



Trabajo Original

Food habits in Mexican pregnant adolescents according to their civil status *Hábitos de alimentación en adolescentes embarazadas de acuerdo a su estado civil*

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Abstract

Objective: To identify the feeding habits of pregnant adolescents in four different civil status: married, cohabiting with a partner, single with no partner and single with a partner.

Methods: In a cross-sectional study, 321 pregnant adolescents aged 13 to 19 years old who attended the Hospital Civil de Guadalajara Dr. Juan I Menchaca, Guadalajara (Jalisco, Mexico) were included. They were healthy, in any trimester of pregnancy and had either a low or medium-low socioeconomic status. The civil status of adolescents was stratified into: a) married, b) cohabiting with a partner, c) single with a partner and d) single without a partner. Socio-demographic, economic and feeding habits data were included. ANOVA, post-hoc tests for Chi², odds ratio and logistic regression models were used.

Results: The frequency of married adolescents was 9.3%; 59.8% of the adolescents were cohabiting, 15.3% of the adolescents were single without a partner and 15.6% of the adolescents were single with a partner. Low schooling (OR 2.6 [1.5-4.4]) and occupation in housework (OR 4.47 [1.99-10.0]) predominated among adolescents in cohabiting with a partner; an occupation at home (OR 0.28 [0.127 to 0.61]) and unaccompanied dining (OR 4.12 [1.62-10.8]) were the factors with the most epidemiological significance in single without a partner adolescents. The consumption of vegetables was significantly lower in married adolescents and cohabiting-with-partner adolescents; consumption of beans and sweet bread was significantly lower in pregnant married adolescents.

Conclusion: Because some variables and eating habits depended on civil status, it is pertinent to analyze them in each group of pregnant teenagers separately.

Key words:

Pregnant teens.
Eating habits. Civil statuses.

Resumen

Objetivo: identificar los hábitos alimentarios de adolescentes embarazadas en cuatro estados civiles diferentes: casada, cohabita con una pareja, soltera sin pareja y soltera con una pareja.

Métodos: en estudio transversal, se incluyeron 321 adolescentes embarazadas de 13-19 años que acudieron al Hospital Civil de Guadalajara Dr. Juan I Menchaca, Guadalajara (Jalisco, México). Se encontraban sanas, en cualquier trimestre del embarazo y pertenecían a un nivel socioeconómico bajo o medio-bajo. El estado civil se estratificó en: casadas; en unión libre; soltera con una pareja y soltera sin pareja. Se incluyeron datos socio-demográficos, económicos y de hábitos de alimentación. Se utilizaron pruebas de ANOVA, pruebas post-hoc para Chi², razón de momios y modelos de regresión logística.

Resultados: la frecuencia de las adolescentes casadas fue de 9,3%, 59,8% en unión libre, 15,3% eran solteras sin pareja y 15,6% solteras con pareja. La baja escolaridad (RM 2,6 [1,5-4,4]) y la ocupación en el hogar (RM 4,47 [1,99-10,0]) predominaron entre las adolescentes en unión libre; la ocupación en el hogar (RM 0,28 [0,127-0,61]) y cenar sin compañía (RM 4,12 [1,62-10,8]) fueron significativamente más frecuentes en adolescentes sin pareja. El consumo de verduras fue menor en las adolescentes casadas y en quienes cohabitaban con pareja; el consumo de frijoles y pan dulce fue menor en adolescentes embarazadas casadas.

Conclusión: debido a que ciertas variables y hábitos de alimentación mostraron diferencias entre los grupos es pertinente analizar las adolescentes embarazadas de acuerdo a su estado civil.

Palabras clave:

Adolescentes embarazadas.
Hábitos alimenticios.
Estado civil.

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INTRODUCTION

Mexico is a country with over 120 million inhabitants and has a large geographical diversity and social, economic, ethnic, cultural, biological and eating habits integrated in 32 independent states. Twenty percent of the total population are adolescents between 10 and 19 years; twenty percent of teens aged 15-19 have initiated sexual activity and more than half (51.9%) of them have been pregnant (1). These figures place Mexico first in teen pregnancy in the OECD; these figures increased from 30,000 to 37,000 women between 2005 and 2011 (2).

Teen pregnancy, especially when the child is unwanted, carries risks and high costs for both the mother and her child. Factors such as poverty, poor nutrition, reproductive immaturity and gender inequality compromise the health of teenage mothers and their children. The highest percentage of teenage pregnancy is concentrated in groups with inadequate health conditions who are living in vulnerable situations. Similarly, pregnancy at an early age is associated with situations that limit the personal development of adolescents and influence the formation and stability of couple unions that impact the pregnancy outcome itself (3).

Moreover, eating habits of pregnant adolescents in Mexico are immersed in a great cultural diversity (4). The autonomy of adolescents to choose their food is linked to the search for their own identity, and family influence is greatly diminished. Adolescents usually eat outside and feel the need to belong and identify with the customs and fashions of their own generation (5). The nutritional needs of pregnant adolescents increase, and the nutrition of the child depends on the mother's supply, which is often inadequate. For all the above, the mother-child dyad is considered vulnerable to malnutrition (6).

In this context, the support that the couple receives may be relevant in promoting healthy habits during pregnancy, including adequate dietary intake (7). The purpose of this research was to identify the eating habits of pregnant adolescents in four different civil status situations.

METHODS

In a cross-sectional study, 321 pregnant adolescents from 13 to 19 years of age who attended the outpatient clinic of the Gynecology and Obstetrics Department of the Hospital Civil de Guadalajara from July to September 2012 were included. The adolescents were healthy and in any trimester of pregnancy and had either a low or medium-low socioeconomic status. The sample calculation was based on a previous study of pregnant adolescents (8); an alpha error of 0.05 and a beta error of 20% were considered. The purposive sampling was not random and it focused in concentration sites of study subjects with continuous inclusion. The independent variable in the analysis was the civil status of the pregnant adolescents. This variable was layered as follows: a) married with a partner was established by those united in marriage by civil laws and/or religious practices; b) cohabitating with a partner was defined when the teen and her partner

were living as a couple together with the full consent of both of the couples parents and the couple lived separately from their parents in a situation similar to marriage; c) single with a partner referred to the situation in which the adolescent has an agreement with her partner, each living in the home of their parents, i.e., they could be a couple and live away for one another without mutual responsibility in economic terms; and d) single without a partner referred to the cases in which the adolescent presented an unplanned pregnancy and lived with her family without any responsibility or knowledge of the other individual who participated in the pregnancy. Other independent variables were considered as socioeconomic and demographic data. Eating habits were considered to be a dependent variable. Usual food consumption was obtained by a dietary survey of food frequency consumption and a 24-hour dietary recall (24h-DR) questionnaire with the use of the Nutrical VO program (NutriKcal® VO for the Office, ©Copyright 2011 Consinfo, SC Mexico, DF) to estimate energy intake and macronutrients.

STATISTICAL ANALYSES

Descriptive statistics were calculated. Quantitative variables that showed significant differences were analyzed by ANOVA and post-hoc tests. The association of qualitative variables was identified with the Chi² test, and the odds ratios were estimated (confidence interval 95%) to identify their epidemiological significance. Logistic regression models with variables that were significantly associated with the civil status of the adolescent were performed. Data were captured and analyzed using SPSS version 20.

ETHICAL CONSIDERATIONS

Written informed consent of the pregnant adolescent or her legally authorized representative was obtained. The study was approved by the Bioethics Committee of the Hospital Civil de Guadalajara with registration by the Ministry of Health (1214-1212).

RESULTS

A total of 321 pregnant adolescents were included. The mean age was 17 ± 1.47 years. Most parents were employees (40%), and 44% of the mothers were housewives. Thirty-six percent of the parents and 44% of the mothers had completed less than junior high school. The frequency of the observed four distinct groups among pregnant adolescents was: 9.3% were married with partner; 59.8% were cohabitating with a partner; 15.3% single without a partner and 15.6% single with a partner. Regarding the eating habits of adolescents, we observed that more than 95% consumed breakfast and lunch daily. However, between 73% and 64% consumed dinner and snacks daily, respectively. Sixty-four to 75% changed their diet during pregnancy. The 24-hour dietary recall showed that between 70 and 77% of the pregnant

women consumed processed products, such as biscuits, cakes, soft drinks, bottled juices, chocolates, sweets and fried foods.

Table I shows that age, years of schooling of the mother and years of study of the adolescent were significantly different between groups. Married teens were older than adolescents who were cohabitating with a partner, single with a partner and single without a partner. Maternal education was significantly higher in adolescents in the single with a partner group than in adolescents who were cohabitating with a partner.

The average length of schooling was higher in married adolescents and lower in adolescents who were cohabitating with a partner. The monthly family income was significantly higher in single with a partner than in adolescents who were cohabitating with a partner. The number of household members was significantly lower among married adolescents than in single without a partner and single with a partner adolescents. Monthly food expenditure was significantly higher in single with a partner pregnant adolescents than in married couples. The per capita food

expenditure was significantly higher among married adolescents than in single without a partner adolescents and was also higher in cohabitating with a partner adolescents than in single without a partner adolescents. The amount of money spent on food per member per day was significantly higher among married adolescents than for single without a partner adolescents and for cohabitating with a partner adolescents than for single without a partner adolescents (Table II).

Table III shows that consumption of tomatoes was lower in single with a partner and single without a partner adolescents than in cohabitating with a partner adolescents; while consumption of other vegetables, including zucchini and squash, was significantly lower in married adolescents and cohabitating with a partner adolescents than in single without a partner adolescents and single with a partner adolescents. Bean consumption was significantly lower in pregnant married adolescents than in the rest of the groups of adolescents; consumption of sweet bread was significantly lower among married adolescent girls than in co-

Table I. General characteristics and the energy and macronutrient intake of pregnant adolescents

Variable	Married			Cohabiting			Single without a partner			Single with a partner			p ¹
	n	X	DE	n	X	DE	N	X	DE	n	X	DE	
Age	30	17.63 ^{2,3,4}	1.33	192	16.67 ²	1.40	49	16.73 ³	1.66	50	16.58 ⁴	1.49	0.007
Schooling of mothers (years)	29	7.48	3.27	180	6.76 ⁵	3.69	48	7.21	3.85	49	8.39 ⁵	2.2	0.035
Schooling of adolescents (years)	30	10.05 ⁶	1.3	191	8.08 ^{6,7,8}	1.96	49	8.88 ⁷	1.71	50	9.22 ⁸	1.75	< 0.001
Energy (kcal/d)	30	1,904	657	192	2075	836	49	1986	626	50	2056	922	0.694
Proteins (g/d)	30	64	31	192	66	28	49	69	27	50	72	36	0.520
Carbohydrates (g/d)	30	279	100	192	300	130	49	285	97	50	277	110	0.547
Fat (g/d)	30	63	33	192	71	42	49	65	30	50	77	61	0.456

¹ANOVA; Post-Hoc tests: ^{2,3,4}Married vs. Cohabiting p = 0.005, ³Married vs. single without a partner p = 0.048, ⁴Married vs. single with a partner p = 0.011,

⁵Cohabiting vs. single with a partner p = 0.001, ^{6,7,8}Cohabiting vs. married p < 0.001, ⁷Cohabiting vs. single without a partner p = 0.044, ⁸Cohabiting vs. single with a partner p = 0.001.

Table II. Socioeconomic variables of pregnant adolescents

Variable	Married			Cohabiting			Single without a partner			Single with a partner			p ¹
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	
Monthly family income (mp)	29	7,259	4,449	180	5,889 ²	2,910	41	7,502	4,884	44	8,368 ²	4,648	< 0.001
Family members in same house	30	3.17 ^{3,4}	2.2	192	4.26	2.5	48	4.96 ³	1.26	50	5.00 ⁴	2.0	0.002
Monthly food expenses (mp)	30	2,710 ⁵	1,042	172	3,409	1,959	44	3,614	1,851	47	4,089 ⁵	1,888	0.015
Per capita food expenses (mp)	30	1,044 ⁶	435	172	963.3 ⁷	470	43	775.6 ^{6,7}	396	47	895	463	0.048
Per capita food expenses (%)	30	57.4 ⁸	23.9	172	53 ⁹	25.8	43	42.7 ^{8,9}	21.8	47	49.3	25.5	0.048
Amount of pesos for food per member/day	30	34.3 ¹⁰	14.3	172	31.7 ¹¹	15.5	43	25.5 ^{10,11}	13.0	47	29.4	15.2	0.048

Mp: Mexican pesos, peso: US dollars 13.4/1; ¹ANOVA; Post-Hoc tests: ²Cohabiting vs. single with partner p = 0.008, ³Married vs. single without a partner p = 0.003,

⁴Married vs. single with a partner p = 0.003, ⁵Married vs. single with a partner p = 0.010, ⁶Single without a partner vs. married p = 0.014, ⁷Single without a partner vs. cohabiting p = 0.016, ⁸Single without a partner vs. married p = 0.014, ⁹Single without a partner vs. cohabiting p = 0.016, ¹⁰Single without a partner vs. married p = 0.014, ¹¹Single without a partner vs. cohabiting p = 0.016.

Table III. Frequency of food consumption according to the civil status of pregnant adolescents

Variable	Married		Cohabiting		Single without a partner		Single with a partner	
	n/N	%	n/N	%	n/N	%	n/N	%
Tomatoes (< 3 t/w)	10/30	33	46/192	24 ¹	16/49	33 ¹	16/50	32 ¹
Zucchini and chayote (< 3 t/w)	22/29	76 ²	139/192	72 ²	27/49	55 ²	27/50	54 ²
Beans (< 3 t/w)	10/30	33 ³	41/192	21 ³	12/49	25 ³	11/50	22 ³
Roll (< 3 t/w)	22/30	73	102/191	53 ⁴	35/49	71 ⁴	29/48	60 ⁴
Sweet bread (< 3 t/w)	19/30	63 ⁵	91/191	48 ⁵	26/49	53	25/50	50
Sweetened water (3-5 t/w)	3/30	10	44/192	23	6/49	12 ⁶	17/50	34 ⁶
Soft drink (daily)	7/30	23 ⁷	77/192	40	21/49	43 ⁷	16/50	32
Nopal (daily)	2/30	7 ⁸	6/192	3 ⁸	1/49	2 ⁸	1/50	2 ⁸
Melon cantaloupe (daily)	1/29	3 ⁹	15/192	8 ⁹	1/49	2 ⁹	1/50	2 ⁹

t/w: times a week; ¹Single with and without a partners vs. cohabiting (OR = 2.1 [1.16, 3.82] p = 0.013); ²Married and cohabiting vs. Single with and without a partner (OR = 2.2 [1.34, 3.6] p = 0.002); ³Married vs. all groups (OR = 3.23 [1.12, 9.3] p = 0.023); ⁴Single with and without a partner vs. cohabiting (OR = 2.06 [1.11, 3.79] p = 0.02); ⁵Married vs. cohabiting (OR = 3.9 [1.1, 13.8] p = 0.03); ⁶Single with a partner vs. single without a partner (OR = 5.95 [1.79, 19.7] p = 0.002); ⁷Single without a partner vs. married (OR = 3.0 [0.98, 9.15] p = 0.05); ⁸Married and cohabiting vs. single with and without a partner (p = 0.036); ⁹Cohabiting vs. all groups (p = 0.043).

habitating with a partner adolescents. In addition, the consumption of sweetened water was significantly higher in cohabitating with a partner adolescents than in single without a partner adolescents. Daily consumption of soft drinks was significantly higher in single without a partner adolescents versus married adolescents. The intake of energy and macronutrients (proteins, carbohydrates and fat) was similar in the four groups.

It is observed that the frequency of pregnant adolescents who had completed less than junior high school was significantly higher in cohabitating with a partner adolescents than in the other groups of adolescents. Housework as an occupation prevailed in cohabitating with a partner adolescents in comparison with the other groups. Most likely the influence of family on eating habits occurred in cohabitating with a partner adolescents

compared to single with a partner and single without a partner adolescents. Particularly, the influence of the mother was significantly lower among married adolescents. Finally, we observed that the frequency of adolescents who were not accompanied during dinner was significantly higher in the single without a partner group, as shown in table IV. A logistic regression model showed that cohabitating with a partner adolescents had a 2.6-fold increase in the probability of completing less years of junior high school and increased the probability by 4.5-times that the teenager was dedicated to housework. Additionally, being a single without a partner adolescent decreased the probability of having housework as an occupation by a little over three times and increased the likelihood that adolescents dine unaccompanied by four times (Table V).

Table IV. Demographic characteristics and food habits according to the civil status of pregnant adolescents

Variable	Married		Cohabiting		Single without a partner		Single with a partner	
	n/N	%	n/N	%	n/N	%	n/N	%
Schooling level of adolescents less than junior high school	1/30	3.3 ¹	87/192	45 ^{1,2,3}	13/49	27 ²	12/50	24 ³
House labor of adolescents	25/30	83 ⁴	183/192	95 ^{4,5,6}	36/49	74 ⁵	39/50	78 ⁶
Schooling level of mothers less than junior high school	13/29	45	105/182	58 ⁷	23/49	47	16/49	33 ⁷
Influence of family members on food habits	19/30	63	121/189	64 ⁸	22/46	48 ⁸	18/50	36 ⁸
Influence of mothers on food habits	3/30	10 ⁹	47/189	25 ⁹	17/46	37	24/50	48
Unaccompanied during dinner	0/30	0 ¹⁰	9/192	5 ¹⁰	9/50	18 ¹⁰	4/49	8 ¹⁰

¹Cohabiting vs. married (OR = 24 [3.2, 180] p < 0.001); ²Cohabiting vs. single without a partner (OR = 2.29 [1.14, 4.6] p = 0.017); ³Cohabiting vs. single with a partner (OR = 2.62 [1.29, 5.3] p = 0.006); ⁴Cohabiting vs. married (OR = 4.06 [1.26, 13.1] p = 0.026); ⁵Cohabiting vs. single without a partner (OR = 7.34 [2.9, 18.5] p < 0.001); ⁶Cohabiting vs. single with a partner (OR = 5.73 [2.23, 14.8] p < 0.001); ⁷Cohabiting vs. single with partner (OR = 2.81 [1.44, 5.5] p = 0.001); ⁸Cohabiting vs. single with and without partner (OR = 2.64 [1.15, 4.6] p < 0.001); ⁹Cohabiting vs. married (OR = 5.9 [1.4, 24.8] p = 0.01); ¹⁰Single without a partner vs. all groups (OR = 4.48 [1.8, 11.7] p < 0.001).

Table V. Logistic regression of civil status with demographic characteristics and food habits

	OR raw	OR adjusted	CI 95%	p
Cohabiting with partner				
<i>Schooling of adolescents less than junior high school</i>	3.3	2.6	1.5-4.4	< 0.001
<i>Housework occupation of adolescent</i>	5.9	4.47	1.99-10.0	< 0.001
<i>Single without partner</i>				
<i>Probability of housework occupation</i>	0.28	0.28	0.127-0.61	0.002
<i>Unaccompanied during dinner</i>	4.48	4.12	1.62-10.8	0.003

DISCUSSION

The group of pregnant adolescents was taken from a hospital in the Western part of the country that serves a population of predominantly middle-low and low socioeconomic strata. The parents' education was relatively low, and only 44% of the mothers of these teenagers are dedicated to household; this frequency is lower than in previous studies in the same metropolitan area of Guadalajara (9,10). This finding demonstrates that the teenagers had stayed at home without the supervision of their mothers for an unspecified number of hours a day. It was noticeable that there were four fairly distinct groups of pregnant adolescents: married, cohabitating with a partner, single without a partner and single with a partner. The latter group has not been clearly displayed. It is observed that certain socioeconomic, demographic and educational variables and eating habits showed significant differences between groups of pregnant adolescents. Therefore, it seemed appropriate to conduct the analysis of the data for each group separately.

Regarding eating habits, the frequency of food consumption was similar among the four groups with some differences, for example, the group of married and single with a partner adolescents had a lower consumption of beans. Married and single without a partner adolescents consumed less rolls, but the consumption of soda was more common in cohabitating with a partner and single without a partner adolescents. The consumption of sweetened water was more common among single with a partner adolescents. As expected, the age of married adolescents was significantly higher than the other groups of adolescents. The fact that the schooling level of the mothers of single without a partner adolescents was significantly higher than other groups indicates that these adolescents have better educated mothers who have a daughter who most likely became pregnant by her partner, who is most likely of a similar age, in contrast to a partner who is more willing to remain as a couple, but the only obstacle to staying together would be the lack of economic resources to achieve independent living without the support of their families. This situation would be different for adolescents who chose to cohabit with their partner; these partners were likely to have a greater economic capacity to sustain independence.

It is explicable that the number of members in the household was lower in married adolescents because single with a partner and single without a partner adolescents would be part of their parents' families, whether nuclear, extended or mixed. It is also

understandable that the monthly food expenditure was higher in pregnant single with a partner adolescents than in married couples because they still live with their parents who have stronger economic stability. It seems paradoxical that food expenditure per capita was greater in married adolescents; however, it is understandable that the proportion of expenditure divided between two people for food would be greater than the proportion of expenditure that is divided among several members of a family when the adolescent stays at home with her parents. It would be the same case observed in cohabitating with a partner adolescents who had higher food expenditure per capita than single without a partner adolescents who still live with their parents and the rest of the family.

It is noteworthy that the consumption of vegetables and legumes, represented by beans, a widely consumed country-wide food, was lower in married adolescents and cohabitating with a partner adolescents. One possible explanation is that food expenditure was higher in adolescents with and without a partner, this suggests a greater purchasing power of parents of adolescents and some restrictions on buying these foods by married and cohabitating with a partner adolescents because of low income. However, daily consumption of soft drinks was significantly higher in single with a partner versus married adolescents. This finding suggests that it is less conscious teens who maintain the same defects in eating habits that were observed before becoming pregnant without regard for improving nutrition during pregnancy. Such defects in eating habits include low consumption of fruits and vegetables and high water consumption of sugary fruit, soft drinks and processed foods (4,11,12) as it happens in adolescents and pregnancy of other Latin American countries (13,14).

It seems reasonable that cohabitating with a partner adolescents had greater influence on the eating habits of the family. Teenagers who live voluntarily as a couple act responsibly and therefore would not have financial limitations to follow the influence of the eating habits of their parents or other family members. There was a more functional relationship with the family. Because the married adolescents were older, they acted more independently from their parents. Another interesting finding was that the risk of not being accompanied during dinner was four times higher among single without a partner adolescents. Most likely, this last group represents the largest group of excluded or marginalized adolescents for having, in many cases, unwanted pregnancies. These adolescents would maintain the same eating habits that

they had before being pregnant without any supervision by their own family. Finally, we note that 24% of adolescents skip dinner. In previous studies, we found that a significant percentage of pregnant women maintain that habit (6), most likely for economic reasons, with prolonged fasting of at least 14 or 16 hours straight. This defect in eating habits has metabolic implications. Additionally, if prolonged fasting occurs in adolescents during pregnancy, physiological effects on the health of adolescents and their offspring would have more serious effects.

CONCLUSION

A group of pregnant adolescents who attended the Civil Hospital of Guadalajara belonging to the central-western region of the country were divided into four groups with distinct characteristics to identify eating habits: married, cohabitating with a partner, single with a partner and single without a partner. Apparently, certain deficiencies in eating habits depend on the civil status in which the pregnant adolescent lives. The monthly food expenditure is higher in single adolescents with or without a partner living with their parents; however, the proportion of expenditure on food per capita is higher in cohabitating with a partner adolescents.

The frequency of consumption of certain healthy foods, including vegetables and other unhealthy foods, such as sweetened beverages and soft drinks, depends on the adolescent's living situation. The cohabitating with a partner adolescents are in a situation of increased susceptibility to be influenced by other family members. It is worrying that 24% of adolescents skipped dinner and adolescents without a partner have a four-fold greater risk of making dinner alone without the support of their family or company.

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