Maternal employment and Mexican school-age children overweight in 2012: the importance of household features

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Abstract

Background: International evidence regarding the relationship between maternal employment and school-age children overweight and obesity show divergent results. In Mexico, this relationship has not been confirmed by national data sets analysis. Consequently, the objective of this article was to evaluate the role of the mothers' participation in labor force related to excess body weight in Mexican school-age children (age 5-11 years). **Methods:** A cross-sectional study was conducted on a sample of 17,418 individuals from the National Health and Nutrition Survey 2012, applying binomial logistic regression models. **Results:** After controlling for individual, maternal and contextual features, the mothers' participation in the labor force was associated with children body composition. However, when the household features (living arrangements, household ethnicity, size, food security and socioeconomic status) were incorporated, maternal employment was no longer statistically significant. **Conclusions:** Household features are crucial factors for understanding the overweight and obesity prevalence levels in Mexican school-age children, despite the mother having a paid job.

Key words: Maternal employment. Overweight and obesity. School-age children. Household features. Health survey.

Empleo materno y exceso de peso en escolares mexicanos en 2012: la importancia de las características del hogar

Resumen

Introducción: La evidencia respecto a la relación entre la participación laboral de las madres y el sobrepeso y la obesidad de los niños en edad escolar presenta resultados divergentes en todo el mundo. En México, dicha relación no ha sido analizada con datos representativos nacionales. Por lo anterior, el objetivo de este artículo fue evaluar el papel de la participación laboral materna extradoméstica en el peso elevado de la población mexicana en edad escolar (5 a 11 años). **Métodos:** Se realizó un estudio transversal a partir de una muestra de 17,418 individuos provenientes de la Encuesta Nacional de Salud y Nutrición 2012, utilizando modelos de regresión logística binomial. **Resultados:** En el modelo en el que se controló por características individuales de la madre y de contexto se encontró una relación entre la participación materna en el mercado laboral y la composición corporal de los escolares. Sin embargo, al incorporar las características del hogar (arreglos residenciales, etnicidad, tamaño, seguridad alimentaria y nivel socioeconómico) al modelo estadístico, el

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empleo materno dejó de ser estadísticamente significativo. Dicho modelo fue el que presentó mayor bondad de ajuste.

Conclusiones: *Las características del hogar, más allá de que la madre trabaje, son aspectos cruciales para entender las tasas de prevalencia de obesidad y sobrepeso en los escolares mexicanos.*

Palabras clave: *Empleo materno. Sobrepeso y obesidad. Escolares. Hogares. Encuesta nacional.*

Introduction

School-age children are at a crucial period to treat and prevent overweight and obesity due to both the adiposity rebound that occurs at this age and the acquisition of increased autonomy in food consumption that will accompany the following development stages¹. In this way, the school-age is materialized as a period of opportunity to prevent weight gain and, thereby, decrease the prevalence of chronic diseases, both in childhood and in adult life^{2,3}. It is worth remembering that Mexico is positioned among the continent first places regarding overweight and obesity^{4,5}, so all the efforts are required to act effectively against this phenomenon. One way in which it has been tried to understand the excess weight in this key period has been to examine its relationship with maternal labor participation, the latter as a condition for maternal attention to household routines that have impacts on the food consumption and the activities of minors since male participation remains scarce⁶. This relationship has been investigated in multiple national contexts, with divergent results.

In the United States, some studies suggest that the mother's participation in the labor market affects the prevalence of excess weight. This association has been identified in seven-year-old children that belong to economically disadvantaged families⁷. However, by including other types of data and expanding the groups analyzed, it is not possible to maintain a direct correlation between maternal work and children's body composition. Thus, the most significant effect on weight corresponds to the environment that promotes obesity, in addition to the opportunity cost that represents, for women, having a paid job compared to the performance of domestic tasks⁸. In this same line, which does not assume a direct relationship between maternal employment and overweight, a survey on the time use conducted in a US population was analyzed. The results showed that the time women who worked had left to buy food, cook, eat, and play with their children was reduced to 133 minutes per day. Although it was reported greater participation of men in domestic activities,

this participation did not exceed a 15% of the time that women stopped dedicating to these activities.⁹

Besides the destined time to school-oriented activities, the mother work overload may be giving way to some behaviors that have been associated with excess weight, without being directly the factor that contributes to the development of overweight in school-age children. In a cross-sectional study in an Australian population, the effect of full-time maternal employment on the hour's children spent in front of the television and their sleep hours was analyzed. A suppressive effect of these activities was observed concerning weight gain because when included in the model, the mother's workload was not statistically significant¹⁰; hence, more than the maternal employment, the hours that children sleep and watch TV were the factors that make them more prone to overweight and obesity.

In Denmark, the evidence also did not permit to establish a direct relationship between maternal employment and the propensity to gain weight¹¹. The author of the study pointed out that this may be due to four aspects: first, that the effect of maternal employment is heterogeneous and context dependent. Second, child care services are of higher quality in Denmark. Third, that despite working full days Danish mothers do not spend significantly less time to eat or play with their children than those who do not work. Finally, Danish parents contribute greatly to the care of their children.

In this scenario, the evidence regarding the link between maternal employment and excess weight of Mexican school-age children is scarce, which contrasts with the need for its examination. Although having a job leads to a reduction in the time for caring the children, the statistics of time use studies show that, since the first records, women continue to perform household chores, even if they have an external job¹²⁻¹⁴.

It is worth to bear in mind that Mexican women, particularly those with limited resources, are socialized to take care of the household members¹⁵. Motherhood and its related activities are central to the formation of the Mexican feminine identity, characterized as a

“being for others”¹⁶. Thus, the dual work/domestic role, both for the women who carry it out and for the subjects who attribute themselves the capability to demand it, does not conflict with the traditional roles centered on domestic work assigned to women. Therefore, it is pertinent to ask whether there is a relationship between maternal employment and body composition of Mexican school-age children.

From the evidence review, the development of the statistical analysis is presented below. The characteristics of the database are described, and the independent and control variables used in the study are characterized as well.

Methods

The National Health and Nutrition Survey (ENSANUT, for its Spanish acronym) in its 2012 version was analyzed to study the effect of maternal labor participation on school-age children overweight and obesity. The ENSANUT was carried out through a representative probabilistic sampling at national, state and metropolitan, urban and rural levels, captured from a multistage and stratified scheme¹⁷. The final analytical sample of 14,718 school-age children with biologically plausible anthropometric data (with a body mass index (BMI) greater than 10 or less than 38) and the complete information for all the variables were considered.

In this study, the BMI is used to identify the body composition of school-age children (between 5-11 years of age), considering the cut-off points proposed by the World Health Organization (WHO)¹⁸. Overweight and obesity were jointly analyzed as forms of excess weight to maintain the comparability with previous studies in Mexico.¹⁹⁻²² Thus, the response variable was the valid z-score of the BMI for age and gender, which was presented in a dichotomous way: “1” when the students were obese or overweight and “0” if they had a healthy weight (normal weight). The cut-off points of the body condition were obtained from the macro provided by the WHO for the STATA® (<http://www.who.int/childgrowth/software/es/>) statistical package.

The analyzed database allows accounting for the mother labor participation, through asking about the development of work activities during the week before the interview and considering those who responded that they have work activities, although they did not work. The mother labor participation was categorized in a dichotomous way: “1” corresponded to the performance of an extra-domestic job and “0” to the opposite case.

As control variables, those aspects that have shown relevance in previous studies were considered. The individual characteristics included in the models are age and gender.

The analyzed population was grouped into two development segments²¹: the young school-age children, with ages between 5 and 7 years, and older school-age children, with ages between 8 and 11 years. Regarding gender, the categorization used is a re-coding of the variable provided by the same survey, in which males were assigned the value “0” and females were assigned the value “1”.

A mother’s characteristic that has been related to the prevalence of excess weight is their schooling^{19,20}. This variable was incorporated into the models as four categories: primary school or lesser education, secondary school, high school or a technical degree and university or higher education.

The importance of the context has been captured by the type of locality, showing to be a key aspect in the analysis of excess weight in national studies¹⁹⁻²². In this study, three types of localities were identified based on their size: less than 2,500 inhabitants, 2,500 to 100,000 inhabitants, and more than 100,000 inhabitants.

Of the household characteristics, the socioeconomic level was considered^{19,21,22}. In this article, the socioeconomic level was analyzed with quintiles constructed from the sample of the ENSANUT and that the same database provides¹⁷. Other household aspects that have also shown to be relevant in the excess weight research are the household size and food safety²³. In the first case, it is necessary to take into account that it is not the same a house where there is only one school-age child or another minor child as another house where there are several, even though they have the same number of members. Therefore, it is necessary to adjust the household size considering the energy needs of men and women according to their age to observe the proportional parts of the equivalent needs of an adult between 30 and 59 years of age with moderate physical activity²⁴. Thus, the proportions of each of the members are added together, and this result is presented to compare households with different compositions. Furthermore, the ENSANUT (2012) included the application of the Latin American and Caribbean Scale of Food Security (ELCSA, for its Spanish acronym). In the present article, it was only distinguished between households that did not show any degree of food insecurity and those that experienced some food insecurity.

Recently, living arrangements, understood as those who cohabit with children²⁵, have been incorporated, which has made it possible to identify that cohabiting with one of the grandmothers produces a higher prevalence of excess weight²⁶. However, it is necessary to consider that the effect of the grandmothers' presence on the school-age children overweight may be included in the impact of cohabitation with other family members, taking into account that these members often offer food to children even without the mother's permission²⁷. Therefore, the following classification was selected:

- Both parents
- Couple cohabiting with other relatives
- Single mother cohabiting with other relatives
- Single mother

It is pertinent to point out that there was at least one grandmother in 54% of the total of cases in which there were other relatives in the house.

Binomial, bivariate, and multivariate logistic models were estimated to assess the association between maternal labor participation and excess weight in the school-age population. The goodness-of-fit of the multivariate models was compared by the likelihood-ratio test. The analysis was carried out with the statistical package Stata[®] version 12.0, adjusting for the complex sampling using the svy module both for the estimation of the percentage distributions and for the odds ratios.

Results

Approximately one-third of the surveyed school-age children mothers had a paid job, and just over 70% of them had secondary school or a lower educational level. More than 60% of the households were two-parent without other relatives; in 9% of them there was at least one indigenous person; 77% of households experienced some food insecurity, and more than 36% of the population was in the lowest socioeconomic status quintile. Finally, more than 50% of the students captured in the survey resided in a locality larger than 100,000 inhabitants. The distribution of each variable is presented in table 1.

Table 2 summarizes the distribution of the variables of interest established by the school-age children body composition that the survey captured. At the national level, more than a third (36.8%) of the school-age population was overweight or obese. Particularly, those over eight years and males had more frequently an elevated weight (around 40% in both cases). It can be

Table 1. Distribution of the selected variables in the analyzed sample. ENSANUT, 2012. Mexico

	n	% [CI]
Total	14,718	100
<i>Maternal extra-domestic job</i>		
No	10,312	65.6 [64.3-66.9]
Yes	4,413	34.4 [33.1-35.7]
<i>Schoolchild age</i>		
5-7 years	6,282	43.2 [42.1-44.3]
8-11 years	8,436	56.8 [55.7-57.9]
<i>Gender</i>		
Male	7,372	50.2 [49.1-51.2]
Female	7,346	49.8 [48.8-50.9]
<i>Maternal schooling</i>		
Primary or less	6,081	36.9 [35.5-38.4]
Secondary	5,304	35.6 [34.3-37.0]
High School	1,698	13.2 [12.3-14.1]
University or higher	1,635	14.3 [13.3-15.4]
<i>Living arrangements</i>		
Both parents	9,434	61.9 [60.6-63.2]
Couple cohabiting with relatives	1,868	13.6 [12.8-14.5]
Single mother cohabiting with relatives	1,825	14.0 [13.2-14.9]
Single mother	1,591	10.5 [9.7-11.3]
<i>Indigenous person sharing residence</i>		
No	12,957	91.1 [89.8-92.3]
Yes	1,761	8.9 [7.8-10.2]
<i>Household adjusted size*</i>		
Average	14,718	4.0 [3.9-4.0]
<i>Food insecurity</i>		
Some degree	11,499	76.7 [75.6-77.8]
No	3,219	23.3 [22.2-24.4]
<i>Socioeconomic level</i>		
Quintile I	6,100	36.4 [34.9-38.0]
Quintile II	3,281	22.0 [20.9-23.1]
Quintile III	2,418	18.1 [17.2-19.1]
Quintile IV	1,967	15.2 [14.2-16.3]
Quintile V	952	8.3 [7.5-9.1]
<i>Locality size</i>		
>2,500 inhabitants	5,590	27.6 [26.5-28.8]
2,500-100,000 inhabitants	3,184	20.3 [19.2-21.4]
>100,000 inhabitants	5,944	52.1 [50.6-53.6]

Source: Prepared by the authors with data from the ENSANUT, 2012.
CI, 95% confidence interval using Stata svy module.

* The estimate and confidence intervals correspond to the mean.

seen that when the mother had a paid job, the proportion of school-age children with excess weight increased (from 34.1% to 42%). Also, as schooling increased, so did the proportion of overweight or obese school-age children. It should be pointed out that the prevalence of excess weight was high, both in the cases in

Table 2. Proportional distribution of the school-age population by body composition, selected variables. ENSANUT, 2012. Mexico

Total	Normal weight		Excess weight		Total	Bivariate models		
	(n = 9,461)		(n = 5,257)		(n = 14,718)			
	%	CI	%	CI		OR	CI	p
	63.2	[62.0-64.3]	36.8	[35.7-38.0]	100			
<i>Maternal extra-domestic job</i>								
No	65.9	[64.5-67.2]	34.1	[32.8-35.5]	100	1.00		
Yes	58	[56.1-59.9]	42	[40.1-43.9]	100	1.40	[1.27-1.54]	0.000
<i>Schoolchild age</i>								
8-11 years	59.3	[57.9-60.8]	40.7	[39.2-42.1]	100	1.00		
5-7 years	68.2	[66.7-69.7]	31.8	[30.2-33.4]	100	0.68	[0.62-0.74]	0.000
<i>Gender</i>								
Male	60.5	[58.8-62.1]	39.6	[37.9-41.2]	100	1.00		
Female	65.9	[64.4-67.3]	34.1	[32.7-35.6]	100	0.79	[0.72-0.87]	0.000
<i>Maternal schooling</i>								
Primary or less	68.9	[67.2-70.5]	31.1	[29.5-32.8]	100	1.00		
Secondary	62.6	[60.8-64.5]	37.4	[35.5-39.3]	100	1.32	[1.18-1.47]	0.000
High School	60.4	[57.1-63.5]	39.7	[36.5-42.9]	100	1.45	[1.25-1.70]	0.000
University or higher	52.4	[48.9-55.7]	47.7	[44.3-51.1]	100	2.01	[1.73-2.35]	0.000
<i>Living arrangements</i>								
Both parents	63.5	[62.1-64.9]	36.5	[35.1-38.0]	100	1.00		
Couple cohabiting with relatives	61.7	[58.4-64.8]	38.3	[35.2-41.6]	100	1.08	[0.93-1.25]	0.301
Single mother cohabiting with relatives	60	[56.9-63.0]	40	[37.0-43.1]	100	1.16	[1.01-1.34]	0.042
Single mother	67.4	[64.3-70.4]	32.6	[29.6-35.7]	100	0.84	[0.72-0.98]	0.023
<i>Indigenous person sharing residence</i>								
No	61.7	[60.5-62.9]	38.3	[37.1-39.5]	100	1.00		
Yes	77.9	[75.2-80.4]	22.1	[19.6-24.8]	100	0.46	[0.39-0.54]	0.000
<i>Household adjusted size*</i>	4.1	[4.1-4.2]	3.9	[3.8-3.9]	100	0.89	[0.86-0.93]	0.000
<i>Food insecurity</i>								
Some degree	58.6	[56.1-61.1]	41.4	[39.0-43.9]	100	1.00		
No	64.6	[63.3-65.8]	35.5	[34.2-36.7]	100	0.78	[0.69-0.87]	0.000
<i>Socioeconomic level</i>								
Quintile I	72.7	[71.1-74.3]	27.3	[25.8-28.9]	100	1.00		
Quintile II	63.4	[60.1-65.7]	36.7	[34.3-39.1]	100	1.54	[1.34-1.77]	0.000
Quintile III	57.6	[54.9-60.2]	42.5	[39.8-45.1]	100	1.96	[1.72-2.25]	0.000
Quintile IV	54.8	[51.4-58.1]	45.2	[41.9-48.6]	100	2.20	[1.88-2.57]	0.000
Quintile V	48.4	[43.9-53.0]	51.6	[47.0-56.2]	100	2.84	[2.31-3.48]	0.000
<i>Locality size</i>								
>2,500 inhabitants	71.4	[69.7-73.1]	28.6	[26.9-30.3]	100	1.00		
2,500-100,000 inhabitants	62.4	[60.1-64.6]	37.7	[35.4-39.9]	100	1.51	[1.33-1.71]	0.000
>100,000 inhabitants	59.1	[57.3-60.8]	40.9	[39.2-42.7]	100	1.73	[1.55-1.93]	0.000

Source: Prepared by the author with data from the ENSANUT 2012. *The mean values are presented instead of the percentage. CI, 95% confidence interval using Stata svy module; OR, odds ratio; p, statistical significance.

which the mother had a job and in those that the mother did not, also at all the educational levels of the mother (Table 2).

Two characteristics were observed in the households where the overweight children are concentrated: there are not residing indigenous people (38.3%)

and have a smaller average size than those households in which the low-risk weight school-age children were concentrated, according to the adult-equivalent food consumer units (3.9 and 4.1, respectively). The households in which food insecurity was experienced showed a lower prevalence of excessive weight than

Table 3. Results of the binomial logistic analysis for excess weight in the school-age population. ENSANUT, 2012. Mexico

Variable	Model 1			Model 2			Model 3		
	OR	CI	p	OR	CI	p	OR	CI	p
<i>Maternal extra-domestic job</i>									
No	1.00			1.00			1.00		
Yes	1.25	[1.13-1.38]	0.000	1.18	[1.06-1.30]	0.001	1.09	[0.97-1.21]	0.151
<i>Schoolchild age</i>									
8-11 years	1.00			1.00			1.00		
5-7 years	0.67	[0.61-0.73]	0.000	0.67	[0.61-0.73]	0.000	0.64	[0.59-0.70]	0.000
<i>Gender</i>									
Male	1.00			1.00			1.00		
Female	0.80	[0.73-0.87]	0.000	0.79	[0.72-0.87]	0.000	0.79	[0.72-0.87]	0.000
<i>Maternal schooling</i>									
Primary or less	1.00			1.00			1.00		
Secondary	1.31	[1.18-1.47]	0.000	1.24	[1.11-1.38]	0.000	1.05	[0.93-1.18]	0.443
High School	1.45	[1.24-1.70]	0.000	1.32	[1.12-1.54]	0.001	0.98	[0.83-1.16]	0.829
University or higher	1.87	[1.59-2.20]	0.000	1.68	[1.42-1.97]	0.000	1.13	[0.94-1.37]	0.188
<i>Locality size</i>									
>2,500 inhabitants	—	—	—	—	—	—	1.00		
2,500-100,000 inhabitants	—	—	—	1.39	[1.23-1.59]	0.000	1.26	[1.11-1.43]	0.000
>100,000 inhabitants	—	—	—	1.48	[1.32-1.66]	0.000	1.26	[1.12-1.41]	0.000
<i>Living arrangements</i>									
Both parents							1.00		
Couple cohabiting with relatives							1.33	[1.13-1.56]	0.001
Single mother cohabiting with relatives							1.21	[1.04-1.42]	0.016
Single mother							0.74	[0.63-0.87]	0.000
<i>Indigenous person sharing residence</i>									
No							1.00		
Yes							0.68	[0.58-0.81]	0.000
<i>Household adjusted size</i>									
Average							0.90	[0.86-0.94]	0.000
<i>Food insecurity</i>									
Some degree							1.00		
No							0.96	[0.85-1.08]	0.481
<i>Socioeconomic level</i>									
Quintile I							1.00		
Quintile II							1.30	[1.12-1.51]	0.001
Quintile III							1.59	[1.37-1.86]	0.000
Quintile IV							1.68	[1.39-2.03]	0.000
Quintile V							2.01	[1.58-2.57]	0.000

Source: Prepared by the author with data from the ENSANUT, 2012.
OR, odds ratio; CI, 95% confidence interval; p, statistical significance.

those where this situation was not reported (35.5% versus 41.4%). Excess weight levels augmented as it went from a lower socioeconomic level to the subsequent (measured in quintiles), in such a way that in the homes with a better socioeconomic situation it exceeded 50%. Finally, it can be observed that the excess weight levels increase as localities with a larger residence size are observed.

In the last three columns, table 2 also shows the bivariate results for each one of the variables considered concerning the corporal composition of the

school-age children (normal weight or excess weight). Overall, it was observed that all the variables had an acceptable statistical significance, except for the category “parents and other relatives”, of the living arrangements variable.

Concerning logistic models, table 3 shows the comparison between three models that incorporate different types of variables. The model 1 corresponding columns show the results of considered individual and mother characteristics, with high levels of significance in all the variables. Thus, having a mother with an extra-domestic

Table 4. Nested binomial models comparison

Model	Observations	Likelihood (null)	Likelihood (models)	df	AIC	BIC
Model 1	14,718	-9592.889	-9383.697	7	18781.39	18834.57
Model 2	14,718	-9592.889	-9343.703	9	18705.41	18773.78
Model 3	14,718	-9592.889	-9163.296	19	18364.59	18508.93

Source: Prepared by the author with data from the ENSANUT, 2012. The models were re-estimated since the likelihood-ratio test does not support complex sampling design.
df, degrees of freedom; AIC, Akaike information criterion; BIC, Bayesian information criterion.

job increased the children propensity by 25%; being between 5 and 7 years old diminished it by 32%, and being female, by 29%, compared with children over 8 years old and with being male, respectively. Moreover, the excess weight school-age children propensity increased by 31% if the mother had a secondary school, 45% if the mother had completed high school and 87% if the mother had completed a university degree or some postgraduate degree, comparing to those with primary or lower schooling level. In model 2, after incorporating the contextual aspect of the locality size, it was noticed that living in a locality of 2,500 to 100,000 inhabitants increased the overweight propensity of school-age children in 51% and 73% in populations > 100,000 inhabitants, in contrast to the localities where fewer than 2,500 people lived. It should be noted that there was a slight decrease in the odds ratios of the rest of the variables, but neither their direction nor their statistical significance underwent major changes.

Finally, in model 3, it can be observed that by incorporating some household characteristics, the statistical significance of some variables changed. The maternal employment ceased to be associated with school-age children overweight and obesity, in the same way as the mother's schooling. The incorporated aspects showed that the school-age children predisposition to excess weight increased if they lived with a family member, apart from both parents or the mother, in the same way as by increasing the household socioeconomic level (from 30% in quintile II to more than 100% in quintile V, with respect to I). The aspects that showed to diminish the excess weight propensity were to live only with the mother (reducing it in 26%), compared to the homes with both parents and without other relatives, and to reside at least with one indigenous person (diminishing it in 32%), compared to those where none resided. For each additional adult-equivalent consumer, school-age children were less likely to be overweight by 10%. Table 4 depicts the likelihood-ratio test, where it can be seen that the smallest number, both of the Akaike information criterion and the Bayesian

information criterion, is the one of model 3, which makes it preferable to the other models.

Figure 1 allows comparing the average marginal effects of each variable in the three multivariate models (more than the odds ratios), to notice what happened with the maternal employment participation variable. It is observed that both maternal employment and schooling level were progressively displaced to zero when considering first a contextual aspect and subsequently the household features, thus losing evidence of an association with excess weight.

Discussion

The present analysis allows to indicate the absence of a statistical association of the maternal labor participation, and even of their schooling, with overweight in school-age children by controlling the household features, which may be related to several convergent processes.

First, as mentioned previously, socialization can play a key role for women to face a higher pressure to take on domestic work despite having employment, which may mean food preparation at home, and even obtaining a greater variety of food. It has been shown in a qualitative way that children have a wider diet variety when mothers are employed than when the male is the exclusive provider²⁸. The last may be highlighting the importance that the model of intensive mothering still has, in which the mother's work focuses on her progeny, is guided by experts, is emotionally absorbing and requires a robust economic investment²⁹. This model has a broad reach among urban middle-class Mexican mothers, but it is spreading to other sectors through the media and social policies, such as the conditional transfer programs³⁰, which could also be related to the fact that the biomedical discourse about the risk of excess weight has permeated the mothers' knowledge, even those from impoverished strata with little schooling³¹.

It is important to remember that the school-age children, who lived in households with other relatives

Figure 1. Average marginal effects for three logistic models of excess weight in school-age children. Mexico, 2012. Inhab, inhabitants; SEL, socioeconomic level.

besides both parents or the mother, showed a higher propensity to be overweight or obese. Even though the mothers are focused on the care of the children and perceive that they are gaining weight and seek to act in this respect, the other family members are the ones who provide the alimentary products considered harmful²⁷. By framing the importance of interaction with family members, the pertinence of analyzing the excess weight is founded beyond the individual who experiences it. Thus, aspects such as the exercise of authority at home acquire relevance.

Furthermore, the statistical association between maternal labor participation and school-age children excess weight disappeared after controlling household characteristics—among other aspects due to the socioeconomic level. This fact leads to reflect about the relationship of the household resources, and the risk of high weight in households since this relationship has been positive for almost 20 years back when overweight and obesity started to be documented in representative national surveys^{19,21,22}.

This element is crucial for the design of public policies that seek to address social determinants—besides the marketplace and its wide-ranging advertising campaigns—since there seems to be a cultural root in the consumption of food of low nutritional value through their association with socioeconomic improvement²⁹. Broadening the focus of policies that aim to make individuals modify their behaviors are required, as well as the inclusion of the vulnerable population group that cannot access healthy food or places and time to exercise, which is not necessarily the lower-income population.

It should be recognized that the use of the mother's labor occupation still requires a series of more detailed analyzes: for example, by incorporating the income amount, the position and the type of employment. The nuances that can be derived from the analysis of those variables remain as pending tasks for future efforts.

Another important aspect is that excess weight and obesity are conditions associated differentially with the school-age children health risks³², which implies another set of pending tasks. Since overweight is a

condition that precedes obesity, its differentiation must consider the need that both outcomes are related. Ordinal models, in which the order of the categories is taken into account, can help distinguish the risks for both conditions. Moreover, other types of techniques have shown the capacity to observe the effects of non-observed confounding variables that logistic models do not take into account³³. Given these limitations of the current article, it is necessary to point out that this type of method should be incorporated in subsequent analyzes to refine the understanding of excess weight in children, once that the household features importance has been shown.

In conclusion, maternal labor participation was not an explanatory factor for the school-age children overweight when the household features were taken into account. It is necessary to study profoundly the role of the household type, particularly regarding the participation of other family members in the frequency at which school-age children can access food of low nutritional value. It is also necessary to pay attention to the home authority kinds since the highest prevalence of excess weight occurred in the homes of mothers who cohabited with other relatives who were not their partners so that they may lack support in the training of their offspring.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Conflicts of interest

The author declares no conflicts of interest.

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