Int. J. Odontostomat.,
19(4):454-459, 2025.

Oral Health Knowledge`s Level in Pregnant Women and their Future Babies in San Luis Potosi City and their Relationship with Age, Marginalization Index and Schooling

Nivel de Conocimiento Sobre Salud Oral en Mujeres Embarazadas y su Futuro Bebé en la Ciudad de San Luis Potosí y su Relación con la Edad, el Índice de Marginación y la Escolaridad

Andrea Fernanda Mesías-Peñaherrera[1,2]; Norma Verónica Zavala-Alonso[3]; Darío Gaytán-Hernández[2] & Luis Eduardo Hernández-Ibarra[2]

MESÍAS-PEÑAHERRERA, A. F.; ZAVALA-ALONSO, N. V.; GAYTÁN-HERNÁNDEZ, D. & HERNÁNDEZ-IBARRA, L. E. Oral health knowledge`s level in pregnant women and their future babies in San Luis Potosi city and their relationship with age, marginalization index and schooling. I*nt. J. Odontostomat., 19(4)*:454-459, 2025.

ABSTRACT: The aim of this study was to determine the relationship between the level of knowledge that pregnant women in the city of San Luis Potosi have about their oral health and that of their future baby among the variables age, marginalization index and schooling. A questionnaire was applied to pregnant women (N=185) in social network groups such as Facebook, WhatsApp, in the Noyola clinic and a private obstetric gynecological office comprising the municipality of San Luis Potosi, during the period September 2020 to May 2022. The general level of oral health knowledge was evaluated, considering oral health preventive measures, oral diseases, dental care for pregnant women and dental development, through the application of a validated questionnaire. The statistical tests Pearson's linear correlation, analysis of variance (ANOVA of one factor) and Somers d. It was identified that 59.5 % of the participants have a regular level of knowledge about oral health. Regarding preventive measures, 44.3 % had a good knowledge and another 44.3 % a regular knowledge, in oral diseases, a regular level of knowledge with 50.8%, in dental care and development a poor level of knowledge. When correlating with the variables age (p = 0.010) and schooling (p = 0.001) it was found that there was an interrelation between these variables and the level of knowledge, while with the marginalization index (p = 0.166) there was no statistically significant correlation. A correlation was found between the level of knowledge of the pregnant women and the variables age and schooling, while no correlation was found with the marginalization index.

KEYS WORDS: Healt knowledge, social marginalization, educational status, pregnant.

INTRODUCTION

The concept of oral health has been changing over the decades. The World Health Organization (WHO) defines it as the absence of orofacial pain, periodontal diseases, caries, infections, tooth loss and others related to the individual, limiting their ability to chew, smile, speak, and its impact on their psychosocial well-being (Achtari *et al*., 2012). Pregnancy is a period characterized by a series of metabolic, physiological and psychological changes that have great influence on oral health, so it is of utmost importance that this stage develops in a balanced way, thus contributing to the overall health of the mother and her future baby (Detman *et al*.,2010). During pregnancy, pregnant women have special needs in terms of oral health, since they are more prone to the appearance of infectious processes, lesions in the oral cavity or painful symptoms (Luengo-Fereira *et al*., 2016).

Within dentistry for the baby, we see that from 267 days of pregnancy, plus 365 days of the first year, plus 365 days of the second year, there is something called the Golden Age, which guides us that everything mom and baby eat and do in these first 1000 days, will have a great influence on their future health, so this stage becomes a window of opportunity to modify and

[1] Universidad Autónoma de San Luis Potosí, UASLP, México.
[2] Facultad de Enfermería y Nutrición, UASLP, México.
[3] Facultad de Estomatología, UASLP, México.

Received: 2025-06-02 Accepted: 2025-09-24

intervene in their epigenetics and metabolic programming, leaving an imprint on the baby with permanent effects since gestation (Gaszyn´ska *et al*., 2015). Therefore, a fundamental part lies in the level of knowledge that the pregnant mother has about these possible alterations, how they can influence her baby, and the care that should be taken with the baby, to avoid any type of affection in the stomatognathic apparatus (Hom *et al*., 2012).

According to the results of the Epidemiological Surveillance System of Oral Pathologies 2023 (SIVEPAB), there is a prevalence of Early Childhood Caries (ECC) of 35 % in children under 3 years of age in the Mexican Republic. In the latest Dental Caries Report, the National Survey of Dental Caries and Fluorosis (ENCDF) 2011-2014, the average dental caries index in primary dentition in 6-year-old schoolchildren shows San Luis Potosi with a moderate risk of 2.0 to 2.9 and a prevalence of dental caries in 6-year-old schoolchildren for San Luis Potosi of 61 to 70 %, and in 12-year-old schoolchildren of 41 to 50 % (Lou, 2017).

Studies report that pregnant women with low levels of education have less knowledge related to pregnancy and poor health behaviors. The prevalence of literacy among pregnant women is low, varying from 15% to 38% worldwide, which could favor the appearance of diseases (Nogueira *et al*., 2016). The relationship between the level of knowledge, the degree of schooling and age, on oral health in pregnant women, in a study where a deficient knowledge of more than 65% was reported. There is an association between a low level of schooling and poor knowledge of oral health in pregnant women, with a negative impact on the health of the mother and child (Keirse & Plutzer, 2010).

It has been suggested that knowledge about oral health in pregnant women could be associated with the place of residence, since this level of knowledge can be attributed to an index of urban marginalization such as the Basic Geostatistical Area (AGEB), which allows the indicators for economic, social, cultural and geographic processes to be evidenced, being classified in a marginalization index (very high, high, medium, low, very low and none) (Shieh *et al*., 2009; Vann *et al*.,2010). Several studies indicate that the oral health status of pregnant mothers is a strong predictor of the oral health status of their children. Pregnancy is the right time for preventive activities to be absorbed, since the mother is more likely to learn and pass on important aspects of oral hygiene to the child, creating favorable habits (Sarmiento, 2019).

The aim of this study was to determine the relationship between the level of knowledge that pregnant women in the city of San Luis Potosi have about their oral health and that of their future baby among the variables age, marginalization index and schooling.

MATERIAL AND METHOD

Population. The study was conducted in the city of San Luis Potosi, in pregnant mothers over 18 years of age in prenatal control, with prior acceptance through informed consent, in the year 2020-2022. Approved by the Scientific Ethical Committee of the Faculty of Nursing and Nutrition with approval act number CEIFE 2021-400.

Study design. An observational and cross-sectional study was carried out to evaluate the level of knowledge about oral health in pregnant women and their future baby, which included: preventive measures in oral health, oral diseases, dental care in pregnant women and dental development.

Instruments and techniques. To evaluate the level of knowledge about oral health in pregnant women and their future baby, an instrument previously validated by (Dr. Jesús Alberto Luengo Fereira, Dr. Luz Elena Carlos Medrano - Universidad Autónoma de Zacatecas) was used, in addition to the inclusion of the prior acceptance of informed consent.

It consisted of 22 items, divided into two sections: the first included informed consent, general data (age, schooling, marital status, socioeconomic level, place of residence); the second included the study variables, measured quantitatively and qualitatively, the level of knowledge about oral health, where eight (8) items were related to prevention, six (6) to oral diseases, four (4) to dental care in pregnant women and four (4) to dental development.

In the questionnaire, the group of questions on oral health prevention integrated content on preventive measures such as tooth brushing, fluoride application, nutrition and hygiene. To assess knowledge of oral diseases, the concepts of gingivitis, periodontal disease, caries and bacterial plaque were consulted. Regarding gestation and dental care, questions were asked about the use of anesthesia, taking dental radiographs during pregnancy and pediatric dental care. In dental development and growth, concepts about primary dentition, chronology of eruption, types of dentitions and tooth formation were included.

To grade the participants' answers, one (1) point was given for each correct answer and zero (0) for each incorrect answer, obtaining a total of 22 points. To group the scores, a scale of Estaninos was applied, classifying the level of knowledge in three categories: good (score equal to or higher than 16), regular (score between 9 and 15) and bad (8 or less points). Once the information was collected, a database was created for the corresponding analyses.

As part of the work due to the current condition we live in of no contact due to the pandemic, groups were used in social networking platforms such as Facebook and WhatsApp, Casa Muluc - Danza con bebé SLP, Ukaabim Lactancia y Crianza en Familia, Tribu Neolacta SLP, Embarazo y maternidad, Tribu Ana Paola Lynch (Lactancia, Maternidad, Todo sobre bebes), Mamiclub Potosino, Maternidad informada y actualizada, BLW (Lactancia materna, crianza respetuosa y más), in addition the questionnaire was implemented in a private obstetric gynecological office and a private clinic, Institución Asistencial Betania-Maternidad Jesús N. Noyola that included the Municipality of San Luis Potosí.

Statistical analysis. The data collected were processed with the SPSS® V-18 program. The variable level of knowledge was considered in numerical and categorical form, so measures of central tendency and dispersion, frequency distribution, tables, Pearson correlation and ANOVA were used.

RESULTS

A questionnaire was applied to pregnant women over 18 years of age (N=185) under prenatal control. It was identified that 59.5 % of the participants have a regular level of knowledge about oral health. Regarding preventive measures 44.3% had good knowledge and another 44.3 % had a fair knowledge, in oral diseases, a fair level of knowledge with 50.8%, in dental care and dental development a poor level of knowledge (Tables I & II).

When correlated with the variables age (p = 0.010) and schooling (p = 0.001), it was found that there is an interrelation between these variables and the level of knowledge, while no statistically significant correlation was found with the marginalization index (p = 0.166).

DISCUSSION

Oral health is an important aspect in the general health of any individual, since diseases of the stomatognathic system can affect personal wellbeing and generate a series of physiological consequences in nutrition, interpersonal relationships and even the mental health of the person. Similarly, before implementing any type of intervention in any population, it is necessary to know the real needs of the group in question, to highlight aspects that influence the very nature of the disease and that may influence the preservation and maintenance of oral health, such as education, work environment, living

Table I. Level of knowledge obtained by each section in the questionnaire.

	Good N (%)	Fair N (%)	Poor N (%)
Prevention	82 (44.3)	82 (44.3)	21 (11.4)
Oral diseases	40 (21.6)	94 (50.8)	51 (27.6)
Dental care	56 (30.3)	58 (31.4)	71 (38.4)
Dental development	19 (10.3)	62 (33.5)	104 (56.2)

Table II. Study variables.

I. Knowledge level	**N**	**%**
Good	57	30.8
Fair	110	59.5
Bad	18	9.7
Age		
< = 20	16	8.6
21 - 30	107	57.8
31 - 38	62	33.5
II. Categorized marginalization index		
Low	53	28.6
Medium	16	8.6
Very low	116	62.7

I. Knowledge level determined according to the score obtained on the questionnaire (good, fair, or poor) and the age of the pregnant mother.

II. Marginalization index: according to the Basic Geostatistical Area (AGEB) obtained.

and working conditions, unemployment, access to health services, housing, physical and genetic factors and other social determinants of the mother-to-be, which in some way influence her future baby. In this sense, in Mexico there are health programs aimed at vulnerable groups or groups in vulnerable conditions, such as pregnant women; however, there are few studies that evaluate the knowledge of oral health in pregnant women.

The main objective of this study was to determine the relationship between the level of knowledge that pregnant women in the city of San Luis Potosi have about their oral health and that of their future baby among the variables age, marginalization index and schooling, to prioritize oral health education during prenatal care, as for the formation of healthy habits. The present study considered this questionnaire as an essential instrument to determine the level of knowledge that the participants have about oral health in this physiological state, to contribute to the identification of diseases, and early management with their future baby. According to the review carried out, no studies were found in the city of San Luis Potosi that evaluated the level of knowledge, nor its relationship with the variables age, marginalization index and schooling. Although this makes it difficult to compare all aspects for San Luis Potosi, it serves as a tool for comparison with similar studies in other countries.

Regarding the level of knowledge about oral health in pregnant women, the results obtained indicate that this is regular (59.5 %) in the participants. They agree with Gaszyn´ska *et al*. (2015), in finding regular knowledge levels at 64 % and 60 %, in pregnant population respectively in participants with similar age and schooling as in our participants. This work divides the level of knowledge into four areas: oral health preventive measures, oral diseases, dental care and dental development. Each category studied was evaluated, and in the first one on the knowledge of preventive measures, 44.3 % of the level of knowledge was good.

In our study, although the knowledge obtained is good, we see in the participants a lack of knowledge regarding the benefits of the use of fluorides at an early age of their future baby and from when they should provide dental care. This data is corroborated in the study carried out by Córdova-Hernández &Bulnes-López, (2007), however, in our study, although the knowledge obtained is good, we see in the participants a lack of knowledge regarding the benefits of the use of fluorides at an early age for their future baby and from when they should provide dental care.

In the second category referring to the knowledge of the pregnant women regarding the main oral diseases, as can be seen in the results presented, 50.8 % of those surveyed presented a regular level of knowledge. Of the pregnant women, 20.5 % (38) presented at least one belief regarding oral health and its relation to pregnancy. Regarding knowledge about dental care and dental development, the persistence of misconceptions was observed, such as that the expectant mother cannot receive dental care because the use of medications can affect gestation" reported by 50.8%, or ignoring the dental development, the moment of formation of the teeth of their children in 57.3 %, presenting similar results found by Rengifo-Reina (2009), confirming the lack of knowledge and fear about what is related to gestation.

According to the age variable, most of the participants belonged to the age group 21 to 30 years (57.8 %), with an age prevalence of 27 years, considering that the questionnaire was applied both virtually and physically, in different institutions and groups. When correlating the level of knowledge with age we found a significant correlation, so we can say that as age increases in pregnant women the level of knowledge also increases. These values are close to those reported by Cartes-Velásquez *et al*. (2009), who show 56 % of deficient knowledge in young pregnant women, where this level of knowledge is clearly influenced by the schooling of each participant in the decision-making process regarding oral health care.

On the other hand, it has been suggested that the level of knowledge about oral health could be indirectly associated with the index of marginalization of the population, given by the neighborhood of residence, and in turn identified as an AGEB (Area Geo Estadística Básica), attributed to level of education, socioeconomic status and availability for dental care in the case of residents of urban areas, compared to those of rural areas, thus managing to categorize this index into high, low, medium, very high, very low described by Gaszyn´ska *et al*. (2015). In the present study, this variable calculated from both a numerical and categorized scope was used, in which a marginalization index of 123.25, represented as very low (62.7 %), predominated. When correlating the level of knowledge with the numerical marginalization index, no correlation was obtained ($p > 0.166$), as well as when processed with the categorized marginalization index ($p > 0.228$), so no influence of this variable on the level of knowledge possessed by each of the participants was found.

Thus, Boggess *et al*. (2011) support the hypothesis that economically disadvantaged women have less knowledge about oral health than those who are not economically disadvantaged. In the case of this study, it allowed us to identify that although some of the participants had a high marginalization index, this did not influence the score achieved in the questionnaire, and likewise, when the marginalization index was very low, it showed wide gaps in the mother's knowledge of oral health. Therefore, although it is usually believed that the level of knowledge can be attributed to the economic conditions acquired by the colony of residence, in the case of this study, it was invalid because of the values obtained, a variable that in one way or another could be modified by access to education, information, social networks or even access to technology that predominates notably in today's society.

On the other hand, the results show that 24% of the pregnant women have a completed bachelor's degree. When correlating this variable with the level of knowledge, a significant difference was found ($p < 001$), finding a relationship between these variables, while when processed with the level of knowledge as a categorized variable, it presented a correlation ($p < 0.013$), which establishes the existence of a correlation between these variables. It could be evidenced that the higher the level of schooling, the higher the level of knowledge, agreeing with the evidence of Sotomayor-Camayo (2012), who reported 65 % of pregnantwomen with a deficient level of knowledge and with high school studies, as did Núñez *et al*. (2013), who found 64% with a regular level of knowledge in mothers with university studies. Thus, once again, the influence of the level of schooling on the knowledge acquired in oral health and the access to education by the different social strata to which each of the pregnant women may be subjected can be seen. However, a key factor that is observed according to many of the results obtained is the use of networks and access to information, which is reflected in the influence of perceived knowledge about oral health, which reaches various age groups. Finally, mothers play a crucial role in transferring oral health education habits to their children, especially in a country like Mexico where population growth is on the rise. Patient education is a priority, making it an important aspect to teach and follow proper hygiene techniques throughout pregnancy. Considering that women at this stage should be aware that dental care during pregnancy is safe for both mother and child.

To promote health, it is necessary for future mothers to be aware of the diseases that affect the oral complex to adopt adequate health behaviors and to achieve the objective of influencing, educating and promoting the wellbeing of mothers on the part of health organizations. Further studies should be conducted to determine the appropriate and effective intervention strategy with this social group.

ACKNOWLEDGMENTS. Sponsored by the (Consejo Nacional de Humanidades, Ciencias y Tecnologías) Conahcyt, with approval of the Ethics Committee with CEIFE approval code: GXI 9-2021.

MESÍAS-PEÑAHERRERA, A. F.; ZAVALA-ALONSO, N. V.; GAYTÁN-HERNÁNDEZ, D. & HERNÁNDEZ-IBARRA, L. E. Nivel de conocimiento sobre salud oral en mujeres embarazadas y su futuro bebé en la ciudad de San Luis Potosí y su relación con la edad, el índice de marginación y la escolaridad. *Int. J. Odontostomat., 19(4)*:454-459, 2025.

RESUMEN: El objetivo del presente estudio fue determinar la relación entre el nivel de conocimiento que tienen las mujeres embarazadas de la ciudad de San Luis Potosí sobre su salud oral y la de su futuro bebé, en función de las variables edad, índice de marginación y escolaridad. Se aplicó un cuestionario a mujeres embarazadas (N = 185) a través de grupos de redes sociales como Facebook y WhatsApp, así como en la Clínica Noyola y en un consultorio privado de ginecología y obstetricia del municipio de San Luis Potosí, durante el periodo comprendido entre septiembre de 2020 y mayo de 2022. Se evaluó el nivel general de conocimiento en salud oral, considerando medidas preventivas, enfermedades orales, atención odontológica durante el embarazo y desarrollo dental, mediante la aplicación de un cuestionario validado. Para el análisis estadístico se utilizaron la correlación lineal de Pearson, el análisis de varianza (ANOVA de un factor) y la prueba d de Somers. Se identificó que el 59,5 % de las participantes presentó un nivel regular de conocimiento sobre salud oral. En relación con las medidas preventivas, el 44,3 % mostró un buen nivel de conocimiento y otro 44,3 % un nivel regular. Respecto a las enfermedades orales, se observó un nivel regular de conocimiento en el 50,8 % de las participantes, mientras que en el área de atención odontológica y desarrollo dental predominó un nivel bajo de conocimiento. Al correlacionar el nivel de conocimiento con las variables edad ($p = 0,010$) y escolaridad ($p = 0,001$), se encontró una interrelación estadísticamente significativa, mientras que no se observó correlación significativa con el índice de marginación ($p = 0,166$). Se concluye que existe una correlación entre el nivel de conocimiento en salud oral de las mujeres embarazadas y las variables edad y escolaridad, mientras que no se evidenció asociación con el índice de marginación.

PALABRAS CLAVE: Conocimiento en salud, marginación social, nivel educativo, embarazo.

REFERENCES

Achtari, M. D; Georgakopoulou, E. A. & Afentoulide, N. Dental care throughout pregnancy: What a dentist must know. *Oral Health Dent. Manag.,11(4)*:169-76, 2012.

Boggess, K. A.; Urlaub, D. M.; Moos, M. K.; Polinkovsky, M.; El-Khorazaty, J. & Lorenz, C. Knowledge and beliefs regarding oral health among pregnant women. *J. Am. Dent. Assoc., 142(11)*:1275-82, 2011.

Córdova-Hernández, J. A. & Bulnes-López, R. M. Nivel de conocimiento sobre prevención de salud bucal en gestantes, hospital de la mujer, Villahermosa, Tabasco 2007. *Horizonte Sanitario, 6(2)*:18-25, 2007.

Cartes-Velásquez, R., Mardones, S., & Paredes, C. (2009). Conocimientos y estado de salud bucal en madres beneficiarias del sistema Chile Crece Contigo. *Rev. Chil. Salud Pública, 13(3)*:136-42.

Detman, L. A.; Cottrell, B. H. & Denis-Luque, M. F. Exploring dental care misconceptions and barriers in pregnancy. *Birth, 37(4)*:318-24, 2010.

Luengo-Fereira, J.; Toscano-García, I.; Anaya-Álvarez, M.; Medrano, L. E.; Lopez-Ávila, L. & Marquez-Sánchez, S. Evaluación del nivel de conocimientos sobre salud oral en embarazadas que acuden al Hospital de la Mujer, Zacatecas, México. *Multidiscip. Health Res., 1(3)*:83-5, 2016.

Gaszyn´ska, E.; Klepacz-Szewczyk, J.; Trafalska, E.; Garus-Pakowska, A. & Szatko, F. Dental awareness and oral health of pregnant women in Poland. *Int. J. Occup. Med. Environ. Health, 28(3)*:603-11, 2015.

Hom, J. M.; Lee, J. Y.; Divaris, K.; Baker, A. D. & Vann, W. F Jr. Oral health literacy and knowledge among patients who are pregnant for the first time. *J. Am. Dent. Assoc., 143(9)*:972-80, 2012.

Keirse, M. & Plutzer, K. Women's attitudes to and perceptions of oral health and dental care during pregnancy. *J. Perinat. Med., 38(1)*:3-8, 2010.

Lou, I. *Nivel de conocimiento sobre salud bucal en gestantes que acuden al servicio de obstetricia del centro de salud Bellavista-La Libertad*. Tesis. La Libertad, 2017. Available in: https://alicia.concytec.gob.pe/vufind/Record/UPAO_045065811484289effb9f9cdbc4e77a5/Details

Nogueira, B. M .L.; Nogueira, B. C. L.; Fonseca, R . R. S.; Brandão, G. A. M.; Menezes, T. O. A. & Tembra, D. P. S. Conocimientos y actitudes de las mujeres embarazadas sobre la salud oral. *Int. J. Odontostomat., 10(2)*:297-302, 2016.

Núñez, J.; Moya, P.; Monsalves, M. J. & Landaeta, M. S. Oral health level of knowledge and use of dental GES in puerperal patients at a private clinic, Santiago, Chile. *Int. J. Odontostomat., 7(1)*:39-46, 2013.

Rengifo-Reina, H. A. Creencias acerca de la salud oral en gestantes en tres ciudades colombianas. *Rev. Fac. Odontol. Univ Antioq., 20(2)*:171-8, 2009

Sarmiento, T. *Relación entre el nivel de conocimiento sobre salud bucal durante el embarazo y grado de instrucción en puérperas del Hospital III Salcedo Puno*. Tesis. Puno, 1-78, 2019. Available in https://repositorio.unap.edu.pe/items/acb5afa1-67f5-477d-9ace-d11066fbf5c7

Sotomayor-Camayo, J.; Reyes-Soto, S.; Ochoa-Tataje, J.; Mallma-Medina, A.; Correa-Olaya, E. & Arieta-Miranda, J. Level of knowledge in prevention of oral health in pregnant women treated in two national peruvian hospitals. *Revista UNMSM,* 2012. Available in: https://alicia.concytec.gob.pe/vufind/Record/1609-8617_e33acf8a38ea071d25a0b13be9c5ff9c

Shieh, C.; Mays, R.; McDaniel, A. & Yu, J. Health literacy and its association with the use of information sources and with barriers to information seeking in clinic-based pregnant women. *Health Care Women Int., 30(11)*:971-88, 2009.

Vann, W. F. Jr.; Lee, J. Y.; Baker, D. & Divaris, K. Oral health literacy among female caregivers: Impact on oral health outcomes in early childhood. *J. Dent. Res., 89(12)*:1395-400, 2010.

Corresponding author:
Norma Verónica Zavala Alonso
Facultad de Estomatología
Universidad Autónoma de San Luis Potosí
San Luis Potosí
MEXICO

E-mail: nveroza@uaslp.mx