Brief communication

Newborn weight and oral health status of mothers in Santiago Nonualco

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Peso del recién nacido y el estado bucodental de las madres de Santiago Nonualco

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Abstract
Introduction. Oral diseases can be considered risk factors for chronic systemic diseases, and according to international studies, currently associated with premature births and low birth weight newborns. **Objective.** Describe the weight of newborns and the oral health status of mothers in Santiago Nonualco. **Methodology.** Descriptive cross-sectional study. The study included records of mothers who attended prenatal checkups and whose newborns were enrolled in the child dental checkup program during 2023. **Results.** The study included 189 mothers and 189 newborns. All mothers had foci of infection in their oral cavity, and 73.5 % had chronic gingivitis. Eleven-point six percent of newborns had low birth weight, of which 81.82 % came from rural areas, and 50.0 % were children of mothers between 21 and 25 years of age. **Conclusion.** The most frequently found infectious focus was chronic gingivitis; and newborns had a higher proportion of low birth weight than the percentage reported for the country.

Keywords
Newborn, Periodontitis, Mouth.

Resumen
Introducción. Las enfermedades bucodentales pueden considerarse como factores de riesgo para enfermedades sistémicas crónicas, y actualmente según estudios internacionales, se relacionan con partos prematuros y recién nacidos con bajo peso al nacer. **Objetivo.** Describir el peso de los recién nacidos y el estado de salud bucal de las madres de Santiago Nonualco. **Metodología.** Estudio transversal descriptivo. Se incluyeron expedientes de madres que asistieron a control prenatal y cuyos recién nacidos se inscribieron al programa de control infantil odontológico durante el 2023. **Resultados.** El estudio incluyó 189 madres y 189 recién nacidos, todas las madres presentaron focos de infección en su cavidad bucal, el 73,5 % presentó gingivitis crónica. El 11,6 % de los recién nacidos tenían bajo peso al nacer, de los cuales el 81,82 % provenía del área rural y el 50,0 % eran hijos de madres entre 21 a 25 años. **Conclusión.** El foco infeccioso encontrado con mayor frecuencia fue la gingivitis crónica, los recién nacidos presentaron una proporción de bajo peso al nacer mayor al porcentaje reportado para el país.

Palabras clave
Recién Nacido, Periodontitis, Boca.

Introduction

The risk of pregnant women developing oral diseases increases due to hormonal changes and reduced immunity during pregnancy, which is exacerbated by poor oral hygiene.[1] This can not only negatively affect the gestation period, complicating pregnancy with preeclampsia or gestational diabetes, but also result in low birth weight and premature birth.[2]

Addressing oral health during pregnancy can improve outcomes for both mother and child.[3] It is important to mention that the most commonly recognized oral diseases are dental caries and periodontal conditions (gingivitis and periodontitis), the latter being the sixth most common noncommunicable oral disease, affecting 796 million individuals globally.[4] Gingivitis, defined as gum inflammation, is classified based on its mediation by biofilm and bleeding index; and periodontitis, which includes loss of the bone that supports the teeth due to inflammation, is classified according to its progression into stages I, II, and III.[5]

In El Salvador, specific health challenges persist, such as those in the department of La Paz, which has a neonatal mortality rate of 5.8 deaths per 100 000 live births, according to the Report on the Second Voluntary National Review of the implementation process of the 2022 Sustainable Development Goals.[6] More research needs to be done at the national level to address infant mortality more effectively and to explore oral health, which is one of the least studied topics. For this reason, we conducted a study to describe the weight of newborns (NB) and the oral health status of mothers at the Intermediate Health Unit (IHU) in Santiago Nonualco in 2023.

Methodology

This was a descriptive cross-sectional study of NB and mothers' medical records assigned to the dental consultation program within the child growth and development monitoring program at the Santiago Nonualco IHU. This district belongs to the department of La Paz, located in the paracentral zone of El Salvador.

The clinical records of all mothers who had received at least one dental check-up during the prenatal stage and who enrolled their children in the newborn check-up program at the dental service in 2023 were reviewed. No exclusion criteria were used; all records of patients who met the inclusion criteria were considered in this study.

The variables considered were birth weight in grams and low birth weight (LBW). All newborns weighing less than 2500 grams were classified as LBW, according to the International Consensus Guide on Small for Gestational Age Pregnancies.[7] These data were extracted from the child check-up registration form. In addition, the geographical area (rural or urban), the mother's age, the number of dental check-ups, and the oral infection sites were analyzed, as recorded in the clinical files. For infection sites, the clinical diagnosis recorded by the treating dentist during the prenatal dental check-up was transcribed. Delivery type was categorized as premature (occurring before 37 weeks of gestation) or full-term (occurring at least 37 weeks of gestation).[8]

Frequencies and proportions were used to analyze categorical variables; for quantitative variables, the Kolmogorov-Smirnov test was used to to analyze whether the data followed a normal distribution, and measures of central tendency and dispersion were calculated based on the results. The data collection form was validated by expert judgment, numerical codes were assigned in a variable dictionary, and the data were analyzed in IBM SPSS version 23.

Throughout the process, the ethical principles of studies involving human subjects were taken into account: respect, beneficence, and justice.[9] Individual anonymous coding was performed on the files. The authors submitted the protocol to the Institutional Ethics Committee of the Evangelical University of El Salvador, which was approved with minutes No. 334.

Results

The study included data from the records of 189 mothers and 189 newborns. Table 1 shows that 11.6 % of newborns were born with LBW. The median birth weight for normal-weight births was 3100 g with an interquartile range (IQR) of 2900 to 3400 g, and for LBW newborns, the median was 2400 g (IQR 2275 - 2500). The proportion of premature births was 3.17 %; the median weight of premature newborns was 2200 g (IQR 2100 - 3250), while the median weight of term newborns was 3000 g (IQR 2800 - 3000) (Figure 1).

The median weight of newborns in urban areas was 3100 g (IQR 2700 - 3300), and in rural areas it was 3000 g (IQR 2758 - 3300) (Figure 2).

The proportion of newborns from rural areas was 81.82 %. Most mothers were between 21 and 25 years old (50 %). When analyzing the frequency of LBW newborns and the number of prenatal gynecological and dental checkups of the mother, 45.45 % had two checkups; 40.9 % had between three and four checkups; and 13.63 % had one checkup (Table 1).

We found infections in all mothers included in the study. 73.5 % had chronic gingivitis, followed by 14.3 % with root remnants, 9 % had pulp necrosis, 2.1 % had periodontitis, and 1.1 % had dentoalveolar abscesses (Table 1).

Table 1. Results of newborn weight and the oral health status of mothers

Variables of interest		Low birth weight (N 22)		Normal birth weight (N 167)		Total (N 189)	
		N	%	N	%	N	%
Area	Urban	4	18.18	31	18.56	35	18.52
	Rural	18	81.82	136	81.44	154	81.48
Mother's age in years	15 to 20	5	22.73	41	24.55	46	24.34
	21 to 25	11	50.00	49	29.34	60	31.75
	26 to 30	2	9.09	37	22.16	39	20.63
	31 to 40	4	18.18	39	23.35	43	22.75
	41 and over	0	0.00	1	0.60	1	0.53
Number of prenatal checkups	One	3	13.64	8	4.79	11	5.82
	Two	10	45.45	67	40.12	77	40.74
	Three or more	9	40.91	92	55.09	101	53.44
Infections diagnosis	Chronic gingivitis	16	72.73	123	73.65	139	73.54
	Periodontitis	1	4.55	3	1.80	4	2.12
	Root remainder	2	9.09	25	14.97	27	14.29
	Dentoalveo lar abscess	1	4.55	1	0.60	2	1.06
	Pulp necrosis	2	9.09	15	8.98	17	8.99
Birth	Preterm childbirth	12	75.0	171	98.8	183	96.8
	Premature childbirth	4	25.0	2	1.2	6	3.2

Discussion

The diagnoses found in the study population coincide with those of Pecci-Lloret *et al.*, who reported in a systematic review that the most frequent oral manifestations in pregnancy include caries, periodontitis, and gingivitis. However, this review also reported pyogenic granuloma and candidiasis, diseases that were not diagnosed in the population selected in this study.[10]

A study conducted in Spain, which included 147 pregnant patients, reported that 71.5 % had infections in the third trimester of pregnancy, a proportion lower than that reported in this study. However, it should be clarified that this study only included gingivitis and periodontitis, with percentages of 42.9 % and 28.6 %, respectively.[11]

In this study, the most frequent infectious focus was chronic gingivitis, a finding similar to that reported in a study from Nepal, published in 2022, with a percentage of 73.6 % in pregnant women during the second trimester of pregnancy.[12] The same condition was found in a study that included 220 multiparous women examined in the first trimester of pregnancy in Senegal, although in a higher proportion, with 88 % of gingivitis.[13] Concurrently, another publication from 2022, which examined 92 pregnant women in Mexico, reported that the prevalence of gingivitis was 60 %.[14]

Recent epidemiological studies suggest a link between oral health and adverse pregnancy outcomes. Two mechanisms of virulence are direct invasion by oral microorganisms and mediators of oral inflammation.[15]

It is safe to perform preventive and restorative periodontal treatment during pregnancy. Likewise, regular dental checkups and treating oral infections before pregnancy prevent women from suffering from periodontal conditions during pregnancy.[16] It is important for pregnant women to have a team of health professionals trained in the importance of oral health during pregnancy, as suggested by a study conducted in Germany, which proposes that this could contribute to better prenatal care and a reduction in negative outcomes.[17]

With regard to the weight of newborns in this study, the proportion of LBW was higher than the 9.9 % reported for El Salvador in 2022, according to the Pan American Health Organization.[18] However, the proportion of LBWs was 17.9 % in the department of La Paz, according to data from the 2021 National Health Survey,[19] a higher percentage than that found in this study, although it should be noted that data from the survey are raw and may not be an accurate representation of the LBW rate. The proportion of LBW in this study was lower than that reported in a study conducted in a rural community in Guatemala, which analyzed a sample of 218 newborns, of whom 13.8 % had LBW, a higher percentage than expected for that country, which is 10.9 %.[20]

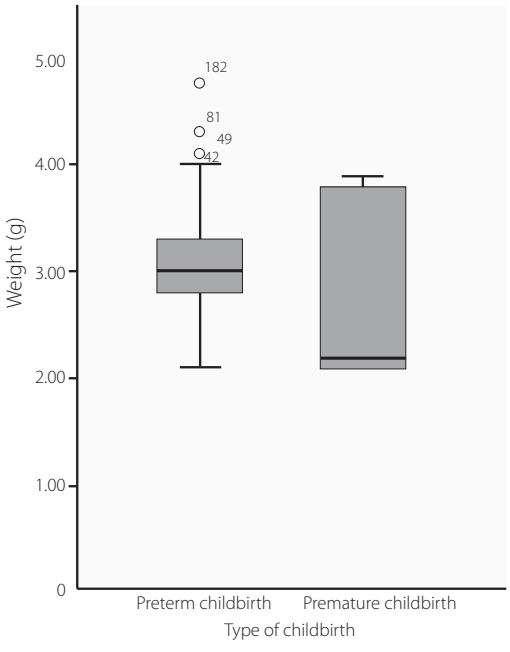

Figure 1. Comparison of median newborn weights by type of delivery.

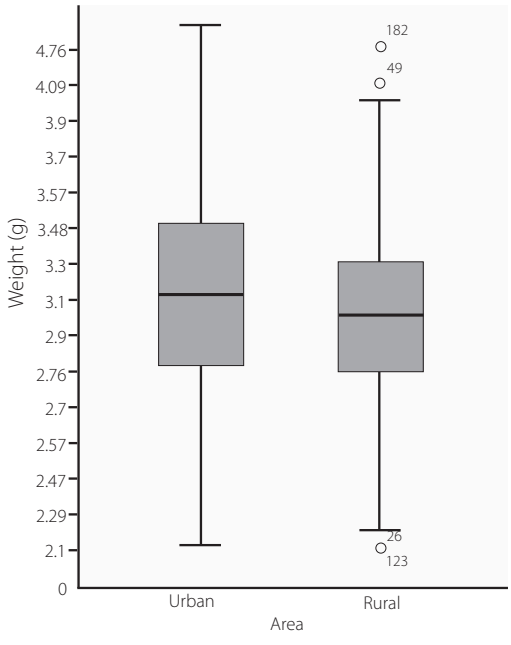

Figure 2. Comparison of median newborn weights according to area of origin.

Among the limitations of the study are the collection of data from a single health center, selected for convenience, and the transcription of findings from records, which affects the reproducibility of the study, as well as the ability to extrapolate data outside the population. It was not possible to obtain information on the stage of pregnancy at which the oral diagnosis was made, nor on the presence of comorbidities and other maternal risk factors for periodontal disease and LBW. The design did not consider the sex of the newborns, which could have provided more information on the behavior of this variable in the selected population. Transcribing clinical diagnosis data directly from records without an established diagnostic standard could limit reproducibility of the results.

It is recommended to continue research efforts with the variables addressed in this study and to include participants from different parts of the country, including the entire national territory. In this way, an overview of the oral health situation of pregnant women in El Salvador can be obtained.

Conclusion

The records of mothers who underwent gynecological check-ups and were enrolled in the prenatal program at the USI in Santiago Nonualco showed chronic gingivitis as the most frequently found infectious focus. Newborns had a higher proportion of LBW than the percentage reported for the country.

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