

ORIGINALRESEARCH

# Family Structure, Sociodemographic Indicators, and Breakfast Omission in Preschool and School-Aged Children from the Central Region of Mexico

## Configuración familiar, indicadores sociodemográficos y omisión del desayuno en estudiantes preescolares y escolares de la región central de México

**José Cutberto Hernández Ramírez.** Investigador posdoctoral en Salud Comunitaria. Programa Nacional de Investigación e Incidencia en Salud Comunitaria, Secretaría de Ciencia, Humanidades, Tecnología e Innovación, Ciudad de México, México.

Email: [nutramedia76@outlook.es](mailto:nutramedia76@outlook.es), <https://orcid.org/0000-0002-9636-6810>

**Susana Medina López.** Universidad Autónoma del Estado de Quintana Roo, Playa del Carmen, Quintana Roo, México.

Email: [susana.medina@uqroo.edu.mx](mailto:susana.medina@uqroo.edu.mx), <https://orcid.org/0000-0002-0425-5137>

**Received:** February 17, 2025.

**Accepted:** March 5, 2025.

**Conflicts of interest:** None.

**DOI:** <https://doi.org/10.71164/socialmedicine.v18i3.2025.2033>

### Abstract

**Introduction.** The omission of breakfast in childhood is associated with metabolic disorders and obesity. In Mexico, most research describes this omission as an individual behavior without investigating underlying social mechanisms. **Objective.** To analyze the relationship between family structure (FS), sociodemographic indicators, and breakfast omission in preschool and school-aged children from five public basic education schools located in the central region of Mexico. **Method.** Cross-sectional survey of 486 student families. Bi-step cluster analysis was performed to identify types of family structure based on social position stratifiers, followed by ordinal regression. **Results.** The most common family structure (52.9%) was a father as the income provider and a mother as a housewife, although there were four subordinate family configurations. 77.4% of students had breakfast daily before going to school, while 4.5% never had breakfast. Regardless of family structure and across all social position stratifications, being a girl was the only predictor that significantly reduced the likelihood of having breakfast before school. **Conclusion.** Gender is essential to understanding both the structure of family life based on the social division of labor within the family economy and the lower access of girls to breakfast.

**Keywords:** Family Structure, Sociodemographic Factors, Eating Behavior.

### Resumen

**Introducción.** La omisión del desayuno en la niñez se asocia con desórdenes metabólicos y obesidad. En México, predominan las investigaciones que describen como conducta individual dicha omisión, sin indagar mecanismos sociales subyacentes. **Objetivo.** Analizar la relación entre la configuración familiar (CF), indicadores sociodemográficos y la omisión del desayuno en preescolares y escolares de cinco escuelas públicas de educación básica ubicadas en la región central de México. **Método.** Encuesta transversal a 486 familias de los estudiantes. Se realizaron análisis de conglomerados bietápico para identificar tipos de CF en función de estratificadores de la posición social, y de regresión ordinal. **Resultados.** La CF mayoritaria (52.9%) fue padre proveedor de ingresos y antes de ir a la escuela y 4.5% nunca. Independientemente de la CF y entre todos los estratificadores de la posición social, ser niña fue el único predictor que redujo significativamente la probabilidad de ingerir desayuno antes de ir a la escuela. **Conclusión.** La categoría género es esencial para comprender tanto la estructura de la CF basada en la división social del trabajo en la economía familiar, como el menor acceso de las niñas al desayuno.

**Palabras clave:** estructura familiar, factores sociodemográficos, conducta alimentaria.



## Introduction

Breakfast is the first meal of the day, typically consumed within the first two or three hours after waking.<sup>1</sup> It is distinct from other meals because it breaks the fast after several hours from the last intake of food the previous day.<sup>2</sup> This implies a reorientation of metabolic processes, shifting from the preferential use of lipids as an energy source to the use of glucose.<sup>3</sup> Additionally, it is recommended that breakfast provide 20-25% of the total daily energy requirement through foods from three or more food groups.<sup>2, 4</sup>

Breakfast is particularly important for preschool and school-aged children because they have a lower capacity for metabolic adaptation to fasting.<sup>2</sup> Thus, the habitual omission of this meal in childhood is associated with a higher risk of overweight and obesity<sup>5-6</sup> and metabolic disorders characterized by adverse effects on lipid profiles, blood pressure, insulin resistance, and metabolic syndrome.<sup>6</sup> In contrast, compared to skipping breakfast, eating breakfast is associated with better short-term performance (on the same morning) in cognitive tasks such as attention, executive function, and memory in preschool and school-aged children.<sup>7</sup>

Breakfast and fasting practices in childhood are determined by family eating habits and sociodemographic characteristics. Among children (7-10 years old) in the Americas, Europe, and Asia, it has been documented that their fasting or breakfast habits are associated with the eating habits and nutritional status of their parents.<sup>8</sup> Regarding adolescents (11-15 years old) in Europe and North America, daily breakfast consumption is consistently associated with higher family wealth levels and a bi-parental family structure.<sup>9-10</sup>

In Mexico, information on the social determinants of breakfast or fasting practices in childhood is scarce. A representative study in the Mexican state of Morelos reports that in individuals aged 6-19, skipping breakfast is associated with family size and place of residence<sup>11</sup>; however, other studies focus on the association between eating breakfast and school performance or obesity<sup>12</sup>, describe breakfast patterns and their relationship to diet

quality<sup>13</sup>, and/or analyze state-run school breakfast programs.<sup>14-15</sup>

Thus, most research in Mexico focuses on the phenomenology of breakfast and its nutritional characteristics, as well as its clinical effects on childhood and adolescence. In other words, it describes facts limited to the individual level, without considering potential underlying social mechanisms. This introduces bias, as monetary income is one of the main determinants of consumption<sup>16</sup>, and certainly, among the countries of the Organization for Economic Co-operation and Development (OECD), Mexico ranks among the most unequal in terms of income<sup>17</sup>, with 44.5% of the population living in poverty.<sup>18</sup>

Furthermore, the network of meanings guiding people's eating behaviors is also related to various characteristics that define the position individuals occupy in society<sup>19</sup>, such as education level, occupation, gender, and age. These characteristics, along with income, are stratifications of social position<sup>20</sup>, which determines inequitable exposure to risks—including nutritional risks—and, therefore, a specific health profile based on one's social position.

Family, through daily interaction norms and attitudes, has the primary influence on food behaviors and food intake during childhood and adolescence.<sup>21</sup> However, the family is a social system that occupies a position within the broader system of society. Therefore, this research identifies family structure based on social position stratifications, with the primary objective of analyzing the relationship between family structure (FS) and breakfast omission in preschool and school-aged children from five public basic education schools located in the central region of Mexico.

## Methodology

The study design was a cross-sectional survey conducted at five basic education schools, two at the preschool level and three at the primary level, located in urban areas of the central region of Mexico. One preschool was in the Iztapalapa borough of Mexico City, another in the municipality of Naucalpan, State of Mexico.

Additionally, one of the primary schools was located in the municipality of Santa María Apaxco, State of Mexico, another in Atitalaquia, State of Hidalgo, and the third in the municipality of Xochitepec, State of Morelos (Table 1).

The schools were selected using non-probabilistic sampling based on the following criteria: a) experience in implementing Social Participation in Health (PSS) strategies<sup>23</sup> to improve students' nutrition; b) the presence of one or more PSS strategies in place at the time of the study; c) public institutions; and d) willingness to participate.

The study reported in this article is part of a larger research project registered under number 3003 as the National Research and Advocacy Program at the National Council for Humanities, Sciences, and Technologies, Mexico. The results reported here

correspond to the diagnostic phase. In each school, individual questionnaires were collected from students, self-administered by the father, mother, or legal guardian, from whom informed consent was obtained. A response rate of 69.4% was achieved, with 486 questionnaires completed.

The questionnaire was designed by nutritionists, sociologists, doctors, and economists. In line with the social position stratifications proposed in the framework of social determinants of health<sup>20</sup>, the items explored the sociodemographic characteristics of the family and its members, processed as categorical variables. Questions were also collected regarding students' eating habits, including the frequency of breakfast consumption before school from Monday to Friday, processed as an ordinal variable (always / 3-4 days a week / 1-2 days a week / never).

**Table 1. General Profile of the Participating Schools**

	Iztapalapa	Naucalpan	Apaxco	Atitalaquia	Xochitepec
<b>Students (n)</b>	70	136	177	164	150
<b>Level</b>	Pre-school	Pre-school	Elementary	Elementary	Elementary
<b>FNEStrategies Identified</b>	ESG FNS	ESG COF	ESG COF	ESG COF	ESG COF
<b>Poverty Quartile of Municipality<sup>a</sup></b>	2	2	3	2	3

**Source:** Self-prepared based on primary sources in all cases (486 individual questionnaires).

FNE: Food and Nutrition Education Strategies beyond the classroom

ESG: Educational School Garden

FNS: The food service has an educational use to train healthy eating habits

COF: Mandatory Consumption of Fruit once per day within the school grounds, at a specific time, with teacher supervision.

a. The poverty quartiles by municipality were determined based on the total number of municipalities in Mexico (n=2469) according to official data (22). The values were ordered from lowest to highest poverty percentage, and then the quartiles were determined.

**Table 2. Family Configurations Identified in the Students' Households**

Family Configuration (FC)	A	B	C	D	E
Predictors (Variables)					
The mother does domestic work at home	X	N/A	N/A	X	X
Both mother and father contribute to income	N/A	X	N/A	X	N/A
Only the father contributes to income	X	N/A	N/A	N/A	N/A

**X:** presence of attribute; **N/A:** not applicable.

Using IBM SPSS® version 22, the analysis was conducted in two stages: 1). Identification of family structure types based on the social position stratifications, and 2). Determination of predictors for breakfast omission, including family structure

To identify family structure, a bi-stage cluster analysis was conducted with the sociodemographic variables mentioned earlier, which were collected through the questionnaire. The distance was calculated using log-likelihood and Bayesian information criterion, with no predetermined number of clusters. The quality of the clusters was considered sufficient if the silhouette coefficient was  $\geq 0.5$  (24). Thus, after an iterative process of variable elimination, a model with a silhouette coefficient of 0.6 was obtained, consisting of three predictors: 1) The mother performs domestic work at home, 2) Both the mother and father contribute to the family income, and 3) The father contributes to the family income.

Therefore, based on the variations (presence or absence of the attribute) and combinations of these predictors, five mutually exclusive clusters were identified, labeled as A, B, C, D, and E respectively (Table 2).

According to Table 2, the roles of the mother and father in the family economy determined the family configuration (CF) in the households. Configuration A was characterized by mothers engaged in domestic work at home (household work) and the father as the sole income provider; in B, both the mother and father contribute to income; in C, none of the predictors applied. In configuration D, both the mother and father provided income while the mother also performed domestic work, and configuration E was exclusively characterized by mothers engaged in domestic work.

Subsequently, the relationship between family structure (FS) and the occurrence or omission of breakfast was assessed using ordinal regression. However, since such FS was obtained through three predictors, other variables were incorporated into the ordinal regression model. Thus, through iteration by elimination, the model was constructed

with main effects. To verify the goodness of fit, likelihood ratio chi-square statistics were used with a cutoff point of  $p < 0.05$ , and Pearson chi-square statistics with a cutoff point of  $p > 0.05$ . Additionally, to evaluate the consistency of the results from the original model, a Bootstrap resampling analysis was performed with 1000 samples using simple random sampling.

## Results

Among the types of family structures (FS) identified, configuration A predominated, corresponding to the traditional family (25) with the father as the provider and the mother as a housewife (Table 3). The second most prevalent was configuration B, in which the family income is contributed by both the father and the mother, while the mother works outside the home and does not perform domestic work. Together, both configurations accounted for 78% ( $n = 379$ ) of the total cases ( $n = 486$ ) (Table 3).

Based on the mother's domestic work at home, the five family configurations can be classified into two subgroups. The first subgroup, which includes A, D, and E, encompasses 67.7% ( $n = 329$ ) of the families, where all the mothers engage in domestic work (Table 3). The second subgroup, consisting of configurations B and C, includes 32.3% of the families ( $n = 157$ ), where none of the mothers engage in this type of work (Table 3).

Additionally, among all the mothers engaged in domestic work in their own homes, those classified in D also contribute with monetary income (Table 3), derived from government transfers. Furthermore, among those classified in E, 11.4% ( $n = 4$ ) are the sole income providers (Table 3), also coming from such transfers. On the other hand, families in C and E are distinguished by receiving income from other family members (Table 3). Also, in C and E, there are families where the mother is the sole income provider. Thus, the variables related to family income contribution and the mother's occupation exhibit clearly differentiated patterns between certain configurations.

**Table 3. Sociodemographic Characteristics of the Family Configurations**

	Family Configuration (FC)				
	A	B	C	D	E
<b>Number of Cases</b>	257	122	40	32	35
<b>Family Members</b>	6.8 ± 2.2	6.7 ± 2.3	6.5 ± 2.1	7.0 ± 2.4	7.2 ± 2.2
<b>Monthly Income (MXN) (%)<sup>a, b</sup></b>					
Up to 4,500 pesos	42.0	27.9	47.5	43.8	45.7
Up to 7,500 pesos	31.5	27.9	32.5	15.6	28.6
Up to 9,700 pesos	12.5	14.8	12.5	21.9	17.1
Up to 12,00 pesos	5.8	10.7	2.5	9.4	5.7
Up to 15,800 pesos	5.1	13.1	5.0	6.3	0.0
More than 15,800 pesos	3.1	5.7	0.0	3.1	2.9
<b>Family Income Contribution (%)<sup>b</sup></b>					
Grandparents	N/A	N/A	2.5	N/A	8.6
Siblings	N/A	N/A	0.0	N/A	2.9
Mother	N/A	N/A	45.0	N/A	11.4
Mother and other family members	N/A	N/A	22.5	N/A	8.6
Stepfather	N/A	N/A	0.0	N/A	8.6
Father, mother, and other family members	N/A	N/A	20.0	N/A	20.0
Father and other family members	N/A	N/A	10.0	N/A	40.0
<b>Mother's Occupation (%)<sup>b</sup></b>					
Wage-earner in commerce or services	N/A	49.2	50.0	N/A	N/A
Farmer	N/A	0.8	2.5	N/A	N/A
Informal Work	N/A	19.7	22.5	N/A	N/A
Self Employed	N/A	1.6	2.5	N/A	N/A
Laborer	N/A	3.3	7.5	N/A	N/A
Professional	N/A	16.4	7.5	N/A	N/A
Unspecified (other)	N/A	9.0	0.0	N/A	N/A
Unemployed	N/A	0.0	7.5	N/A	N/A
<b>Father's Occupation (%)<sup>b</sup></b>					
Wage-earner in commerce or services	36.6	52.5	50.0	21.9	22.9
Farmer	3.9	2.5	2.5	3.1	2.9
Informal Work	3.5	6.6	7.5	12.5	8.6
Self Employed	0.0	0.8	0.0	0.0	2.9
Laborer	0.4	0.0	2.5	0.0	0.0
Professional	33.9	13.1	20.0	37.5	28.6
Unspecified (other)	3.1	6.6	5.0	0.0	8.6
Wage-earner in commerce or services	18.3	17.2	12.5	21.9	20.0
Retired	0.0	0.8	0.0	3.1	2.9
Unemployed	0.4	0.0	0.0	0.0	2.9
<b>Mother's Education Level (%)<sup>b</sup></b>					
No formal education	3.1	1.6	10.0	0.0	9.4
Elementary School	13.2	8.2	10.0	20.0	6.3
Middle School	44.4	38.5	32.5	40.0	50.0
High School	35.8	30.3	35.0	17.1	31.2
University Degree	3.5	18.9	12.5	22.9	3.1
Postgraduate	0.0	2.5	0.0	0.0	0.0
<b>Father's Education Level (%)<sup>b</sup></b>					
No formal education	5.4	6.6	5.0	14.3	6.3
Elementary School	16.0	12.3	20.0	22.9	25.0
Middle School	48.6	38.5	42.5	22.9	37.5
High School	23.3	31.1	20.0	25.7	28.1
University Degree	5.8	7.4	12.5	14.3	3.1
Postgraduate	0.0	1.5	0.0	0.0	0.0

<sup>a</sup> The first five categories of monthly family income correspond to the first five income deciles identified in the 2022 National Survey of Household Income and Expenditures.<sup>25</sup> The low frequency of families in deciles<sup>6</sup> and higher justified combining deciles<sup>6-10</sup> into a single category.

<sup>b</sup> The percentages for the variable are read vertically for each family configuration.

N/A: Not applicable

Table 4 shows the proportions of preschool and school-aged children who skip breakfast or eat breakfast before going to school, according to the weekly frequency of consumption in each family

José Cutberto Hernández Ramírez, Susana Medina López

configuration. In general, seven to eight out of every 10 students eat breakfast regularly. Table 5 presents the proportions of cases of breakfast omission or consumption by gender. It is observed that for every boy who never eats

breakfast, there are almost two girls who also do not, and among them, there is a higher proportion in the two categories with the lowest breakfast frequency.

**Table 4. Proportions of preschool and school-aged children with breakfast omission/consumption behaviors before school, by family configuration.**

	Family Configuration (FC)				
	A	B	C	D	E
<b>Number of cases</b>	257	122	40	32	35
<b>Breakfast before school (%)<sup>b</sup></b>					
<b>Never</b>	4.3	4.1	5.0	6.3	5.7
<b>1-2 days per week</b>	9.3	4.9	7.5	3.1	11.4
<b>3-4 days per week</b>	9.7	10.7	15.0	9.4	8.6
<b>Always (Monday through Friday)</b>	76.7	80.3	72.5	81.3	74.3

b. The percentages for the variable are read vertically for each family configuration.  
Source: Self-prepared based on primary sources (486 individual questionnaires).

**Table 5. Breakfast omission/consumption behaviors before going to school by gender and education level of preschool and school-aged students, n = 486.**

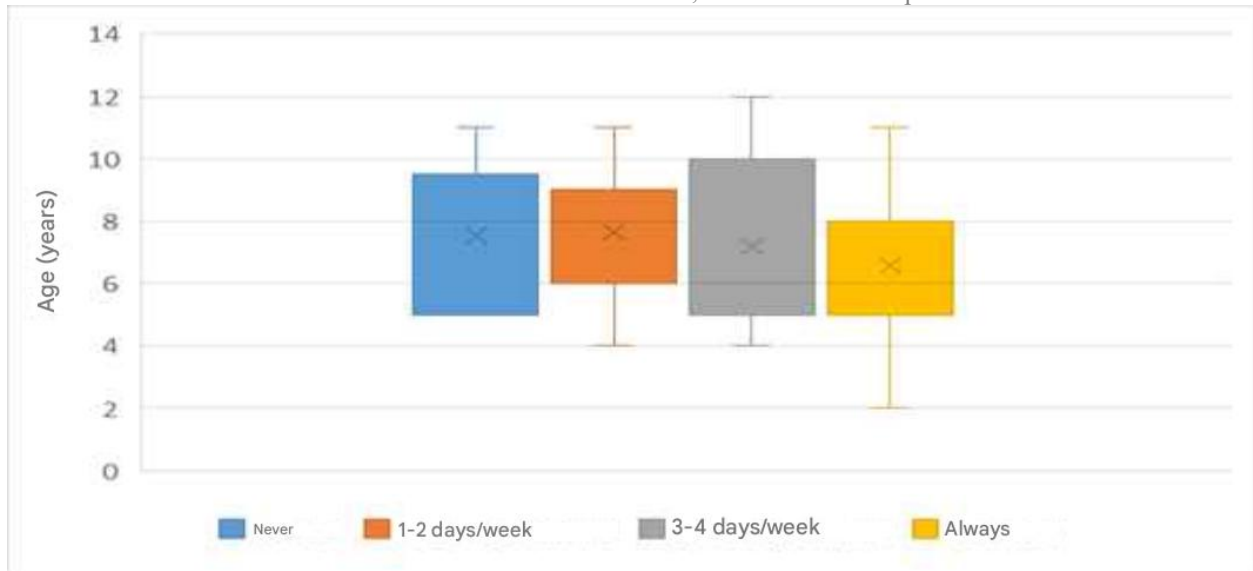
	Sex	
	Female	Male
<b>Cases (n)</b>	260	226
<b>Breakfast before school (%)<sup>b</sup></b>		
<b>Never</b>	5.8	3.1
<b>1-2 days per week</b>	9.2	6.2
<b>3-4 days per week</b>	7.3	13.7
<b>Always (Monday through Friday)</b>	77.7	77.0

b. The percentages for the variable are read vertically for each family configuration.  
Source: Self-prepared based on primary sources (486 individual questionnaires).

Regarding the age of the students classified into each of the four categories of weekly breakfast frequency, the median ages in years were 7.5, 8.0, 6.5, and 6.0 for Never, 1-2 days/week, 3-4 days/week, and Always, respectively. However, the main difference is observed in the lower range (from two to four years) of those who always have breakfast, compared to the other groups (Figure 1).

**Figure 1. Median and age ranges in preschool and school children based on their breakfast omission/intake behaviors**

José Cutberto Hernández Ramírez, Susana Medina López



Note: The "Always" category refers to the Monday-to-Friday interval, corresponding to school days.  
Source: Self-prepared based on primary sources (486 individual questionnaires).

**Table 6. Parameter estimates to determine the predictors of breakfast consumption in preschool and school-aged children before attending school.**

	Breakfast before school			
	Estimation and 90% CI <sup>a</sup>	EE <sup>a</sup>	Wald	Sig.
<b>Female sex (girl)</b>	-0.315 [-0.596 a -0.035]	0.171	3.414	0.065*
<b>Mother is wage earner in commerce or service industry</b>	-0.316 [-0.847 a 0.215]	0.323	0.960	0.327
<b>Number of family members</b>	-0.028 [-0.080 a 0.023]	0.031	0.821	0.365
<b>Mother is unemployed</b>	3.607 [-2.965 a 10.179]	3.996	0.815	0.367
<b>Mother is self-employed</b>	3.228 [-3.703 a 10.159]	4.214	0.587	0.444
<b>Municipality poverty quartile</b>	-0.108 [-0.415 a 0.199]	0.187	0.335	0.562
<b>Mother has university degree</b>	-0.071 [-0.580 a 0.439]	0.310	0.052	0.820
<b>Fater has high school education</b>	-0.021 [-0.409 a 0.367]	0.236	0.008	0.928
<b>Mother has no official education</b>	-0.021 [-0.776 a 0.734]	0.459	0.002	0.963
<b>Coefficiente R<sup>2</sup> de Nagelkerke</b>	0.361			

a CI: confidence interval; SE: standard error. \* Statistical significance at a  $p < 0.10$  level.

Source: Self-prepared based on primary sources (486 individual questionnaires). Finally, through bootstrap resampling with 1000 samples, the consistency of female sex (girl) as a predictor that significantly reduced ( $p < 0.10$ ) the probability of eating breakfast was verified (Appendix 1).

Now, regardless of the family configuration (CF) and other sociodemographic variables of the students and their families, being a girl was the only predictor that significantly reduced the

probability of eating breakfast before going to school (Table 6). In contrast, although without statistical significance, in the analyzed sample, the variables "unemployed mother" and "self-

employed mother" had a broad favorable effect on breakfast consumption (Table 6).

## Discussion

This research discovered how the roles of the father and mother in the family economy—income provision versus unpaid domestic work—determine five types of family configurations (CF) of students in the participating schools; although the majority of families are characterized by having the father as the provider and the mother as a housewife. Additionally, 77.4% of students eat breakfast daily before going to school, and independently of their CF, being a girl was the only predictor that significantly reduced the probability of having breakfast before going to school.

The primary importance that these roles in the family economy have—according to the underlying structure in the data—for identifying the CF could be due to the fact that, although there are income differences between the analyzed families (Table 1), all of them are below the poverty line in Mexico.<sup>26</sup>

Indeed, given a relatively similar level of poverty, the division of labor by gender in the family economy could be an appropriate criterion for identifying mutually exclusive family configurations. This nuance is important to note because, throughout human history, household management and the provision of food have entailed different ways of dividing labor between men and women in the context of a home economy oriented towards social production.<sup>27</sup>

While most families exhibited the father as the provider and the mother as the housewife, corresponding to the traditional model still predominant in Mexican families<sup>25</sup>, four subordinate family configurations were identified around income provision and domestic work, which disagrees with official data suggesting a dichotomy where the "head of the family" role would be assigned to either the man or the woman.<sup>28</sup>

Regarding fasting/breakfast practices among children before going to school, while in Europe and North America, material wealth of the family

and the bi-parental structure are associated with daily breakfast consumption<sup>9-10</sup>, in this research, being female was the only consistent predictor of breakfast omission. In Europe and North America, this same predictor has only been verified in adolescence.<sup>29</sup>

Among previous studies on breakfast in children in Mexico, a report shows 9.9% daily omission compared to the 4.5% found in this study. Other studies report proportions between 19% and 47%.<sup>11</sup> However, these studies only use binary variables (breakfast/no breakfast)<sup>12-14, 30</sup> and apply questionnaires that only report food intake in the 24 hours prior.<sup>13-14</sup> Therefore, more research is needed on food consumption frequencies with ordinal categories, because the phenomenon of breakfast omission is not binary, and it is crucial to distinguish between when it is an event versus a habit.

On the other hand, this research used multivariate statistics to determine predictors of breakfast occurrence/omission because the family is an open system with interdependent characteristics embedded in a social context, rather than assuming a bidimensional reality methodologically. This difference is crucial compared to the most representative study on the same topic in Mexico, which performs bivariate analyses to separately assess the association of each independent variable with breakfast occurrence/omission<sup>11</sup>; and reports an association between breakfast omission and family size and place of residence.<sup>11</sup>

In the study presented here, the significant effect of being female on breakfast omission was part of an ordinal regression model integrated with more variables that, although not statistically significant, contributed to the model's fit (Table 6). Among these non-significant variables, at the sample level, the mother being self-employed or her unemployment showed a strong favorable effect on breakfast occurrence (Table 6). In contrast, the mother's occupation in commerce or services had a negative effect and smaller magnitude. Also included in the model was the number of family members, previously reported as significant.<sup>11</sup> Such variables in the model could have a non-linear relationship with children's fasting/breakfast practices before going to school; therefore, it

would be advisable to further study them in contexts similar to those analyzed in this research. Furthermore, nearly all variables that comprise the model relate to the mother's occupation. This suggests that the responsibility for breakfast omission/consumption falls on the mother and might depend on how she manages her time according to the type of employment.

In Yucatán, Mexico, qualitative research has documented the differential assignment of breakfast to men and women based on the hegemonic division of labor.<sup>31</sup> Thus, it is necessary to complement mathematical models with qualitative methodologies such as oral history and/or ethnography, to understand social norms and, in general, the network of meanings that guide food-related behaviors<sup>19</sup> regarding breakfast. This would go beyond describing data associations to deepening the "why" behind them.

In summary, although there are differential food intake patterns by gender<sup>31</sup>, this research specifically shows how being a girl is a predictor that increases the likelihood of going to school without having breakfast in the contexts studied. In Mexico, there is a lack of addressing breakfast omission in the child population through the lens of social determinants of health, especially gender, as well as the association between this food behavior and childhood obesity. In the future, it is important to view this behavior from a systemic perspective, avoid bivariate models in favor of multivariate analysis, and use methodological triangulation with qualitative approaches. This would contribute to a comprehensive understanding of the underlying social mechanisms in the phenomenon of breakfast omission in Mexican child populations.

**Acknowledgments:** Many thanks to the mothers and fathers who participated in the surveys and to the primary school staff who supported the data collection process. Also, thanks to Marco Antonio Muñoz Madrid, Soledad Hernández, and the ANIMAH project team for their essential role in the primary data collection and entry.

**Funding:** This project was funded by the Postdoctoral Stays Program for Mexico and PRONACES-Health (project number 3003) of the National Council for Humanities, Sciences, and Technologies, Mexico.

## References

1. O'Neil CE, Byrd-Bredbenner C, Hayes D, Jana L, Klinger SE, Stephenson-Martin S. The role of breakfast in health: definition and criteria for a quality breakfast. *J Acad Nutr Diet*. 2014;114(12 Suppl):S8-S26. <https://doi.org/10.1016/j.jand.2014.08.022>
2. López-Sobaler AM, Cuadrado-Soto E, Peral-Suárez Á, Aparicio A, Ortega RM. Importancia del desayuno en la mejora nutricional y sanitaria de la población. *NutrHosp*. 2018;35(N.º Extra. 6):3-6. <https://doi.org/10.20960/nh.2278>
3. Lecerf J-M, Cayzele A, Bal S. Petit déjeuner, est-ce utile? *Cahiers Nutr Diet* 2011;46(1):30-9. <https://doi.org/10.1016/j.cnd.2010.10.001>
4. Moreno-Aznar LA, Vidal Carou MDC, López Sobaler AM, Varela-Moreiras G, Moreno Villares JM. Papel del desayuno y su calidad en la salud de los niños y adolescentes en España. *NutrHosp*. 2021;38(2):396-409. <https://doi.org/10.20960/nh.03398>
5. Ricotti R, Caputo M, Monzani A, et al. Breakfast Skipping, Weight, Cardiometabolic Risk, and Nutrition Quality in Children and Adolescents: A Systematic Review of Randomized Controlled and Intervention Longitudinal Trials. *Nutrients*. 2021;13(10):3331. <https://doi.org/10.3390/nu13103331>
6. Monzani A, Ricotti R, Caputo M, et al. A Systematic Review of the Association of Skipping Breakfast with Weight and Cardiometabolic Risk Factors in Children and Adolescents. What Should We Better Investigate in the Future? *Nutrients*. 2019;11(2):387. <https://doi.org/10.3390/nu11020387>
7. Adolphus K, Lawton CL, Champ CL, Dye L. The Effects of Breakfast and Breakfast Composition on Cognition in Children and Adolescents: A Systematic Review. *Adv Nutr*. 2016;7(3):590S-612S. <https://doi.org/10.3945/an.115.010256>
8. de Menezes LRD, E Souza RCV, Cardoso PC, Dos Santos LC. Factors Associated with Dietary Patterns of Schoolchildren: A Systematic Review. *Nutrients*. 2023;15(11):2450. <https://doi.org/10.3390/nu15112450>
9. Lazzeri G, Ciardullo S, Spinelli A, et al. The Correlation between Adolescent Daily Breakfast Consumption and Socio-Demographic: Trends in 23 European Countries Participating in the Health Behaviour in School-Aged Children Study (2002-2018). *Nutrients*. 2023;15(11):2453. <https://doi.org/10.3390/nu15112453>
10. Lazzeri G, Ahluwalia N, Niclasen B, et al. Trends from 2002 to 2010 in Daily Breakfast Consumption and its Socio-Demographic Correlates in Adolescents across 31 Countries

José Cutberto Hernández Ramírez, Susana Medina López

- Participating in the HBSC Study. *PLoS One*. 2016;11(3):e0151052. <https://doi:10.1371/journal.pone.0151052>
11. Quintero-Gutiérrez, A. G., González-Rosendo, G., Rodríguez-Murguía, N. A., Reyes-Navarrete, G. E., Puga-Díaz, R., & Villanueva-Sánchez, J. (2014). Omisión del desayuno, estado nutricional y hábitos alimentarios de niños y adolescentes de escuelas públicas de Morelos, México. *CyTAJFood*, 12(3), 256–262. <https://doi:10.1080/19476337.2013.839006>
  12. Flores-Huerta Samuel, Klünder-Klünder Miguel, Medina-Bravo Patricia. La escuela primaria como ámbito de oportunidad para prevenir el sobrepeso y la obesidad en los niños. *Bol MedHospInfant Mex*. 2008; 65(6): 626-638.
  13. Afeiche MC, Taillie LS, Hopkins S, Eldridge AL, Popkin BM. Breakfast Dietary Patterns among Mexican Children Are Related to Total-Day Diet Quality. *J Nutr*. 2017;147(3):404-412. <https://doi:10.3945/jn.116.239780>
  14. Shamah-Levy T, Morales-Ruán MC, Ambrocio-Hernández R. Contribución de los desayunos escolares del DIF Estado de México en el estado de nutrición. Cuernavaca: Instituto Nacional de Salud Pública; 2010.
  15. Hernández JL, Hernández EY, García VE, Fajardo KD, Valdés LD. El desayuno en México. *RevEspNutr Comunitaria*. 2018;24(Supl 3):49-59.
  16. Samuelson, P. Nordhaus, W. Economía; con aplicaciones a Latinoamérica. 19ed. Perú: McGraw-Hill Interamericana; 2010.
  17. Keeley B. Desigualdad de ingresos: La brecha entre ricos y pobres. París: OECD. 2016 [citado 2024 Ago 17]. Disponible en: <https://doi.org/10.1787/9789264300521-es> .
  18. Gobierno de México. DATA MÉXICO. México. Equidad. 2024 [citado 2024 Jul 25]. Disponible en: <https://www.economia.gob.mx/datamexico/en/profile/geo/mexico?povertySelector=deprivationOption#equidad>
  19. Hernández JC, Guerrero RN, Orellana JE, Cortés E. Elementos para el análisis semiótico de la cultura alimentaria. *Rev Mex Enf*. 2019; 7:103-108.
  20. Puime ÁO, Zunzunegui MV. Determinantes sociales de la salud y su influencia en la atención sanitaria. En Martín A, Jodar G, editores. Atención familiar y salud comunitaria. España: Elsevier; 2011. p.87-99.
  21. Chen P-J, Antonelli M. Conceptual Models of Food Choice: Influential Factors Related to Foods, Individual Differences, and Society. *Foods*. 2020; 9(12):1898. <https://doi:10.3390/foods9121898>
  22. Consejo Nacional de Evaluación de la Política de Desarrollo Social. Medición de la pobreza. Pobreza a nivel de municipio 2010-2020. Consejo Nacional de Evaluación de la Política de Desarrollo Social. 2022 [citado 2024 Jul 25]. Disponible en:<https://www.coneval.org.mx/Medicion/Paginas/Pobreza-municipal.aspx>
  23. Hernández JC. Participación Social para la Seguridad Alimentaria en Comunidades Escolares Mexicanas de Educación Básica. *RevInfancAdolesc*. 2024; 26: 38-57. <https://doi:10.4995/reinad.2024.17766>
  24. Kaufman L, Rousseeuw J. Finding groups in data: an introduction to cluster analysis. New Jersey: John Wiley & Sons, Inc; 2005.
  25. Iglesias Ortuño E, Ulloa Espinosa C. La mediación de conflictos y sus aportaciones al cambio sociocultural de la familia mexicana. *Áreas*. 42:81-93.
  26. Consejo Nacional de Evaluación de la Política de Desarrollo Social. Líneas de Pobreza por ingresos, julio de 2023. 2023 [citado 2024 Jul 25]. Disponible: [https://www.coneval.org.mx/Medicion/Documents/Lineas\\_de\\_Pobreza\\_por\\_Ingresos/Lineas\\_de\\_Pobreza\\_por\\_Ingresos\\_jul\\_2023.pdf](https://www.coneval.org.mx/Medicion/Documents/Lineas_de_Pobreza_por_Ingresos/Lineas_de_Pobreza_por_Ingresos_jul_2023.pdf)
  27. Engels F. El origen de la familia, la propiedad privada y el estado. España: Akal; 2017.
  28. Consejo Nacional de Población. La composición de las familias y hogares mexicanos se ha transformado en décadas recientes como resultado de cambios demográficos y sociales. Gobierno de México. [actualizada el 15 de mayo de 2020; citado 2024 Sep 03]. Disponible en: <https://www.gob.mx/conapo/articulos/la-composicion-de-las-familias-y-hogares-mexicanos-se-ha-transformado-en-las-recientes-decadas-como-resultado-de-cambios-demograficos?idiom=es>
  29. Lazzeri G, Pammolli A, Azzolini E, et al. Association between fruits and vegetables intake and frequency of breakfast and snacks consumption: a cross-sectional study. *Nutr J*. 2013;12:123. <https://doi:10.1186/1475-2891-12-123>
  30. Sámano R, Zelonka R, Martínez-Rojano H, Sánchez-Jiménez B, Ramírez C, Ovando G. Asociación del índice de masa corporal y conductas de riesgo en el desarrollo de trastornos de la conducta alimentaria en adolescentes mexicanos. *ArchLatinoamNutr*. 2012;62(2):145–154.
  31. Marín A; Sánchez G, Maza L. Prevalencia de obesidad y hábitos alimentarios desde el enfoque de género: el caso de Dzutóh, Yucatán, México. *Estud Soc*. 2014;22(44):64–90.

José Cutberto Hernández Ramírez, Susana Medina López

32. Grzymisławska M, Puch EA, Zawada A, Grzymisławski M. Do nutritional behaviors depend on biological sex and cultural gender? *Adv*

*Clin ExpMed*. 2020;29(1):165–72.  
<https://doi.org/10.17219/acem/111817>



**Social Medicine**

Health For All

ISSN: 1557-7112