

SCIENTIFIC ARTICLE

Infant feeding among indigenous populations: A qualitative study

Alimentación infantil en poblaciones indígenas: un estudio cualitativo

Alimentação infantil em populações indígenas: um estudo qualitativo

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Abstract

Background: Breastfeeding and complementary feeding practices are crucial for health throughout life. Objective: The purpose of this study was to determine some infant feeding practices in a Mexican indigenous population. Methods: Twenty Mexican indigenous mothers with children under two years of age completed a semistructured interview. Results: Most of the mothers reported feeding their children with breast milk during the first months, although exclusive breastfeeding did not meet the recommended time, mainly due to cultural factors. Conclusions: The mothers followed the preferences and signals of the child for complementary feeding and instinctively determined how and when to offer different foods to breast milk.

Keywords: Breastfeeding; complementary feeding; indigenous mothers; infant feeding; qualitative study.

Resumen

Antecedentes: la lactancia materna y las prácticas de alimentación complementaria son cruciales para la salud a lo largo de la vida. Objetivo: el propósito del estudio fue determinar algunas prácticas de alimentación infantil en una población indígena mexicana. Métodos: veinte madres indígenas mexicanas con hijos menores de dos años respondieron a una entrevista semiestructurada. Resultados: la mayoría de las madres informaron alimentar a sus hijos con leche materna durante los primeros meses, aunque la lactancia materna exclusiva no cumplió con el tiempo recomendado

principalmente debido a factores culturales. Conclusiones: las madres siguieron las preferencias y señales del niño para la alimentación complementaria e instintivamente determinaron cómo y cuándo ofrecer diferentes alimentos a la leche materna.

Palabras clave: Lactancia materna, alimentación complementaria, madres indígenas, alimentación infantil, estudio cualitativo.

Resumo

Contexto: O aleitamento materno e as práticas de alimentação complementar são fundamentais para a saúde ao longo da vida. Objetivo: o objetivo do estudo foi determinar algumas práticas alimentares infantis em uma população indígena mexicana. Métodos: vinte mães indígenas mexicanas com filhos menores de dois anos responderam a uma entrevista semiestruturada. Resultados: a maioria das mães relatou alimentar seus filhos com leite materno nos primeiros meses, embora o aleitamento materno exclusivo não tenha atingido o tempo recomendado, principalmente devido a fatores culturais. Conclusões: As mães seguiram as preferências e pistas da criança para a alimentação complementar e determinaram instintivamente como e quando oferecer diferentes alimentos ao leite materno.

Palavras-chave: Aleitamento materno, alimentação complementar, mães indígenas, alimentação infantil, estudo qualitativo.

Introduction

Complementary feeding, defined by the World Health Organization, is the process of providing foods in addition to milk when breast milk or milk formula alone are no longer adequate to meet nutritional requirements; this process generally starts at the age of 6 months and continues until 23 months of age. Children learn to accept healthy foods and beverages during this developmental period when it is critical to establish long-term dietary patterns. Additionally, this period coincides with the risk of growth faltering and nutrient deficiencies. (“WHO Guidelines Approved by the Guidelines Review Committee,” 2023) Solid food introduction can have effects on positive or negative insults and long-term outcomes in later life, such as growth, noncommunicable diseases, and food allergies; although CF is influenced by new modes and trends, it is deeply rooted in each country and each family’s tradition, culture and beliefs. CF is a fundamental milestone in infant nutrition. (Capra et al., 2024).

The first two years of life are decisive for human beings; therefore, breastfeeding (BF) and complementary feeding (CF) practices are crucial for health throughout life (Romero-Velarde et al., 2016). The global strategy for infant feeding establishes exclusive breast feeding (EBF) for the first six months of life and thereafter an adequate and safe CF, maintaining a complementary BF until two years or more. In Mexico, the infant population presents high rates of alterations in nutritional status (Rivera-Dommarco et

al., 2013); however, research on minority groups is lacking. The purpose of the study was to identify feeding practices in children from 0–24 months of age in a Mexican indigenous population.

Materials and Methods

In this cross-sectional study, 20 indigenous women with children 0–24 months of age were interviewed (beneficiaries of a comprehensive nutrition program in Chiapas, Mexico). A semistructured interview was designed on the basis of the Family Census from the program “Un kilo de ayuda”, the Individual Questionnaire for children 0–9 years of age of ENSANUT2005 (Mundo-Rosas et al., 2009), and a survey of the University of California Davis and the University of California and Guanajuato on migration and nutrition practices that promote childhood obesity (Heinig et al., 2009; Vera-Becerra et al., 2015); additionally, familiar characteristics and perceptions of the practices of BF and CF were given. The IRB approval number is UGTO/CEI-2012013.

Results

Participant characteristics

The average age of the mothers was 24 years; all of them spoke Spanish and Tzeltal (indigenous language). Most of the women had a basic educational level, and three were illiterate. Their economic income came mainly from agriculture (Table 1).

TABLE 1. CHARACTERISTICS OF THE SAMPLE (N = 20).

	n (%)
Education level (maximum completed)	
No education	3 (15)
Grade school (up to 6th grade)	7 (35)
Middle school (up to 9th grade)	10 (50)
Language most commonly spoken at home	
Spanish	20 (100)
Indigenous language (Tzeltal)	20 (100)
Employment of father	
Agriculture	19 (95)
Driver	1 (5)
Number of children under 5 years old	
One	6 (30)
Two	9 (45)
Three	5 (25)

Breastfeeding

Only 10% of the children received EBF until six months, although most of the mothers received previous counseling in this regard; almost half of the mothers offered their children other drinks from newborns. With respect to the reasons to stop EBF, mothers reported insufficient milk production, loss of infant interest, and other reasons. Most of the mothers had positive perceptions of BF, considering it the best food to avoid disease of the child and promote growth; however, 10% of the women gave BF only to avoid child crying (Table 2).

Family characteristics

The third group of indigenous women justified the early introduction of fluids owing to the delay in the “lowering” of breast milk and the presence of colic or diarrhea in the infant. Simple water, teas or infusions, and infant formulas or cow milk were provided beginning in the first month of life. Coffee drinks, bean or chicken broth, atoles and pozol (corn-based hot drinks) were offered after three months of age; mothers moistened cereals such as bread or tortillas in coffee or bean broth. Most of the mothers started CF early because they perceived that the BF was insufficient, mentioning that the infant was starting to lose weight. In addition, certain behaviors of the child, such as eating food or showing food dishes when the mother is eating, are considered indications of appetite. On the other hand, introducing food early was recommended by family members (mothers/

TABLE 2. BREASTFEEDING (N = 20)

Characteristic	n (%)
Breastfeeding at the time of the interview	
Current	17 (85)
Absent	3 (15)
Exclusive breastfeeding	
1-2 months	12 (60)
3-4 months	6 (30)
5-6 months	2 (10)
Perception of breastfeeding	
Positive	18 (90)
Nonpositive (only for avoiding crying)	2 (10)
Counseling	
Received	12 (60)
Nonreceived	8 (40)
Main reason for breastfeeding	
Growth	11 (55)
Health/nutrition	5 (25)
Hygiene	1 (5)
Other	3 (15)
In the early days, the baby drank	
Only Breastfeeding	13 (65)
Breastfeeding and other drinks	7 (35)

grandmothers) and health personnel. Apple, beans, and chicken were the most common solid foods in CF. Indigenous mothers also offered industrialized products such as yogurt and commercial baby foods.

Quantity and consistency of complementary foods

When starting CF, half of the women offered their children 2-3 teaspoons, 3 times a day; the consistency of the food was mainly scraped or mashed. Beef, chicken, and fish were prepared in broth accompanied by rice or corn tortillas. Cookies and sweet bread are moistened in hot drinks such as coffee or atole. Most of the mothers added sugar and salt to their children’s food.

Perception of complementary feeding

Almost half of the mothers thought that CF should start between three and five months of age; only 30%

considered starting CF after six months. Half of the mothers started with fruit and vegetables (apple, banana, chayote); a lower percentage of mothers started CF with beans and chicken.

Discussion

Inadequate infant feeding practices are determined by economic, cultural, social, and educational factors. Cruz et al. reported that some women, when they were expecting a new product, suspended the BF of the previous son because they considered that their milk could be a poison for this child; another study reported that some mothers associated BF with diarrhea and weight loss in children. As in other publications, the women in the present study stopped breastfeeding because they considered that milk production was insufficient for the baby (Zaragoza Cortes et al., 2019).

The introduction of solid foods at three months of age coincides with other studies (Lindsay et al., 2008; Mennella et al., 2005; Zaragoza Cortes et al., 2019). The criterion of indigenous mothers for the early introduction of complementary foods aligns with other studies where women started complementary feeding when the child showed interest in the food that someone eats. Heinig et al. reported that women with Mexican-American children responded to feelings about the moment to introduce new foods (Heinig et al., 2006; Heinig et al., 2009). Studies in the Latino population mention that mothers introduce foods other than milk when they perceive that the supply of breast milk is insufficient and that children lose weight (Lindsay et al., 2008; Sacco et al., 2006). The present work revealed that some health professionals, especially doctors, indicated complementary feeding before three months.

With respect to the preparation of complementary foods, indigenous women preferred hot or crushed preparations, which differs from other studies where thick preparations are preferred because they represent more food and thus greater caloric intake (Zaragoza Cortes et al., 2019). Although it is not recommended to season foods at this stage (Alvisi et al., 2015; Romero-Velarde et al., 2016), most of the indigenous women added salt or sugar to their children's food, considering that it improved their taste and therefore acceptance. In addition, indigenous mothers consume high-sugar commercial foods such as soft drinks and yogurt, as do Hispanic women in other countries, who provide their children with more su-

gary foods than other ethnic groups do (Mennella et al., 2006). This study has several limitations. First, data collection is complex because of the lack of standardized and validated instruments, coupled with language difficulties. Healthcare professionals, especially pediatricians, must not have prejudices against parents' wishes or traditions about CF; rather, they should respect each family's beliefs and traditions to support and educate them in the case of alternative CF choices. The primary goal is the infant's adequate growth, neuro- and taste development, and ability to achieve correct eating behavior. (Capra et al., 2024).

Conclusion

Although the indigenous women had received nutritional guidance, it did not induce correct infant feeding. This study suggests the development of programs focused on indigenous Mexican populations to improve the nutritional status of children and government interventions for minorities that respect cultural diversity and make proper use of available resources and food.

Author Contributions

Conceptualization, L.E.V.B. and A.R.G.; methodology, L.E.V.B. and C.M.C.; investigation, L.E.V.B. and A.R.G.; writing—original draft preparation, L.E.V.B. and C.M.C.; writing—review and editing, C.M.C.; supervision, L.E.V.B. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

References

- ALVISI, P., BRUSA, S., ALBORESI, S., AMARRI, S., BOTTAU, P., CAVAGNI, G.,...AGOSTONI, C. (2015). Recommendations on complementary feeding for healthy, full-term infants. *Ital J Pediatr*, 41, 36. <https://doi.org/10.1186/s13052-015-0143-5>

- CAPRA, M. E., DECAROLIS, N. M., MONOPO-
LI, D., LAUDISIO, S. R., GIUDICE, A., STAN-
YEVIC, B.,...BIASUCCI, G. (2024). Com-
plementary Feeding: Tradition, Innovation and
Pitfalls. *Nutrients*, 16(5). [https://doi.org/10.3390/
nu16050737](https://doi.org/10.3390/nu16050737)
- HEINIG, M. J., FOLLETT, J. R., ISHII, K. D.,
KAVANAGH-PROCHASKA, K., COHEN, R.,
& PANCHULA, J. (2006). Barriers to compli-
ance with infant-feeding recommendations among
low-income women. *J Hum Lact*, 22(1), 27-38.
<https://doi.org/10.1177/0890334405284333>
- HEINIG, M. J., ISHII, K. D., BAÑUELOS, J. L.,
CAMPBELL, E., O'LOUGHLIN, C., & VERA
BECERRA, L. E. (2009). Sources and acceptan-
ce of infant-feeding advice among low-income
women. *J Hum Lact*, 25(2), 163-172. [https://doi.
org/10.1177/0890334408329438](https://doi.org/10.1177/0890334408329438)
- LINDSAY, A. C., MACHADO, M. T., SUSSNER,
K. M., HARDWICK, C. K., & PETERSON,
K. E. (2008). Infant-feeding practices and be-
liefs about complementary feeding among low-
income Brazilian mothers: a qualitative study. *Food Nutr Bull*, 29(1), 15-24. [https://doi.
org/10.1177/156482650802900102](https://doi.org/10.1177/156482650802900102)
- MENNELLA, J. A., PEPINO, M. Y., & REED, D.
R. (2005). Genetic and environmental determi-
nants of bitter perception and sweet preferen-
ces. *Pediatrics*, 115(2), e216-222. [https://doi.
org/10.1542/peds.2004-1582](https://doi.org/10.1542/peds.2004-1582)
- MENNELLA, J. A., ZIEGLER, P., BRIEFEL, R.,
& NOVAK, T. (2006). Feeding Infants and
Toddlers Study: the types of foods fed to Hispa-
nic infants and toddlers. *J Am Diet Assoc*, 106(1
Suppl 1), S96-106. [https://doi.org/10.1016/j.
jada.2005.09.038](https://doi.org/10.1016/j.jada.2005.09.038)
- MUNDO-ROSAS, V., RODRÍGUEZ-RAMÍREZ,
S., & SHAMAH-LEVY, T. (2009). Energy and
nutrient intake in Mexican children 1 to 4 years
old: results from the Mexican National Health
and Nutrition Survey 2006. *Salud Publica Mex*,
51 Suppl 4, S530-539. [https://doi.org/10.1590/
s0036-36342009001000008](https://doi.org/10.1590/s0036-36342009001000008)
- RIVERA-DOMMARCO, J., CUEVAS-NASU, L.,
GONZÁLEZ DE COSÍO, T., SHAMAH-LEVY,
T., & GARCÍA-FEREGRINO, R. (2013). Des-
nutrición crónica en México en el último cuarto
de siglo: análisis de cuatro encuestas nacional. *Sa-
lud Publica Mex*, 55 Suppl 2, S161-169.
- ROMERO-VELARDE, E., VILLALPANDO-CA-
RRIÓN, S., PÉREZ-LIZAU, A. B., IRACHE-
TA-GEREZ, M. L., ALONSO-RIVERA, C. G.,
LÓPEZ-NAVARRETE, G. E.,...PINACHO-VE-
LÁZQUEZ, J. L. (2016). Consenso para las prác-
ticas de alimentación complementaria en lactantes
sanos. *Bol Med Hosp Infant Mex*, 73(5), 338-356.
<https://doi.org/10.1016/j.bmhmx.2016.06.007>
- SACCO, L. M., CAULFIELD, L. E., GITTELSON,
J., & MARTÍNEZ, H. (2006). The concep-
tualization of perceived insufficient milk among
Mexican mothers. *J Hum Lact*, 22(3), 277-286.
<https://doi.org/10.1177/0890334406287817>
- VERA-BECERRA, L. E., LOPEZ, M. L., & KAI-
SER, L. L. (2015). Child feeding practices and
overweight status among Mexican immigrant fa-
milies. *J Immigr Minor Health*, 17(2), 375-382.
<https://doi.org/10.1007/s10903-013-9879-4>
- WHO GUIDELINES APPROVED BY THE GUI-
DELINES REVIEW COMMITTEE. (2023).
In *WHO Guideline for complementary feeding
of infants and young children 6–23 months of
age*. World Health Organization © World Health
Organization 2023.
- ZARAGOZA CORTES, J., TREJO OSTI, L. E.,
& OCAMPO TORRES, M. (2019). Impact of a
complementary feeding intervention and mother's
perceptions of child weight status in infants. *Nutr
Hosp*, 36(2), 282-289. [https://doi.org/10.20960/
nh.2249](https://doi.org/10.20960/nh.2249)