

**Dissemination event on research in fluorides and dental fluorosis in
Latin America - Santiago, Chile, October 18, 19 and 20, 2023**

**Evento de divulgação de pesquisas em fluoretos e fluorosis dentária na
América Latina - Santiago, Chile, 18, 19 e 20 de outubro de 2023**

**Evento para difundir la investigación sobre fluoruro y fluorosis dental
en América Latina - Santiago, Chile, 18, 19 y 20 de octubre de 2023**

DOI:10.34117/bjdv10n3-032

Originals received: 02/16/2024

Acceptance for publication: 03/01/2024

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ABSTRACT

The activities developed in the Dissemination Day of the FONIS SA21I0117 project called “Academic dissemination events of the Faculty of Dentistry of the University of Chile and entities participating in the study with foreign professors” are presented with the Agenda: Research in Fluorides and Dental Fluorosis”. This activity took place on October 18, 19 and 20, 2023 at the Faculty of Dentistry of the University of Chile, Santiago, Chile ⁽¹⁾. The activities carried out included a: I) Symposium on “Dental Fluorosis in Latin America”, with the participation of researchers from Argentina, Chile, Colombia, Ecuador, Paraguay and Peru. II) Seminar on “Feeding in children from 0 to 12 months in Chile” and III) Presentation of results of research on “Fluorides” and Fluorosis developed in Latin American countries. In the fluorosis Symposium section, six research experiences were presented by researchers from 6 presentations were made from Argentina, Colombia, Chile, Ecuador, Paraguay, and Peru. At the seminar on Nutrition in children under 1 year of age in Chile there were three presentations from three government entities in the country. The presentations of free works on fluorides and fluorosis in Latin America included one work from Argentina, two from Chile, one from

Colombia, two from Ecuador, one from Brazil, and one from Peru. As the production of scientific works during the event was extensive and very varied, on this occasion we will present only the expanded summaries of the round table on “Dental Fluorosis in Latin America”.

Keywords: fluorides, dental fluorosis, latin america, dissemination event.

RESUMO

As atividades desenvolvidas no Dia de Difusão do Projeto FONIS SA21I0117 chamado "Eventos de difusão acadêmica da Faculdade de Odontologia da Universidade do Chile e entidades que participam do estudo com professores estrangeiros" são apresentadas com a Agenda: Pesquisa em Fluoretos e Fluorose Dental. Esta atividade teve lugar em 18, 19 e 20 de outubro de 2023 na Faculdade de Odontologia da Universidade do Chile, Santiago, Chile (1). As atividades realizadas incluíram: I) Simpósio sobre "Fluorose Dental na América Latina", com a participação de pesquisadores da Argentina, Chile, Colômbia, Equador, Paraguai e Peru. II) Seminário "Alimentação infantil de 0 a 12 meses no Chile" e III) Apresentação dos resultados da pesquisa sobre "Fluoretos" e fluorose desenvolvida em países da América Latina. Na seção Simpósio de fluorose, seis experiências de pesquisa foram apresentadas por pesquisadores de 6 apresentações feitas na Argentina, Colômbia, Chile, Equador, Paraguai e Peru. No seminário sobre Nutrição em crianças com menos de 1 ano de idade, no Chile, houve três apresentações de três órgãos governamentais do país. As apresentações de trabalhos gratuitos sobre flúor e fluorose na América Latina incluíram um trabalho da Argentina, dois do Chile, um da Colômbia, dois do Equador, um do Brasil e um do Peru. Como a produção de trabalhos científicos durante o evento foi extensa e muito variada, nesta ocasião apresentaremos apenas os resumos ampliados da mesa-redonda sobre "Fluorose Dental na América Latina".

Palavras-chave: fluorides, fluorose dentária, américa latina, evento de disseminação.

RESUMEN

Las actividades desarrolladas en la Jornada de Difusión del proyecto FONIS SA21I0117 denominado “Eventos de difusión académica de la Facultad de Odontología de la Universidad de Chile y entidades participantes en el estudio con profesores extranjeros” se presentan con la Agenda: Investigación en Fluoruros y Fluorosis Dental”. Esta actividad tuvo lugar los días 18, 19 y 20 de octubre de 2023 en la Facultad de Odontología de la Universidad de Chile, Santiago de Chile (1). Las actividades realizadas incluyeron: I) Simposio sobre “Fluorosis Dental en América Latina”, con la participación de investigadores de Argentina, Chile, Colombia, Ecuador, Paraguay y Perú. II) Seminario sobre “Alimentación en niños de 0 a 12 meses en Chile” y III) Presentación de resultados de investigaciones sobre “Fluoruros” y Fluorosis desarrolladas en países de América Latina. En la sección del Simposio sobre fluorosis se presentaron seis experiencias de investigación de investigadores de 6 presentaciones realizadas en Argentina, Colombia, Chile, Ecuador, Paraguay y Perú. En el seminario sobre Nutrición en niños menores de 1 año en Chile hubo tres presentaciones de tres entidades gubernamentales del país. Las presentaciones de trabajos gratuitos sobre fluoruros y fluorosis en América Latina incluyeron un trabajo de Argentina, dos de Chile, uno de Colombia, dos de Ecuador, uno de Brasil y uno de Perú. Como la producción de trabajos científicos durante el evento fue extensa y muy variada, en esta ocasión presentaremos solo los resúmenes ampliados de la mesa redonda sobre “Fluorosis Dental en América Latina”.

Palabras clave: fluoruros, fluorosis dental, América Latina, evento de difusión.

1 INTRODUCTION

The Conference organized by the FONIS SA21I0117 project called “Academic dissemination events of the Faculty of Dentistry of the University of Chile and entities participating in the study with foreign professors”, with the theme Research in Fluorides and Dental Fluorosis took place on the 18th, 19th and October 20, 2023 at the Faculty of Dentistry of the University of Chile, Santiago, Chile¹. The activities included I) Symposium on “Dental Fluorosis in Latin America”, with the participation of researchers from Argentina, Chile, Colombia, Ecuador, Paraguay and Peru. II) Seminar on “Food in children from 0 to 12 months in Chile” and III) Presentation of research results on “Fluorides” and Fluorosis developed in Latin American countries.

The international literature mentions that, in Latin America, dental fluorosis has been documented. In Brazil with 4 publications^{2,3, 4, 5}, Argentina with 2 publications^{6,7} and Mexico with 4 publications^{8,9, 10,11} and Colombia with 7 publications^{12,13,14,15,16,17,18}, considering this large country as Latin American, although it is not¹⁹.

But what happens with Fluorosis in other Latin American countries such as Ecuador, Peru, Chile, Bolivia, and not to mention the Central American countries. Simply for the international scientific community, dental fluorosis does not exist in these countries.

As the production of scientific works during the event was extensive and very varied, on this occasion we will present only the expanded summaries of the Symposium on “Dental Fluorosis in Latin America.” We know that this publication is an “unselfish intellectual action” because it is the joint work of researchers from different countries, without government support and even with the opposition of some of them, to show the situation of an oral pathology, but which often represents the state general health of completely abandoned areas of countries.

2 OBJECTIVES

Objectives 1: Show some aspects and in some geographical locations of the Latin American region the dental fluorosis that affects the population that lives there.

Objectives 2: Show some aspects and some geographic locations of the Latin American region where dental fluorosis affect the oral health of the population.

3 MATERIALS AND METHODS

The inputs used for the construction of this publication were mainly the oral presentations made by different researchers from different Latin American countries attending the dissemination seminar on a particular situation in their country of origin regarding the central topic, which was “Dental fluorosis in Latin America.” These presentations are based on fieldwork and collection of information on the central pathology and others also present in the study region. This presentation may be visible as an individual work, work presented at conferences or scientific meetings, or published in a national or international journal.

The inputs used for the publication were the following:

- a) “School Dropouts in Adolescents and Dental Fluorosis”, presented by Argentine teachers.
- b) “Prevalence of Dental Fluorosis in areas of exposure to fluorides through drinking water in the Colombian Caribbean Region”, presented by a Colombian researcher.
- c) “Prevalence and severity of dental fluorosis in schoolchildren aged 6 to 12 years from the Metropolitan Region, Chile”, disclosed by a Chilean academic.
- d) “Prevalence and Distribution of Dental Fluorosis in three provinces of Ecuador”, presented by two researchers from Ecuador.
- e) “Dental fluorosis in some Departments of Paraguay.” Presentation carried out by the vice dean of a state university in Paraguay.
- f) "Situation of scientific evidence on fluoride and fluorosis in Peru”, publication presented by two academics from Peru.

4 RESULTS

Below are the summaries of the presentations made during the round table on “Fluorides and Fluorosis in Latin America”.

4.1 “SCHOOL DROPOUT IN ADOLESCENTS WITH DENTAL FLUOROSIS/WATER STAINING AND SCHOOL DROPOUT”

Exhibitors and speakers: Gallará Raquel Vivian, PhD; Ponce Rubén Hugo, PhD.

Place: Chairs of Biological Chemistry. Faculty of Dentistry, National University of Córdoba. Argentina. “Latin American Research Network on Fluorides and Dental Fluorosis”

Charbonier, (Córdoba, Argentina), is a rural community where many of the children present dental fluorosis. In the absence of a secondary educational center, adolescents must migrate to neighboring towns to continue their studies. Numerous studies have shown that aesthetic alterations in teeth can adversely affect the psychological well-being of children and adults. One of the factors that influence school dropout is discrimination or self-discrimination. Our purpose was to investigate whether dental fluorosis affects the school dropout of Charbonier students to establish the relevant inclusion or retention strategies. The intervention was carried out in Charbonier and San Esteban (rural commune without fluorosis), in adolescents and adults of both sexes. Situations of exclusion in the school environment were studied, through demographic and ethnographic data surveys, and interviews with various actors from the educational institutions of the mentioned communes. Furthermore, the existence of discriminatory and self-discriminatory actions was assessed through interviews. An increase was demonstrated in the percentage of total school dropouts of students from Charbonier compared to those from San Esteban (56% and 40%, respectively). This difference is due to the percentage of students who never attended middle school (34% Charbonier and 15% San Esteban). The level of absenteeism among Charbonier students was lower and their discipline was better. Ethnographic records showed that students with dental fluorosis are less communicative and participatory than the rest. These attitudes, analyzed in conjunction with interviews in adults with dental fluorosis, suggest self-discriminatory behavior. Interviews with former students revealed discriminatory practices. In addition, the archaeological find that shows the caricature of a companion with stains on her teeth was relevant. Until now, there were no studies that related dental fluorosis to school dropout. The actions of Public Health and educational institutional policies are made a priority to address the problem. Discrimination for aesthetic reasons constitutes a subtle but effective mechanism of social differentiation, and the only way out for those who are discriminated against is for society to become aware of such practices and reject them.

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4.2 “PREVALENCE OF DENTAL FLUOROSIS IN AREAS OF EXPOSURE TO FLUORIDES DUE TO GROUNDWATER INGESTION IN COLOMBIA”

Exhibitor and speaker: Farith D. González Martínez. PhD.

Place: Full professor University of Cartagena, Colombia. “Latin American Research Network on Fluorides and Dental Fluorosis”

Natural water sources are considered as the major environmental exposure of fluoride, resulting in increased prevalence of enamel fluorosis in endemic regions. This natural exposure should be permanently monitored to avoid the interactions with other non-natural fluoride sources. We evaluated the prevalence of enamel fluorosis in Colombian schoolchildren and its relationship with fluoride-containing water ingestion exposure dose and urinary fluoride excretion. We included 923 schoolchildren aged 7 to 12 years residing in eight municipalities in Colombia. Sampling of consumption water was performed in major aquifers used for daily supply. Samples were collected in 98

polyethylene containers and refrigerated until analysis. Water and urine fluoride concentrations were measured using the fluoride selective electrode method. Enamel fluorosis was evaluated using Thylstrup and Ferjerskov Index (TFI). Demographic and anthropometric characteristics were assessed. Besides, other exposures to fluoride were also evaluated. Logistic regression was applied for multiple analyses. The median fluoride concentration in water and urine samples was 10.5 mg/L and 0.63 mg/L respectively, with the highest value found in Algarrobo-Magdalena, and the lowest value found in Manzanares-Caldas. The overall prevalence of enamel fluorosis was 86.1%, being more frequent the mild codes with TFI-1 to TFI-2. The highest prevalence was found in Margarita-Bolívar and Manzanares-Caldas, and the most severe codes (TFI-5 to TFI-9) were detected in Manzanares-Caldas. The multiple analysis revealed water ingestion exposure dose, urinary excretion, involuntary intake of toothpaste, amount of table salt consumption and sex as significant factors ($p < 0.001$). We concluded that the fluoride ingestion exposure dose and its subsequent urinary excretion could be used as estimators of past fluoride exposure, explaining the current prevalence of enamel fluorosis in Colombian schoolchildren.

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4.3 “PREVALENCE AND SEVERITY OF DENTAL FLUOROSIS IN SCHOOLCHILDREN FROM 6 TO 12 YEARS OF AGE IN THE METROPOLITAN REGION, CHILE”

Exhibitors and speakers: Dr. M. Consuelo Fresno.

Place: Associate Professor. Dept. Restorative Dentistry. Faculty of Dentistry. U. of Chile.

The aim of this study was to determine the prevalence and severity of dental fluorosis in schoolchildren aged 6 to 12 years in province of Santiago. In this cross-sectional study, 1351 schoolchildren aged 6 to 12 years, from 7 public and private schools of the Santiago Province. They were examined by two calibrated investigators (Kappa 0.94). Clinical examinations were recorded using Thylstrup and Fejerkov (TF). Fluorosis distribution according to sex, age, and socioeconomic status (SES) were determined. Data was analyzed with Kruskal-Wallis and Mann-Whitney test with a confidence interval of 95% ($p \geq 0,05$). The initial sample comprised 1351 participants, from which 300 individuals were excluded. Reasons for exclusion included 7 participants wearing orthodontic appliances, 11 falling outside the specified age range, 63 lacking fully erupted first permanent molars, and 219 presenting other dental structural alterations. This led to the formation of a final sample of 1051 participants, encompassing 51.67% women ($n=543$) and 48.43% men ($n=508$). The identified prevalence of fluorosis was 59.4% ($n=624$). Among those affected, 95.67% exhibited mild fluorosis (grades 1, 2, and 3 of TF criteria), 3.85% showed moderate fluorosis (grades 4 and 5 TF), and 0.48% displayed severe fluorosis (grade 6 TF). No instances of greater severity were observed in the entire sample. In terms of gender distribution, 62.24% of women ($n=538$) and 56.29% of men ($n=286$) presented fluorosis, with no statistically significant difference noted between the

sexes ($p = 0.05$). Examining prevalence across strata revealed rates of 44.90% in stratum I ($n = 105$), 59.74% in stratum II ($n = 328$), and 71.26% in stratum III ($n = 191$), indicating a significant difference ($p = 0.01$) when comparing stratum, I with III and II with III. Further analysis by age demonstrated the lowest fluorosis prevalence at 6 years (46.5%) and the highest at 12 years (66.12%), with statistically significant difference observed based on age ($p = 0.045$). The prevalence of dental Fluorosis in schoolchildren aged 6 to 12 years old in Santiago Province is high, reaching a 59,4 % with the greatest prevalence at 12 years old with significant difference. Mild fluorosis severity is the highest found reached 95.67%. The highest socioeconomic stratum has the lowest prevalence with significant difference.

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4.4 “FACTORS ASSOCIATED WITH DENTAL FLUOROSIS IN THREE ZONES OF ECUADOR”

Exhibitors and speakers: Ana del Carmen Armas-Vega, PhD. Eleonor Vélez León, PhD.

Place: Universidad Central, Ecuador. Universidad Católica de Cuenca, Ecuador. “Latin American Research Network on Fluorides and Dental Fluorosis”.

Recent studies on dental fluorosis in Ecuador reflect a growing concern regarding its prevalence and associated factors. In a study conducted in the provinces of Imbabura, Pichincha, and Chimborazo, the aim was to determine the prevalence of dental fluorosis in children aged 10 to 12 years, revealing a high prevalence of 89.96%. A statistically significant relationship was identified between dental fluorosis and the consumption of bottled beverages, as well as the quantity of toothpaste used and inadvertently ingested during brushing.

On the other hand, the study conducted in the Southern Region, although reported a lower prevalence (50.1%), revealed differences in the distribution of dental fluorosis among the assessed provinces. The higher occurrence of moderate cases in Cañar (17%) underscores the heterogeneity of the situation, illustrating how the severity of fluorosis varies depending on geographical location .

Both studies emphasize the pressing need to delve deeper into researching the underlying factors influencing the prevalence of dental fluorosis in these regions. Additionally, they underscore the importance of implementing tailored preventive and intervention strategies adapted to the particularities of each geographic area, aiming to mitigate the burden of this condition and enhance oral health among the Ecuadorian pediatric population.

The interconnection between the findings of both investigations provides a holistic view of the issue of dental fluorosis in Ecuador, emphasizing the complexity of the phenomenon [d] and the necessity for a multifaceted approach that considers geographical, socioeconomic, and oral hygiene habit aspects. Consequently, there is a call for further detailed studies and the implementation of relevant intervention strategies to effectively and sustainably address this public health challenge.

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4.5 “DENTAL FLUOROSIS IN THE DEPARTMENTS OF PARAGUAY.”

Exhibitors and speakers: Heriberto Núñez. Master. Place: Vice Dean, National University of Asunción, Paraguay. “Latin American Research Network on Fluorides and Dental Fluorosis”

Water fluoridation in Paraguay lasted only a couple of years and its history was recorded in the Editorial of the Dental Magazine of the Circle of Dentists of Paraguay in 1959 whose heading was "Asunción: First South American capital with fluoridated tap water". US Public Health Service (PHS) did not change its recommendation that the optimal concentration of fluoride in drinking water for the prevention of dental caries in the United States be reduced to 0.7 mg/L, from the previous range of 0.7 to 1.2 mg/L, for the following: a) Fluoridation of drinking water is an effective public health strategy to prevent cavities and the most feasible and profitable to reach entire communities. b) Drinking water and other sources of fluoride exposure have contributed to preventing dental caries and increasing the prevalence of dental fluorosis. c) Preventing caries and reducing the risk of dental fluorosis can be achieved at a fluoride concentration of 0.7 mg/L. d) Recent data do not show a relationship between water intake and outdoor temperature, therefore, fluoride concentrations in water that differ depending on outdoor temperature are unnecessary. In Paraguay, with a high prevalence of caries, fluoridation should be carried out with a massive vehicle. Paradoxically, there are localities with high concentrations of fluorides in drinking water naturally, reporting fluoride concentrations equal to or greater than 1.5 mg/L (1998) in the Departments of Alto Paraná, Concepción, San Pedro, and Paraguairí. Dental fluorosis was already mentioned in the city of

Concepción, Paraguay (1949), where patients with chalk-white teeth were reported. An investigation carried out in the previous departments (2002) in 12-year-old children, found an average prevalence of 50% of dental fluorosis, with values that varied from 80% (Loreto), 66% (Yataty del Norte) and 22% in Ñacunday. Since 2018, Research Centers, State Universities and the Department of Oral Health of the Ministry of Public Health have been collecting information on fluoride concentrations in drinking water and diagnosis of dental fluorosis in localities not included in the National Oral Health Survey of the Paraguay 2017, such as those of the IV Sanitary Region of Guairá and the X Sanitary Region of Alto Paraná, which report high concentrations of fluoride in drinking water, as well as high prevalence and severity of dental fluorosis.

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4.6 SITUATION OF SCIENTIFIC EVIDENCE ON FLUORIDE AND FLUOROSIS IN PERU”

Exhibitors and speakers: Dr. Juana Rosmeri Salas Huamani^a, Mg. Emeterio Marino Olivares de la Cruz^b.

Place: ^aResearch Professor at the Faculty of Stomatology, César Vallejo University, Peru. ^bProfessor of Biology and Biochemistry, César Vallejo University, Peru. “Latin American Research Network on Fluorides and Dental Fluorosis”

The last national information survey about dental fluorosis in Peru was in 2002, the Ministry of Health (www.minsa.gob.pe) found a general prevalence of dental enamel fluorosis of 10.1% in schoolchildren aged 6 to 8, 10, 12 and 15 years, being higher in

Ancash (60.1%) and Junín (37.2%). At 12 years old it was 8.7% and at 15 years old it was 7.5%. In the rural area it was 12.15% and in the urban area 9.9%). According to Dean's classification, the degree of severity of fluorosis was healthy 89.9%, very mild 7.5%, mild 1.6%, moderate 0.8% and severe 0.2%. The community fluorosis index (CFI) was 0.30. The departments with the highest values were Ancash (0.97), Ayacucho (0.72), Huánuco and Junín (0.57). In view of the lack of updated information on the matter a search for scientific articles on the subject was carried out in Scopus, Web of Science, Scielo, ProQuest, using various keywords such as, “prevalence” and (or) “fluorosis”, “fluor” and(or) “fluorosis”, “fluorides” and(or) “fluorosis”, “toothpastes” and (or) “fluorosis”, “dentifrices” and(or) “fluorosis” and the main filter used was "Peru". Six articles were found conducted in the Peruvian population, on different topics related to fluoride and fluorosis. Chumpitaz-Cerrate, V. et al. 2023 determining the frequency and levels of dental fluorosis in 252 schoolchildren aged 12 to 15 years from Lima - Peru, a frequency of dental fluorosis was 44.8%, mostly affecting males (27.39%) and 13-year-old adolescents (15.1%), and a predominant level was “very mild” fluorosis (34.9%). An exploration on the concentration of fluoride present in drinking water was carried out to find a relationship with dental fluorosis in children. It was concluded that the concentration of fluoride in drinking water is managed as a form of prevention for dental pathologies, and that the levels of fluoride allowed in children must be known, because excess of fluoride can cause dental fluorosis.

In 2021, in the document title “Community interventions and strategies for caries control in Latin American and Caribbean countries” were carried out three systematic searches and twenty-six publications served to summarize the main scientifically documented interventions and community strategies based on the use of fluoride for caries control in Latin American and Caribbean countries (LACC), including Peru. Evidence of fluoride use was observed, and it is mentioned that fluoride use should be monitored at local, regional, and national levels to minimize the risk of dental fluorosis.

Previous to this document Villena et al.⁴ in 2000 evaluated a method of placing the toothpaste in transverse relation to the bristles (TT), concluding that this technique could be recommended for young children to reduce the amount of toothpaste with fluoride used, thus minimizing the possible inadvertent ingestion of fluoride toothpaste. Other study in 2009, estimate the dietary intake of F in children (4-6 years) who received fluoridated salt (FS-Peru, 180-200 mg F/Kg) and fluoridated milk (FM- Peru, 0.25 mg F), it was found that the main dietary contributors to FS/FM/NoF were solids, and that dietary

intake of F should be considered before implementing any systemic fluoridation method⁵. Finally, based on the National Registry of Research Works of Peru (RENATI-www.renati.sunedu.gob) that include research work to obtain university degrees, master's degrees and doctorates and searching in national repositories and using different terms related with the publication date filter: 2023 to 2018, seven undergraduate theses were accessed in the last five years, of which three correspond to the year 2023, two to 2021, one to 2019 and one to 2018.

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5 DISCUSSION

The results of the presentations show us a reality unknown to most of the inhabitants of the south of the American continent. Without trying to show the situation of fluorosis pathology by country, which is impossible to describe in a single presentation,

they show us different realities by country. In some of them, there is no government application of fluoride despite the very high percentage of dental caries that occurs not only in the adult population, but also in children, and where it is possible to find endemic places for dental fluorosis, a situation that must be addressed, not by academia, but by government entities of these countries ⁽¹⁴⁾.

In other countries, regulation of fluoridation through a mass vehicle exists, which can be fluoridated salt or water. There the situations tend to be similar on the macro level, which is an increase in dental fluorosis, a situation reflected by relatively constant reports generally prepared by the countries' health ministries. But at a micro level, differences appear that can be very different, as happens when we compare, for example, Chile with Colombia.

But the situation for other countries may be worse, where public policy applied to oral health does not exist or is not applied. In those places, only university research gives us warning signs about critical situations, but due to the scope of this research, it is always partial or applied to very specific places as is the case in Peru, the last national report on fluorosis is from 22 years ago.

There is a very old proverb that states “there is no worse blind man than he who does not want to see.” This happens with government authorities that, despite having academic information about an oral pathological situation, ignore it in their national health reports. This oral pathological situation is perpetuated even though the evidence at least tells us that the triggering factors of this pathology must be studied. This situation occurs today in regions of Paraguay where there is water with a very high fluoride content. This water from wells continues to reach rural regions that have a high degree of endemic dental fluorosis.

For the early prevention of fluorosis, it is necessary in our opinion as a network dedicated to the review of fluorosis and its diagnosis, to reinforce global research in two aspects: a) Age of onset of the pathology, we speak of onset windows which we think needs to be re-study and b) Review all fluoride contributions that are ingested, both of natural and anthropometric origin, since the birth of the child. We have recently reviewed 800 natural foods that children from 0 to 12 months of age receive and in all of them we have found fluoride, the vast majority of them with low concentrations, but in all of them there is fluoride. And as we know what produces the pathological effect is the cumulative action of this ion.

We believe that what was delivered is a grain of sand that can lead to showing the great beach behind situations that affect the entire region. We know that there is no single solution, what is valid and works for one country or region most likely will not work for another. The only solution is for each country, with government support, to take charge of its situation in depth. We know that this is difficult, because despite the wide coverage of the pathology, it is not perceived as something harmful, but only a consequence of something better. That is the thinking that leads this highly prevalent pathology in many Latin American countries to be only seen as an aesthetic problem and not really an oral pathology.

6 CONCLUSIONS

Dental fluorosis is recognized as a recurrent pathology by the members of the different countries that attended this meeting.

The members of the different countries that attended this meeting recognize dental fluorosis as a recurrent pathology.

Both the prevalence and incidence of dental fluorosis is different for each participating country, but it is also different for the same country due to circumstances such as climate, geographic location, population density and fluoride intake through different sources. There are no common policies for the diagnosis, prevention, and treatment of dental fluorosis, although there are general guidelines issued by international organizations.

Joint action between academia and government organizations is essential so that fluorosis is recognized as an oral pathology and not a cosmetic problem.

It is necessary to unify criteria in the treatment of fluorosis because each country, university, and study center has their own treatments, most of them being inadequate.

ACKNOWLEDGMENTS

We thank the FONIS Project SA21i 0117 (Chile), for allowing us to carry out this Dissemination Day that included Symposiums, seminars and presentation of research work on the topic "Fluorides and Fluorosis in Latin America"

Thanks to Mr. Juan Fernández de los Ríos, from the Language and Translation services of the Faculty for kindly proofreading and checking the spelling and grammar of this article.

FINANCING

The financing of the publication was provided by the FONIS-ANID Project, SA21I0117, called "Estimation of the average daily intake of fluorides in children from 0 to 12 months in the Metropolitan Region, Chile, 2022".

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