



ORIGINAL ARTICLE

Clinical and therapeutic characteristics of patients with dental emergencies of dental origin

Características clínicas y terapéuticas de los pacientes con urgencias estomatológicas de origen dental

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ABSTRACT

Introduction: dental clinics are daily visited by patients with stomatological emergencies, in this sense, an exhaustive analysis on this subject is indispensable for a better control and control of them.

Objective: to describe the clinical and therapeutic characteristics of patients with stomatological emergencies of dental origin seen in the emergency clinic of the Policlínico Docente Norte "Diego del Rosario" of the municipality of Morón, Ciego de Avila province.

Methods: an observational, descriptive, cross-sectional study was carried out on patients seen in the aforementioned institution, during the period from January 2021 to January 2022. We worked with the totality of the universe, constituted by 122 patients. Descriptive statistics were used. Absolute and relative percentage frequencies were used to summarize the information.

Results: there was a predominance of female sex (59,0 %) and of the 35-59 years age group (55,7 %). Pain was reported in 45,9 % of the patients. Pulpal and periapical processes were present in 74 (52,5%) of the cases. It was observed that pulp sedation was the therapeutic treatment of choice, performed in 57 emergencies representing 40,4 %.

Conclusions: Pulpal and periapical processes were identified as the most predominant type of stomatological emergency, of which acute dentoalveolar abscess was present in most patients. Pulp sedation was the therapeutic treatment of choice

Keywords: Urgent care; Mouth diseases/epidemiology; Diseases of the mouth/therapy; Stomatology; Emergency treatment.

RESUMEN

Introducción: a las clínicas dentales acuden diariamente pacientes con urgencias estomatológicas, en este sentido se hace indispensable un análisis exhaustivo sobre el tema para un mejor dominio y control de las mismas.

Objetivo: describir las características clínicas y terapéuticas de los pacientes con urgencias estomatológicas de origen dental atendidos en la consulta de urgencias del Policlínico Docente Norte "Diego del Rosario" del municipio de Morón, provincia Ciego de Ávila.

Métodos: se realizó un estudio observacional, descriptivo, transversal, en pacientes atendidos en la institución antes mencionada, durante el período comprendido entre enero del 2021 a enero del 2022. Se trabajó con la totalidad del universo, constituido por 122 pacientes. Se utilizó estadística descriptiva. Como medida de resumen de la información se utilizaron las frecuencias absolutas y relativas porcentuales.

Resultados: existió predominio del sexo femenino y del grupo de edades de 35-59 años. El 45,9 % de los pacientes acudieron a consulta refiriendo dolor. Los procesos pulpares y periapicales estuvieron presentes en 74 de los casos. Se observó que la sedación pulpar fue el tratamiento terapéutico de elección, realizado en 57 urgencias para un 40,4 %.

Conclusiones: se identificó a los procesos pulpares y periapicales como el tipo de urgencia estomatológica de mayor predominio, de ellos, el absceso dentoalveolar agudo estuvo presente en la mayoría de los pacientes. La sedación pulpar fue el tratamiento terapéutico de elección.

Palabras clave: Atención de urgencias; Enfermedades de la boca/epidemiología; Enfermedades de la boca/terapia; Estomatología; Tratamiento de urgencia.

INTRODUCTION

Stomatology is the branch of medical sciences whose purpose is to diagnose, treat and rehabilitate the individual from diseases that affect the stomatognathic apparatus.^(1,2) Oral diseases are diverse, as well as their etiological and predisposing factors, so they can be considered multifactorial diseases that affect the oral cavity in different ways.^(3,4)

Stomatological emergency consultations are regularly attended by patients who report suffering from different health problems, ranging from simple aesthetic affections, functional affection or more complex situations, in this sense the Stomatology professional must be prepared to find a quick solution to this emergency.⁽⁵⁾

Stomatological emergencies are complications that occur suddenly and cause damage to dental organs or adjacent structures.⁽⁶⁾ Dental emergencies, as the word reflects, are those that develop in the dental organ itself, whose affectation has a negative impact on the individual health of the person; within this group of diseases are alveolitis, dental trauma, dentin hyperesthesia, pericoronaritis, pulp conditions and periapical processes, post-exodontic hemorrhage, facial cellulitis and pain due to dental caries.⁽⁴⁾

According to González del valle et al.,⁽⁶⁾ most emergencies are of pulp origin derived from caries complications and dental trauma. Some studies state that dental caries affects approximately 90% of the world population, being one of the diseases with the highest prevalence and incidence at present.^(7,8) Countries such as Peru,⁽⁹⁾ Ecuador,⁽¹⁰⁾ Mexico,⁽⁶⁾ and Timor Leste,⁽¹¹⁾ show a high presence of this entity in their research.

On the other hand, pulpal and periapical processes are among the main reasons for attendance at emergency departments; in Scotland and the United Kingdom, an incidence of up to 17 % is described.⁽¹²⁾ In Cuba, there are studies by Chacón Najarro et al.,⁽¹³⁾ Torrecilla Venegas et al.,⁽¹⁴⁾ and Castro-Yero et al.,⁽¹⁵⁾ who confirm what was previously announced, showing in each of their articles a gradual increase in the number of patients suffering from these diseases.

The purpose of treatment in a stomatological emergency is to restore the functionality of the stomatognathic system as soon as possible and provide greater well-being to the patient. Oral diseases that can lead to a dental emergency are generally highly prevalent in the world population and are among the five leading causes of demand for care in health services.⁽¹⁶⁾

Given the absence of updated scientific material in the territory referring to stomatological emergencies and the increase of patients with these conditions in the Stomatology clinics of the municipality, the interest of carrying out the present study is focused, with the purpose of compiling information on the diseases considered as stomatological emergencies, for such reason, an exhaustive analysis on this subject is indispensable for the better control and control of them.

The research was carried out with the objective of describing the clinical and therapeutic characteristics of patients with stomatological emergencies of dental origin attended in the emergency room of the Policlínico Docente Norte "Diego del Rosario" of the municipality of Morón, Ciego de Avila province.

METHODS

An observational, descriptive, cross-sectional study was carried out in patients seen in the emergency room of the Policlínico Docente Norte "Diego del Rosario" of the municipality of Morón, Ciego de Avila province, in the period from January 2021 to January 2022.

The universe was constituted by the total number of patients with stomatological emergencies of dental origin attended in the place and period mentioned above, being conformed by 122 patients with 141 emergencies. We worked with all of them because they met the criteria established for their selection.

Inclusion criteria: patients who attended the dental emergency consultation mentioned above in the period of time established and who met the diagnostic criteria.

There were no exclusion criteria.

The information was collected from a data collection instrument, by means of an interview, created for this purpose by the authors of the research with the objective of organizing the variables to be analyzed, being the same, the result of a correct anamnesis of the patient and the oral examination, carried out in adequate conditions of hygiene and illumination as established by the work norms and with the help of the classification set.

The variables studied were age group, sex, reason for consultation (pain, inflammation, pain and inflammation, defective restorations, discomfort, bleeding), perception of pain intensity (no pain, mild, moderate and intense) taking into account the numerical verbal scale,⁽¹⁷⁾ type of dental emergency of dental origin according to the classification of Gonzalez Naya in the book Comprehensive General Stomatology,⁽⁴⁾ and therapeutic conduct (exodontia, pulpotomy, pulp sedation, chamber access, splinting, hemostasis of the damaged area, cleaning of the affected area, releasing the tooth from occlusion).

The results were entered into a Microsoft Office Excel database, which was processed in the IBM SPSS 18.0 statistical package for Windows. Descriptive statistics were used. Absolute and relative percentage frequencies were used to summarize the information.

The research was approved by the Scientific and Ethics Council of the institution, taking into account the Declaration of Helsinki (the welfare of individuals must prevail over the interests of science and society). Therefore, no data were disclosed that would allow recognition of any participating patient. The ethical and bioethical requirements for safeguarding personal information were complied with. The basic principles of respect for persons, beneficence, non-maleficence and justice were assumed with responsibility.

RESULTS

The 59,0 % of the cases represented the female sex and 55,7 % belonged to the 35-59 years age group, as shown in Table 1.

Table 1. Distribution of patients in terms of age group and sex.

Age group	Sex				Total	
	Male		Female		No	%
	No	%	No	%		
Younger than	8	6,6	10	8,2	18	14,8
19 - 34	13	2,5	18	14,8	31	25,4
35 - 59	27	22,1	41	33,6	68	55,7
60 and over	3	2,5	2	1,6	5	4,1
Total	50	41,0	72	59,0	122	100

Source: Data collection instrument.

There was a predominance of patients who came to the consultation referring pain, present in 56 patients for 45,9 % of the total, as shown in table 2.

Table 2. Distribution of patients according to reason for consultation.

Reason	No	%
Pain	56	45,9
Inflammation	16	13,1
Pain and inflammation	8	6,6
Defective restorations	23	18,9
Discomfort	13	10,7
Bleeding	6	4,9

Source: Data collection instrument.

Figure 1 shows the perception of the patients who came to the consultation referring painful symptomatology, where it was observed that 58 (47,5 %) patients did not refer pain, in 27,04 % of the cases the intensity of the pain was severe.

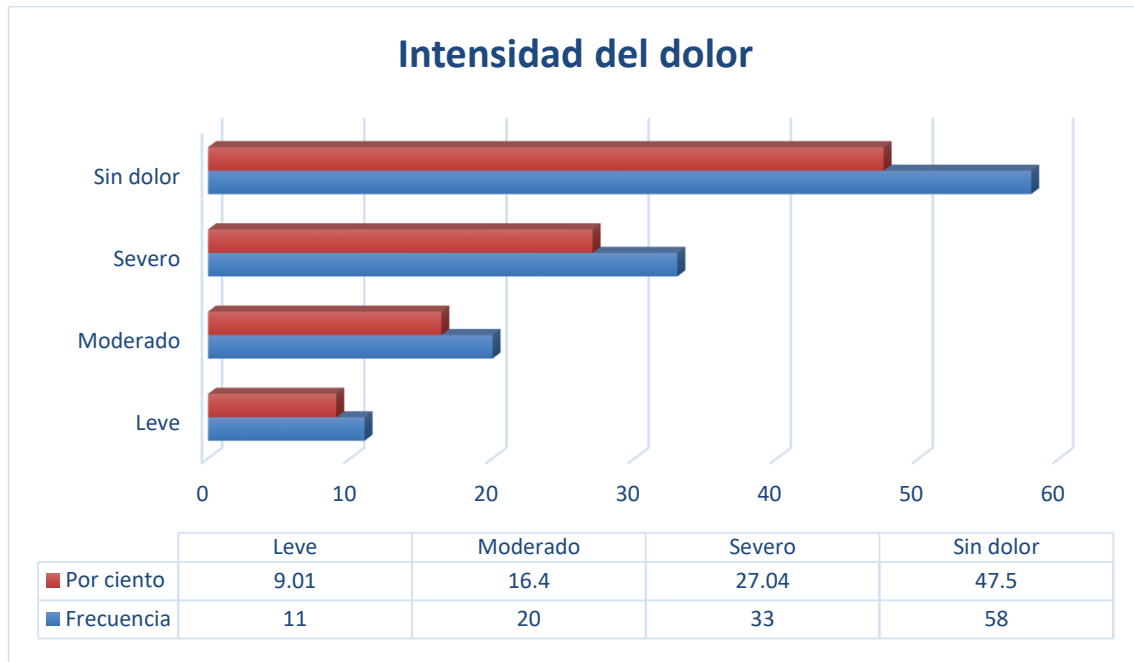


Fig. 1 Perception of pain intensity according to the verbal numerical scale.

Pulpal and periapical processes were the most common type of emergency, present in 74 cases, representing 52,5 %; of these, the most common were acute dentoalveolar abscess, transient pulpitis and pulp necrosis, as shown in Table 3.

Table 3. Distribution of dental emergencies of dental origin and age group.

Type of emergency	Age group								Total	
	≤ 18		19 - 34		35 - 59		≥ 60		No	%
	No	%	No	%	No	%	No	%		
Alveolitis	0	0,0	2	1,4	5	3,5	1	0,7	8	5,7
Trauma										
Uncomplicated crown fracture	2	1,4	1	0,7	0	0,0	0	0,0	14	9,9
Complicated crown fracture	3	2,1	2	1,4	1	0,7	0	0,0		
Extrusive dislocation	2	1,4	0	0,0	0	0,0	0	0,0		
Lateral luxation	1	0,7	0	0,0	0	0,0	0	0,0		
Laceration of the gingiva or buccal mucosa	2	1,4	0	0,0	0	0,0	0	0,0		
Hyperesthesia	2	1,4	1	0,7	1	0,7	0	0,0	4	2,8
Pericoronaritis	0	0,0	3	2,1	0	0,0	0	0,0	3	2,1
Pulpal and periapical processes										
Pulpal conditions										
Hyperemia	0	0,0	2	1,4	7	5,0	0	0,0		
Transitory pulpitis	1	0,7	3	2,1	9	6,4	1	0,7		
Suppurative pulpitis	1	0,7	4	2,8	5	3,5	1	0,7		
Hyperplastic pulpitis	0	0,0	1	0,7	3	2,1	0	0,0	74	52,5
Pulp necrosis	1	0,7	2	1,4	8	5,7	2	1,4		
Periapical processes										
Acute dentoalveolar abscess	1	0,7	5	3,5	12	8,5	0	0,0		
Apical periodontitis	0	0,0	2	1,4	3	2,1	0	0,0		
Post-periodontal hemorrhage	1	0,7	3	2,1	1	0,7	1	0,7	6	4,3
Facial cellulitis	1	0,7	0	0,0	0	0,0	0	0,0	1	0,7
Dental caries	3	2,1	5	3,5	23	16,3	0	0,0	31	22,0
Total	21	15,0	36	25,5	78	55,3	6	4,3	141	100
Note: Unit of analysis: dental emergencies. The percentages are calculated based on the total number of stomatological emergencies identified (n=141). No trauma was identified in the population aged 60 and over.										

Source: Data collection instrument.

It was observed that pulp sedation was the most predominant therapeutic treatment, performed in 57 cases representing 40,4 %. The emergencies with the highest frequency of this procedure corresponded to those with a diagnosis of dental caries (31) and transient pulpitis (11), as shown in Table 4.

Table 4. Therapeutic conduct according to type of stomatological emergency.

Type of emergency	Therapeutic behavior*																	
	E		P		SP		AC		F		H		L		LO		RBF	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Alveolitis	0	0	0	0	0	0	0	0	0	0	0	0	8	61,5	0	0	0	0
Trauma																		
Uncomplicated crown fracture	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0	0	0	3	100
Complicated crown fracture	0	0,0	3	42,9	2	3,5	1	2,6	0	0,0	0	0	0	0,0	0	0,0	0	0,0
Extrusive dislocation	0	0,0	0	0,0	0	0,0	0	0,0	2	75,0	0	0,0	0	0,0	0	0,0	0	0,0
Lateral dislocation	0	0,0	0	0,0	0	0,0	0	0,0	1	25,0	0	0,0	0	0,0	0	0,0	0	0,0
Laceration of the gingiva or buccal mucosa	0	0	0	0	0	0	0	0	0	0	0	0,0	2	15,4	0	0	0	0
Hyperesthesia	0	0	0	0	4	7,0	0	0	0	0	0	0	0	0	0	0	0	0
Pericoronaritis	0	0,0	0	0	0	0	0	0	0	0	0	0,0	3	23,1	0	0,0	0	0
Pulpal and periapical processes																		
Pulpal conditions																		
Hyperemia	0	0,0	0	0,0	9	15,8	0	0,0	0	0	0	0	0	0	0	0,0	0	0
Transitory pulpitis	0	0,0	3	42,9	11	19,3	0	0,0	0	0	0	0	0	0	0	0,0	0	0
Suppurative pulpitis	0	0,0	0	0,0	0	0,0	11	28,9	0	0	0	0	0	0	0	0,0	0	0
Hyperplastic pulpitis	0	0,0	1	14,3	0	0,0	3	7,9	0	0	0	0	0	0	0	0,0	0	0
Pulp necrosis	9	100	0	0,0	0	0,0	4	10,5	0	0	0	0	0	0	0	0	0	0
Procesos periapicales																		
Acute dentoalveolar abscess	0	0,0	0	0,0	0	0,0	18	47,4	0	0	0	0,0	0	0	0	0	0	0
Apical periodontitis	0	0,0	0	0,0	0	0,0	0	0,0	0	0	0	0	0	0	0	0	0	0
Post periodontal bleeding	0	0	0	0	0	0	0	0	0	0	6	100	0	0,0	0	0	0	0
Facial cellulitis	0	0,0	0	0	0	0	1	2,6	0	0	0	0,0	0	0,0	0	0,0	0	0
Dental caries	0	0,0	0	0,0	31	54,4	0	0,0	0	0	0	0	0	0,0	0	0	0	0
Total**	9	6,4	7	5,0	57	40,4	38	26,9	3	2,1	6	4,2	13	9,2	5	3,5	3	2,1

Legend: Exodontia (E), Pulpotomy (P), Pulpal Sedation (SD), Cameral Access (AC), Splinting (F), Hemostasis of the damaged area (H), Cleaning of the affected area (L), Freeing the tooth from occlusion (LO), Regularization of the sharp edge (RBF).

Note: Unit of analysis: dental emergencies of dental origin. *Percentages in columns. **Percentages are calculated based on the total number of stomatological emergencies(n=141).

Source: Data collection instrument.

DISCUSSION

The results of the present study coincide with those of Herrero-Solano et al.,⁽⁵⁾ and Machado Pina et al.,⁽¹⁸⁾ who report a predominance of the female sex; this may be attributed to the fact that women are generally more careful and concerned about their oral health than men. In addition, they agree that the most affected ages were 19 to 59 years.

This last result is similar to the one described by Ferrer Vilches et al.,⁽¹⁹⁾ in a characterization of pulp diseases in 329 patients who went to the emergency department, where the most affected ages were 19 to 34 and 35 to 59 for both sexes, demonstrating that the prevalence and severity of these conditions increase with age, due to the structural and functional changes that occur with age, causing a decrease in the biological response capacity of the organism. It does not coincide in that in this research men were the most affected group, contrary to what is reflected in the study,⁽²⁰⁾ who, in his epidemiological study of 150 patients attended in emergency consultation, states that the diseases were present in the population studied without predilection for one or the other sex.

It is valid to point out that the high incidence of edentulous patients in the population over 60 years of age in this health area influenced the small number of affected patients in this age group.

Stomatology emergencies are consequences of a variety of disorders which may present a variety of symptoms, pain being the most common.⁽¹⁸⁾ The most common causes of pain in the oral cavity are inflammation and pulp degeneration. Spontaneity, periodicity, intensity, frequency and persistence of pain are the most important elements to take into account to qualify and quantify the painful symptomatology.⁽⁶⁾

With regard to the reasons for which the patients went for emergency consultation, the results obtained are related to the study carried out by González del Valle et al.,⁽⁶⁾ where it was found that in 90 % of the patients pain was the main reason for the emergency, of which 70 % of the cases were of dental origin.

It was observed that most of the patients who came to the service did not present pain, although of the remaining patients, the majority presented severe, almost unbearable pain, according to what was reported by the patients themselves. With mild pain, the patient performs normal activities and does not pay attention to his disease, only some cases, with previous experiences of pain, go to the dentist in time, a situation that is reflected in the study by finding the fewest number of people who presented such pain. When not properly attended, the disease worsens and it is when the intensity of the pain becomes moderate and severe, interfering with the usual activities and preventing rest, that is when they go for emergency consultation.

In general, the study was dominated by pulp and periapical processes where there is pulp involvement with a very important compromise of its vitality, which results in little conservative treatment of the pulp due to the degree of involvement or irreversible stages that cause the loss of its vitality, of this very important, resulting in poorly conservative treatment of the pulp due to the degree of involvement or irreversible stages that cause the loss of its vitality. These results are mostly due to the fact that there are pathologies that occur without presenting any symptomatology and that, due to the contamination caused by the advance of untreated dental caries, become acute, causing discomfort to the patient. This situation is reflected in the data obtained in the research. Similar results were obtained by Machado Pina et al.,⁽¹⁸⁾ where acute alveolar abscess predominated with 27,4 %.

Likewise, in a study of the behavior of stomatological emergencies in the ASIC Santa Ana, Aragua state, carried out by Martínez Sánchez et al.,⁽³⁾ and by Herrero-Solano et al.,⁽⁵⁾ in a transversal descriptive study on the stomatological emergencies attended in a clinic in Bayamo, during the epidemiological situation caused by COVID-19, pulp and periapical processes were the ones that predominated in more than half of the patients.

This does not coincide with the studies carried out by Ferrer Vilches et al.⁽¹⁹⁾ who in their study showed a predominance of pulp necrosis in 40,73 %, followed by reversible pulpitis with 12,46 %, nor with the results achieved by Calle Molina et al.,⁽²¹⁾ where they obtained that irreversible acute pulpitis was the main cause of urgency in patients with 62 %.

Caries is the chronic dental disease responsible for a large part of the dental emergencies, being the second most frequent cause in our investigation. It causes severe odontalgia due to pulpitis that can lead to necrosis, fistulas or diffuse cellulitis. Pain caused by dental caries constitutes 30 % of emergencies.^(12,19)

The results obtained by Ferrer Vilches et al.,⁽¹⁹⁾ differ from this research, where exodontia was the predominant treatment in 60,49 %, which represents a much higher percentage than those obtained in this research. In addition, regarding the frequency of pulpotomies performed as treatment, they obtained that it was performed in 25,23 % of the cases, a result that differs from those found in this research.

Most of the extractions performed in the patients were due to teeth affected by dental caries which caused extensive coronary destruction, where the remaining tissue made it impossible to carry out a restorative treatment or the fabrication of a fixed partial prosthesis, since they constituted true root remnants.

The results obtained coincide with those of González del Valle et al.,⁽⁶⁾ where most of the patients could be treated by more conservative ways of pulp vitality allowing the maintenance of pulp tissue or a pulp remnant. Nevertheless, a predominance of chamber access and pulp extirpation was observed as the second most frequent treatment, which speaks of the need to continue increasing health promotion and prevention activities for these pathologies, through the development of preventive strategies and treatments that respond to the needs of patients, in order to raise the level of information in health education in the population, and prevent the occurrence of pulpal and periapical diseases.

Among the limitations of the study we found those typical of cross-sectional studies, since no causal relationships or association between variables were attributed to them, which could demonstrate other results related to the variables analyzed.

CONCLUSIONS

There was a predominance of the female sex, of the 35-59 years age group, of the patients who came to the consultation referring pain and of those whose pain intensity was severe. Pulpal and periapical processes were identified as the most common type of stomatological emergency, of which acute dentoalveolar abscess was present in most patients. Pulpal sedation was the therapeutic treatment of choice.

Conflict of interest

The authors declare that they have no conflicts of interest.

Author's contribution

JCAH: conceptualization, data curation, formal analysis, research, project management, writing, review and editing. Manuscript version approval.

DTH: conceptualization, data curation, formal analysis, research, writing, revising and editing. Approval of the manuscript version.

EQM: data curation, formal analysis, research, project management, writing, revising and editing. Approval of the manuscript version.

AGL: formal analysis, research, original draft, writing, revising and editing. Approval of the manuscript version.

MELP: data curation, formal analysis, research, project management, writing, revising and editing. Manuscript version approval.

BHA: data curation, formal analysis, research, project management, writing, revising and editing. Approval of the manuscript version.

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BIBLIOGRAPHIC REFERENCES

1. Rojas Herrera IA, Morales Navarro D, Hernández Pedroso W. Urgencias médicas durante la práctica estomatológica. Rev haban cienc méd [Internet]. 2021 [citado 17/06/2022]; 20(6): e3238. Disponible en: <http://www.revhabanera.sld.cu/index.php/rhab/article/view/3238>
2. Rojas Herrera IA, Morales Navarro D, Rodríguez Soto A, Hernández Pedroso W. Nivel de conocimientos sobre urgencias médicas durante la práctica profesional de los estomatólogos. EMS [Internet] 2021 [citado: 20/11/2021]; 35(1): e2579. Disponible en: <http://ems.sld.cu/index.php/ems/article/view/2579>
3. Martínez-Sánchez N, Polanco-Miniet Y, Arzuaga-Carrazana T, Leyva-Escalona E, Mascareño-Ramos A. Comportamiento de las urgencias estomatológicas en el ASIC Santa Ana estado Aragua. Enero-diciembre 2013. MULTIMED [Internet]. 2015 [citado: 20/11/2021]; 19(1): 25-40. Disponible en: <http://www.revmultimed.sld.cu/index.php/mtm/article/view/89>.
4. Gonzales Naya G, Montero del Castillo ME. Estomatología general Integral [Internet]. La Habana: Editorial Ciencias Médicas; 2013. [citado: 20/11/2021]. Disponible en: http://www.bvs.sld.cu/libros/estomatologia_general_integral/estomatologia_general_completo.pdf
5. Herrero-Solano Y, Zamabrano-Gómez V, Arias-Molina Y, Pérez-Milán A, Ramírez-Menéndez S. Urgencias estomatológicas atendidas en una clínica de Bayamo, durante la situación epidemiológica causada por la COVID-19. Revista Electrónica Dr. Zoilo E. Marinello Vidaurreta [Internet]. 2020 [citado 17/06/2022]; 45(5). Disponible en: <http://revzoilomarinello.sld.cu/index.php/zmv/article/view/2360>
6. González del Valle E, Peral García A, Vázquez de Lara Saavedra L, Medina Medina BV. Frecuencia de urgencias estomatológicas atendidas en la Clínica de la Maestría en Ciencias Estomatológicas con terminal en Pediatría de la BUAP en el periodo Enero-Diciembre 2016. Revista Tamé [Internet]. 2017 [citado: 22/01/2022]; 6(17): 598-602. Disponible en: https://www.uan.edu.mx/d/a/publicaciones/revista_tame/numero_17/Tam1717-3i.pdf

7. Muñoz Macías NV, Muñoz Macías MD, Jimbo Mendoza JC. Epidemiología de la caries dental en adolescentes de un consultorio odontológico. Rev. Pol. Con [Internet]. 2017 [citado: 13/12/2022]; 2(4): 101-110. Disponible en: <https://polodelconocimiento.com/ojs/index.php/es/article/download/106/pdf>
8. Castro-Gutiérrez I, Torrecilla-Venegas R, Díaz-Rodríguez YL, Carmenate-Meneses R, Morgado-Marrero DE. Programa educativo sobre caries dental en niños de quinto grado del municipio La Sierpe. Rev Ciencias Médicas [Internet]. 2022 [citado: 13/12/2022]; 26(1): e5357. Disponible en: <http://revcmpinar.sld.cu/index.php/publicaciones/article/view/5357>
9. Cipriano Martínez D, Chipana Herquinio C. Asociación entre la higiene oral y la prevalencia de Caries Dental en escolares de 6 a 12 años de edad de la Institución Educativa San Gabriel, Villa María del Triunfo, en 2017. Rev Cient Odontol [Internet]. 2018 [citado: 13/12/2022]; 6(2): 167-176. Disponible en: <https://revistas.cientifica.edu.pe/index.php/odontologica/article/download/468/531/>
10. Ortega Pérez F, Guerrero A, Aliaga A. Determinantes sociales y prevalencia de la caries dental en población escolar de zonas rurales y urbanas de Ecuador. Odontoinvestigación [Internet]. 2018 [citado: 13/12/2022]; 4(2): 20-31. Disponible en: <https://revistas.usfq.edu.ec/index.php/odontoinvestigacion/article/view/1281>
11. Rodríguez Sánchez O, Hernández García G. Comportamiento de las enfermedades bucodentales en el Hospital Referal Maliana de Timor Leste. Rev Ciencias Médicas [Internet]. 2021 [citado: 13/12/2022]; 25(4): e4855. Disponible en: <http://revcmpinar.sld.cu/index.php/publicaciones/article/view/4855>
12. Puig González JC, Rodríguez Leyva R, García Díaz D, Masó Galán MZ. Comportamiento de las enfermedades pulpares en pacientes de la Facultad de Estomatología. 2019 - 2020. [Internet]. La Habana: Congreso Internacional Estomatología 2020 (Virtual); noviembre 2020. [citado: 22/01/2022]: [aprox. 12 p.]. Disponible en: <http://estomatologia2020.sldcu/index.php/estomatologi/2020/paper/view/771>
13. Chacón Najarro E, Montero Valero C, Mentado Figueroa L, Ferrer Vilches D. Enfermedades pulpares y periapicales en el servicio de urgencias. Inmedsur [Internet]. 2021 [citado: 13/12/2022]; 4(1): e143. Disponible en: <http://www.inmedsur.cfg.sld.cu/index.php/inmedsur/article/view/143>
14. Torrecilla Venegas R, de Castro Yero JL, Castro Gutiérrez I, García Rodríguez M. Caracterización del absceso dentoalveolar agudo en la Clínica Estomatológica Docente Provincial de Sancti Spíritus. SPIMED [Internet]. 2020 [citado: 13/12/2022]; 1(1): e10. Disponible en: <http://www.revspimed.sld.cu/index.php/spimed/article/view/10>
15. de Castro-Yero JL, Yero-Mier IM, Álvadez-Morgado A, Gómez-Hernández IE, García-Rodríguez M, García-Luis Y. Sistema de acciones para la prevención y tratamiento de enfermedades pulpares y periapicales agudas. SPIMED [Internet]. 2021 [citado: 13/12/2022]; 2(2): e89. Disponible en: <http://revspimed.sld.cu/index.php/spimed/article/view/89>
16. Colectivo de autores. Anexo 5: Indicaciones generales a cumplimentar en los Servicios de Urgencia de Estomatología. En: Programa Nacional de Atención Estomatológica Integral a la Población. [Internet]. La Habana; 2011. [citado: 20/11/2021]. p 146-7. Disponible en: <http://files.sld.cu/sida/files/2012/01/progatenc-estomatol-integr-2009.pdf>

17. Castro Beltran DE, Tafurt Morelo RA, Cassiani Reyes V. Concordancia: escala verbal numérica y escala visual analógica del dolor [Tesis]. Colombia: Universidad de Cartagena; 2019 [citado: 20/11/2021]. Disponible en: <https://hdl.handle.net/11227/9464>
18. Machado Pina A, Tan Suárez N, Suárez Tan NT, Silba Martínez Y, García Vitar L, Travieso Gutiérrez Y. Caracterización de urgencias pulpares y periapicales en pacientes del policlínico Este de Camagüey. Revista Archivo Médico de Camagüey [Internet]. 2018 [citado: 22/01/2022]; 22(4): 474-483. Disponible en: <http://revistaamc.sld.cu/index.php/amc/article/view/5419>
19. Ferrer-Vilches D, Hernández-Millán A, García-Álvarez O, Rodríguez-Alonso Y, Pérez-Morales M, Liriano-García R. Caracterización de las enfermedades pulpares en pacientes pertenecientes al Área II del municipio Cienfuegos. Medisur [Internet]. 2017 [citado: 22/01/2022]; 15(3): 327-332. Disponible en: <http://www.medisur.sld.cu/index.php/medisur/article/view/35800>
20. Piquera Palomino Y, Paneque Escalona T, Infante Tamayo M de la C, Pilar Merino Noguera Y, Reyes Romagosa DE. Caracterización de las enfermedades inflamatorias pulpares en pacientes atendidos por urgencia. Multimed [Internet]. 2017 [citado: 22/01/2022]; 21(5): 529-541. Disponible en: <http://www.revmultimed.sld.cu/index.php/mtm/article/view/612>
21. Calle Molina C, Guerrero Coello ME, Urgilés Rojas A, Salinas Abarca G. Frecuencia de patologías pulpares atendidas en una Clínica Docente de Ecuador. Rev. Evid. Odontol. Clinic. [Internet]. 2017 [citado: 22/01/2022]; 3(2): 8-11. Disponible en: <http://dx.doi.org/10.35306/eoc.v3i2.488>