. The application of antiseptic products can limit the risks of transmission, by intensifying microbial reduction or by benefiting an increase in the frequency of hand hygiene. (APARECIDA and SANTOS, 2002)

The importance of hand hygiene in preventing the transmission of nosocomial infections is based on the ability of the skin to host microorganisms and transfer them from one surface to another, by direct contact, skin to skin, or indirect, by means of objects. The normal skin microbiota is divided into resident and transient and this classification is paramount for understanding the transmission current of infectious agents. (APARECIDA and SANTOS, 2002)

Technological innovations were developed to be used by an amplified number of people, without which they would lose their meaning and practical application. With regard to Medicine and Public Health, the dissemination of information, especially in epidemic periods, was a matter of



survival. Throughout the nineteenth century awareness was created, by the traumatic experience of successive pandemics, that prevention and increasingly hygiene were the most efficient ways to deal with health crises in most cases and diseases in particular.

Without this resource the doctors and the health authorities would have lost the consecutive struggles against the diseases in which the whole world was involved, at least they would have had many greater obstacles. (MARIA ANTÓNIA ALMEIDA, 2013)

Therefore, Hand-Foot-Mouth Disease (BMD) is an acute, often self-limiting, viral exanthematous condition caused by non-polio human enteroviruses. Several factors such as environmental, socioeconomic and immunological factors allow the circulation of enteroviruses in a seasonal way. Outbreaks of these agents have been recorded worldwide since the 1960s. During the flow of non-polio EV, children under five years of age are the most affected. (MORTARI et al, 2022)

It is a fact that all Brazilian citizens, without any type of discrimination, have the right to access health actions and services, according to the principle of universality, in this scenario, the National Health Surveillance Agency (Anvisa) is also part of the SUS, and it is responsible for quality control and food hygiene, cosmetics, cleaning products, vaccines, transplants, cigarettes and medicines in Brazil. Anvisa's purpose is to identify the potential risks to health and the environment of several of the products and services marketed in the country. (FIOCRUZ, 2022)

The SUS is responsible for planning basic sanitation actions in the small municipalities of the country, with up to 50 thousand inhabitants (except in metropolitan regions). The activities are carried out by Funasa, the National Health Foundation, associated with the Ministry of Health. The scope of the foundation includes the construction of wells, distribution networks, water treatment plants and reservoirs, as well as garbage disposal programs to prevent the contamination of diseases in these areas. (CALEGARI, 2017)

There are several actions that can be done to make a group of people aware of hygiene and diseases that are caused by it, such as:

- Prevention and Control Measures in the care in the residence, daycare centers and schools: Guide social isolation of cases, while the acute phase of the disease lasts, the child should not attend the daycare center for about seven days or until the absence of skin lesions, subject to medical reevaluation. When the child returns to the activities in the daycare, certify compliance with personal hygiene measures and the environment by caregivers and collaborators, since the viral excretion by feces in convalescence remains for weeks, being able to perpetuate the outbreak and observe hand washing in diaper changes. Warn the institutions involved, encourage the clarification of parents, train service providers on measures to prevent transmission.



In addition, carry out socio-educational activities to maintain the high standard of hygiene, such as:

- Hand hygiene with soap and water, especially if dirt is apparent, or alcoholic products;
- Avoid nail biting and finger sucking;
- Hygiene of personal objects;
- Cleaning disinfection of the environment with 70% ethyl alcohol solution. In the case of visible dirt, opt for cleaning followed by disinfection with high-concentration chlorinated solution (15ml of concentrated bleach 5 to 6% or 30ml of bleach at 2% for a liter of water), let it dry. Personal items should be rinsed after 10 minutes, before using again;
- Avoid the flow of children under five years of age in agglomerations, during periods of outbreak;
- Care for pregnant and postpartum women, where pregnant women need to distance themselves from people with BPD, it is recommended that they seek their doctor reporting the exposure for specific guidance. Nursing mothers of infected infants are encouraged to remain breastfeeding, needing to wear a surgical mask, sanitize their hands and nipples after breastfeeding. Symptomatic infected nursing mothers need to pause lactation until symptoms are resolved, as they can transmit EV through milk.
- Care in the care of patients in health settings the dispersion of respiratory secretions, vomiting and fecal contamination of surfaces are capable of causing outbreaks in health services. The Hospital Infection Control Service should emphasize the routine cleaning and disinfection measures already determined in the institution, as well as strengthen the standard precautionary methods and/or appropriate contact for patient care.

Standard considerations: to increase adherence to the components of this precaution, with specific attention to hand hygiene, use of personal protection instruments during the management of secretions and care of infected materials and utensils.

The transport of the patient should be restricted to the minimum possible and, when performed, the hygiene of the regions that had contact with the patient's secretions should be strengthened.

Contact precautions need to be maintained throughout the event in the following episodes:

- Children in diapers;
- Children with incontinent diarrhea;
- Occurrence of outbreak in health units. Although there is evidence of viral excretion in respiratory tissues, there is no formal warning for the adoption of droplet precautions for enteroviruses in health units.



Cleaning and disinfection procedures should be performed because in the case of an unenveloped virus, similar to polioviruses, the level of disinfection should be intermediate. The indicated solution should be sodium hypochlorite in standard commercial concentration (concentrated bleach at 5-6%), in its dilutions of 1:10 to 1:100, ensuring the contact time of the sanitizer. Soon after cleaning and disinfection, objects and surfaces should be rinsed in running water and if possible, employ ethyl alcohol in the concentration 60-80%. (CALEGARI, 2017)

Epidemiological surveillance is the part of the SUS that identifies and controls disease epidemics in Brazil. Professionals in this area supervise the emergence and spread of communicable and non-communicable diseases and their risk factors, in addition to carrying out environmental health surveillance. Prevention actions against the *Aedes aegypti* mosquito are an example of epidemiological surveillance actions. (CALEGARI, 2017)

In Brazil, including the State of São Paulo, isolated cases of hand-foot-mouth disease are not compulsorily notifiable, but outbreaks of the disease must be reported by SINAM (National System of Medical Care). Thus, it is possible to be aware of the magnitude of the disease and to establish the appropriate prevention and control measures. (MORTARI et al,2022)

## 5 HAND, FOOT AND MOUTH SYNDROME

Hand-foot-mouth disease was first described in 1958 by Robinson et. al, where symptoms included the presence of fever, ulcerative lesions of the face and mouth, macula and after, blisters and ulcers, where Group A Coxsackie virus was found in 71% of patients. And in 1960 Birmingham, Alsop, suggested the name "hand-foot-and-mouth-disease". (NAKAO et al., 2020)

Certain studies have observed that the etiologic agents of BMDM have undergone some changes over time with circulation of several serotypes in several locations. Climate change has a major influence on the occurrence of BMD outbreaks in some Asian countries. However, government measures and surveillance actions are extremely important and necessary in Brazil, to collect more information about the syndrome in relation to outbreaks and evolution of its complications. (CALILI et al., 2021)

Enteroviruses are prevalent worldwide and have relevant potential for emerging diseases due to their adaptive and evolutionary genetic variability. BMD has a versatile geographic distribution; it is endemic to Southeast Asian and Western Pacific countries. It has a temporal variation, with seasonality related to summer and the rainy season and its infectivity can be compared to that of diseases such as diphtheria, mumps, polio. (MORTARI et. Al, 2018)

Lugo et al., (2016) characterizes Hand, Foot and Mouth Disease in 3 phases:





1. Prodrome: from two to four days before the appearance of the rash it is possible to notice the appearance of fever, adynamia (intense muscle weakness), prostration, diarrhea, odynophagia (pain in swallowing food) and vomiting.
2. Acute Phase: the appearance of erythematous macules on the hands and feet with small, non-pruritic vesicles of 2 to 5 millimeters is observed. Very painful aphthoid lesions still appear on the oral mucosa. The vesicles tend to persist for 7 to 10 days, cause difficulty in feeding and fluid intake, leading to dehydration.
3. Convalescent phase: the infected individual shows signs of prostration. Not infrequently, another symptom that can happen up to two months after the onset of the disease, is onychomadesis, painless displacement of the nail from its matrix. (CLEMENTZ & MANCINI, 2000; BERNIER et al., 2001).

According to the severity of the disease, the World Health Organization categorizes Hand, Foot and Mouth Disease into: Hand, Foot and Mouth Disease without major complications. Self-limiting disease; Hand, Foot and Mouth Disease with Involuntary Central Nervous System involvement; DMPB that presents dysregulation of the Autonomic Nervous System and DMPB with cardiopulmonary failure. (WHO, 2011)

The most common clinical manifestations are fevers associated with a papulovesicular eruption on the palms and plants (Figure 2), usually more oval in the shape of a "grain of rice" and ulcerated lesions in the oral cavity (Figure 3) that may not be present in all cases. One of the main concerns in the vast majority of cases is dehydration, however in recent years, it has been observed in epidemics in Asia that this disease can be fatal, mainly related to enteroviruses, and may cover the central nervous system and even the autonomic, causing changes in circulation, heart and even pulmonary edema. In addition, clinical pictures with disseminated lesions that cause pain and are quite debilitating have been described, and it is common in these cases to require hospitalization and management of the hospitalized condition. (JANDREI et al., 2020)



Figure 2



Figure 3

Source: Estrada e Lazcano



Around the 13th day the symptoms subside. From the appearance of the first signs to the healing of the lesions on the skin are, at most, 17 days. In rare circumstances, this can develop into viral meningitis, milder than bacterial meningitis. However, the disease is limited. Between the second and sixth day after infection occurs the incubation period in which the symptoms are similar to a flu. (MENDONCA, 2018)

The diagnosis is made only clinically. The characteristic history, complete physical examination of the patient with fever, sore throat, skin lesions in typical regions and asthenia will provide sufficient information to make the diagnosis. In this case, laboratory confirmation is not required. If the presentation is atypical or behaves like another disease, it may be advantageous to test for diagnostic confirmation. Tests for rapid diagnosis are available, if necessary, by PCR or indirect immunofluorescence. As a differential diagnosis of classic viral exanthems we have that of measles, rubella, and scarlet fever that are well known. Other types of viral rashes that can also occur in the pediatric population are erythema infectiosum caused by Human Parvovirus B19, sudden rash caused by human herpes viruses HHV-6 and HHV-7, and exanthema by Epstein-Barr virus (EBV), of the family herpesviridae. (CHEN, [n.d.] )

The management of hand-foot-mouth disease is carried out through supportive measures and measures for infection control. There is still no specific therapy for the disease, analgesics, such as paracetamol, and anti-inflammatory drugs, such as ibuprofen, are used to relieve pain and discomfort caused by fever and oral lesions have a good therapeutic response. The use of oral topical medications containing lidocaine and other anesthetic agents is not advisable due to the lack of evidence of benefit, the risk of systemic toxicity and allergic reaction, and the difficulty of application in young children. It should be noted that children with the inability to maintain adequate hydration through fluid intake should be hospitalized. (BRAZIL, 2018).

## 6 CONCLUSIONS

Given this, it is extremely important to identify and recognize early symptoms of the disease hand, foot and mouth, in order to avoid the proliferation of it, in the same way that it is necessary to implement preventive measures, among other various care aimed at the school area, children's hygiene, adequate cleaning protocols for the efficient control of this disease and subsequent that may arise from the lack of hygiene of children.



## REFERENCES

- A HIGIENIZAÇÃO SIMPLES DAS MÃOS. Usisaúde, 2016. Disponível em: <https://www.fsfx.com.br/usisaude/higienizacao-simples-das-maos/#:~:text=O%20passo%20a%20passo%20para%20a%20higieniza%C3%A7%C3%A3o%20das%20m%C3%A3os&text=Esfregue%20o%20dorso%20dos%20dedos,m%C3%A3o%2C%20tamb%C3%A9m%20com%20movimentos%20circulares>. Acesso em: 5 ago 2022.
- LAROCCA, Liliana Muller; MARQUE, Vera Regina Beltrão. Quando a higiene se torna pública: saúde e estado. *Cogitare Enfermagem*, v. 10, n. 1, 2005.
- Higienização das mãos, ANVISA, 2020. Disponível em: <<https://www.gov.br/anvisa/pt-br/assuntos/servicosdesaude/prevencao-e-controle-de-infeccao-e-resistencia-microbiana/higienizacao-das-maos>>. Acesso em: 11 ago 2022.
- OMS. Doença mão-pé-boca | Biblioteca Virtual em Saúde MS. Disponível em: <<https://bvsm.saude.gov.br/doenca-mao-pe-boca/>>. Acesso em: 5 ago 2022
- DOS SANTOS, Adélia Aparecida Marçal. HIGIENIZAÇÃO DAS MÃOS NO CONTROLE DAS INFECÇÕES EM SERVIÇOS DE SAÚDE. *RAS*, v. 4, n. 15, p. 10-14, 2002.
- ALMEIDA, Maria Antônia Pires de. Saúde pública e higiene na imprensa diária em anos de epidemias. Lisboa, Colibri, 2013
- UNIVERSALIDADE. Fiocruz, 2022. Disponível em: Universalidade - SUS: O que é? Leia mais no PenseSUS | Fiocruz. Acesso em: 5 ago 2022
- CALEGARI, Luiza. As atribuições do sus que você (provavelmente) não conhece. *Exame*, 2017. Disponível em: As atribuições do SUS que você (provavelmente) não conhece | Exame. Acesso em: 5 ago 2022
- NAKAO, Priscila Higa et al. Doença mão-pé-boca no atendimento odontopediátrico. *ARCHIVES OF HEALTH INVESTIGATION*, v. 8, n. 12, 2019.
- MORTARI, Naíma et al. Doença Mão-Pé-Boca: diretrizes e orientações para surtos. *BEPA. Boletim Epidemiológico Paulista*, v. 15, n. 173, p. 11-28, 2018.
- LEMENTZ G.C., MANCINI A.J.: Nail matrix arrest following hand-footmouth disease: a report of five children. *Pediatr Dermatol* 2000
- BERNIER V., LABRÈZE C., BURY F., TAÏEB A.: Nail matrix arrest in the course of hand, foot and mouth disease. *Eur J Pediatr* 2001.
- 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.
- LUGO D., KROGSTAD P. Enteroviruses in the early 21st century: new manifestations and challenges. *Curr Opin Ped*. 2016.
- MARKUS, Jandrei Rogério et al. Síndrome mão-pé-boca, devemos nos preocupar.
- SANTOS, Andréa Corrêa; GONÇALVES, Heloisa Helena Leal. AÇÕES EDUCATIVAS DO CURSO TÉCNICO EM VIGILÂNCIA EM SAÚDE PARA EQUIPE DE EDUCAÇÃO INFANTIL: PREVENÇÃO DA SÍNDROME MÃO, PÉ, BOCA.



Lacecen, 2018. Vigilância epidemiológica da síndrome mão-pé-boca no estado do Paraná. Disponível em: Síndrome mão pé boca (saude.pr.gov.br). Acesso em: 5 ago 2022

CALILI, L. C. C.; LEAL, W. D. S.; TOSATE, T. dá S. .; SOUZA, L. C. B. de .; ARAÚJO, J. M. P. .; REIS, M. B. dos .; MARCOS, V. D. .; BACELAR JÚNIOR , A. J. . SÍNDROME MÃO, PÉ E BOCA CAUSADA PELO VÍRUS COXSACKIE: UMA ANÁLISE DA LITERATURA. Revista Ibero-Americana de Humanidades, Ciências e Educação, [S. l.], v. 7, n. 10, p. 2317–2330, 2021. DOI: 10.51891/rease.v7i10.2815.

MENDONÇA.G. R, 2018; Doença mão pé e boca-o que é e como prevenir. Disponível em:<<https://revistacrescer.globo.com/Crianças/Saude/noticia/2016/09/doenca-mao-pe-boca-o-que-e-e-comoprevenir.html#:~:text=Os%20enterov%C3%ADrus%2C%20como%20os%20causadores,ou%20de%20preparar%20as%20refei%C3%A7%C3%B5es.>>. Acesso em 06 de agosto de 2022

ESTRADA, Virginia Martínez; LAZCANO, Moisés Laureano. Enfermedad mano-pie-boca. Presentación de un caso y breve revisión de la literatura. Revista del Centro Dermatológico Pascua, v. 8, n. 1, p. 21-24, 1999.