Dietary Patterns and Sociodemographic Factors in Socially Vulnerable Populations: Cross-Sectional Study in Users of First Level Healthcare

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Abstract

Objective: Define the dietary patterns of adults with normal weight, overweight and obesity, and their association with socio-demographic factors.

Methods: The size of the sample universe is 1,000 homes in four states of the Mexican Republic. A sub-sample was selected of 787 people to whom a healthcare questionnaire was applied. A factor analysis by principal components was carried out to identify dietary patterns. The distribution of the population's socio-demographic characteristics was analyzed by quartiles and a multivariate logistic regression was done with dietary patterns as the dependent variable; $p < 0.05$ values were taken for statistical significance.

Results: Three dietary patterns were identified in the two population groups (normal weight / overweight-obesity): Prudent, Western and Varied. In both groups, a prudent pattern was found, with high consumption of fruits, vegetables and plain water. The Western pattern is characterized by consumption of flours, processed foods and those of animal origin, and the varied pattern presented consumption of oils, sugar sweetened beverages and snacks. The Prudent pattern was positively associated with the female sex and age, while the Western pattern was associated with elementary schooling level and the varied pattern with the masculine sex. The study population reported dietary risk factors, physical inactivity, and time in front of a screen, tobacco consumption, alcohol consumption and family history of chronic diseases.

Conclusion: Health effects derived from the different dietary patterns could increase economic and social vulnerability of the studied populations, which is a challenge to the health system for the provision of comprehensive care.

Introduction

Overweight and obesity are two public health problems that are a priority at the global level, due to their impact in terms of loss of healthy life. The World Health Organization (WHO) estimates that in 2016 there were close to 1900 million people with overweight and obesity, that is, 39% of adults over 18 years old were overweight and 13% were obese, at the world level.¹ In Mexico, the combined prevalence of overweight and obesity in people over 20 years old was 71.2%, according to the 2012² National Health and Nutrition Survey (ENSANUT, Spanish acronym) and 72.5% according to the 2016³ ENSANUT. In this last survey there was a greater concentration of overweight (75.6%) and obesity (38.6%) in the female population.

Epidemiological and nutritional transitions in Mexico have gone from a situation where malnutrition and infectious diseases were predominant to one where overweight, obesity, diabetes and cardiovascular diseases are now prevalent. This is such a big change that in 2016 the Health Secretariat declared an epidemiological emergency due to overweight, obesity and diabetes, since the first two affect 33% of the child population and 70% of the adult population; these numbers are among the five highest in the world. The problem becomes worse if we consider that these conditions are linked to cardiovascular diseases and obesity, which are some of the first causes of mortality in the country.⁴

In Mexico, the nutritional transition has proven to be related to the local economic, political and cultural conditions of each population sector. It is characterized by a diet that is high in fats and sugar, as well as low in polyunsaturated fatty acids and fiber.^{5,7} This pattern, called the Western pattern, is associated with gains in abdominal fat, overweight, obesity and diabetes.⁸⁻¹¹

Western dietary patterns, including meat and high in fat, have been associated with low economic status, basic education, sex (women). In these patterns, there is a predominance of processed and ultraprocessed foods, sugary beverages, bread rolls and snacks, which frequently have a lower cost and greater availability, compared to fruits and vegetables.¹²⁻¹⁴ These changes in the dietary patterns of the Mexican population, together with overweight, obesity, physical inactivity and tobacco consumption, favor the appearance of diabetes at an early age.^{6,7} Different factors are involved in the increase in portions that are consumed in the different dietary patterns: economic factors, globalization, demographic transition, environmental,

cultural and social. The dynamics of this polarization correspond to the epidemiological and nutritional transition, as well as to changes in the health system.^{15,16}

It is problematic that the low income groups in Mexico are the ones who purchase foods with low nutritional quality, because these are available at a lower cost per calorie.¹⁷ Because of this, a large number of poor homes has access to enough foods to satisfy their energy needs, though frequently their diets have a low quality due to the predominance of high energy density foods and sugar sweetened beverages.¹⁸ For this reason, the objective of this study is to identify dietary patterns in adults with normal weight, overweight and obesity, in order to evaluate the associations with sociodemographic factors.

Methods

Design and sample

A cross-sectional analysis was carried out of the project entitled, “Model for the prevention of risks and health damages for diabetes and hypertension in the framework of effective universal coverage”¹⁹, which was developed in four Mexican states. The objective of the project was to “Generate knowledge to contribute to universal coverage, developing a model for the first level of healthcare that is oriented towards the prevention of risks and damages to health as a consequence of diabetes and hypertension.”

States were included which: a) had prior experience in the promotion of initiatives to provide healthcare for chronic diseases; b) had decision-makers that were interested in participating in strengthening the healthcare model for non-transmissible diseases. A health center was selected for each state that had systematic management of patients with diabetes or hypertension. These units were located in areas with high social marginalization (according to the marginalization index of the National Population Council) and c) had personnel who were interested in participating in the project: Hidalgo (Tulancingo), Jalisco (Arenales Tapatíos), Morelos (Alta Palmira) and Yucatán (Ucú). Data collection was carried out in 2014.

A georeferenced map for each health center showed all the homes in its jurisdiction. We drew a spiral on the map, starting at the place where the health center was and including all homes up to 1,000 homes per center. People who were 18 years old or more were included in the study. Food consumption and physical activity were explored in a sub-sample of homes which corresponds to 20% of the 1000 homes. In one out of every five homes, the complementary questionnaire was applied, reaching a total sample of 787, of which 506 people were overweight and obese, and 281 had normal weight.

Inclusion criteria in this study were: a) having complete anthropometric data; b) having a normal BMI, overweight or obesity and c) complete dietary data.

Instruments

A quantitative questionnaire was applied to collect data on home characteristics, preventive aspects, comorbidities, hereditary background, alcohol and tobacco consumption, quality of care, international physical activity questionnaire (IPAQ, short version), and a food frequency questionnaire on the 7 days prior to the survey. Weight and height were measured with referenced techniques and standardized observers, the BMI was calculated (kg/m^2) in order to classify the participants according to their nutritional state: normal 18.50–24.99, overweight 25–29.9 and obese > 30 .²⁰

Diet

Dietary data were obtained by means of a food frequency questionnaire, which collected information on consumption of foods and beverages during the seven days prior to the application of the questionnaire; this was adapted from the questionnaire used in the 2012 ENSANUT.

To obtain dietary patterns, the composition of each food was analyzed (kcal, carbohydrates, protein, lipids, grams and fiber). 27 food groups were formed (Table 1) according to their nutritional characteristics, based on the Mexican System of Equivalents, 4th edition.²¹ Observations of a daily consumption of 500 kcal or less, and above 5 standard deviations were excluded, since they were considered to be biologically implausible.

Table 1
FOOD GROUPS ACCORDING TO NUTRITIONAL CHARACTERISTICS

FOOD GROUP	FOODS
Vegetables	Spinach, chard, purslane, cabbage, lettuce, celery, chayote, tomato, green tomato, onion, jicama, pumpkin flower, nopal, cucumber, carrot, beet, pumpkin, chili, broccoli
Fruits	Melon, papaya, pineapple, watermelon, strawberry, peach, orange, banana, pear, tuna, guava, mamey, grapefruit, plum, nanche, zapote, grape, tangerine, mango, apple, loquat, fig
Sweet Bread And Cookies	Cookies, cake, biscuit, donut, churros, sweet bread, hot cakes, bars
Sweet Cereals	Choco krispis, frosted flakes, corn flakes, granola
Low-fat Cereals	Amaranth, oats, wheat bran
Unfried Corn Derivatives	Corn, esquites, popcorn, corn tortillas
White Bread And Flours	White bread, bolillo, flour tortilla, crackers, fried rice, spaghetti, pasta, industrialized soups, whole-grain bread
Mexican dishes	Enchiladas, tamale, fat free sope, tacos, fat free quesadillas
Fried Mexican dishes	Sope with fat, quesadillas with fat, chilaquiles, tostada
Potato	Potato
Meats	Beef, pork, skinned chicken, skinless chicken
Fish	Fish, tuna in water, tuna in oil
Processed Meats	Ham, sausage, longaniza, bacon, pork rinds, pork rind with sauce
Eggs	Egg
Low-fat Dairy Products	Light milk, skim milk, light yogurt, cottage cheese, panela cheese, jocoque
High-fat Dairy Products	Requeson cheese, yogurt, lactose-free yogurt, asadero cheese, cotija cheese, whole milk, lactose-free milk, cream, yellow cheese, Oaxaca cheese
Oils	Avocado, oil
Fats	Butter with salt, butter without salt, margarine without salt, margarine with salt, lard
Oilseeds / Snacks	Natural peanut, natural nut, sunflower seeds, pistachios, pumpkin seeds, mixed seeds with salt
Fried Snacks	Japanese peanut, candied nut, fritters
Sweets	Chocolate, lollipops, sweet tamarind, tamarind with chili, sugar, honey, brown sugar, chocolate powder
Simple water	Simple water
Sugary drinks	Flavor water, sweet flavor water, boing, soda, fruit water, sweetened fruit water, fruit juice

FOOD GROUP	FOODS
Alcoholic drinks	Beer, rum, pulque
Desserts	Rice with milk, atole with milk

Total consumption in grams was obtained for each food, according to the total consumed portion, multiplied by the days of the week and by times per day. Then, a principal component factor analysis with orthogonal rotation (1.4 varimax) was carried out. Patterns were organized according to the factor loading of each food (> 0.3). Eigenvalues were figured for each factor and the interpretability of each component, in order to decide the number of extracted factors. The analysis was done for people with normal weight and people with overweight/obesity.

Physical Activity

To explore physical activity (PA), the Physical Activity Questionnaire was used (IPAQ) in its short version. The short version IPAQ reports PA by intensity (mild, moderate and vigorous), frequency (days per week) and duration (hours/minutes per day). We estimated the metabolic equivalent of task (MET) as a physiological measurement that expresses the energy cost (or calories) of physical activity. According to IPAQ, PA is classified as: mild < 600 met/min/week, moderate 600–2999 met/min/week and vigorous > 3000 met/min/week. Time that participants remained sitting at rest was also evaluated.

Statistical analysis

Descriptive statistical analyses were obtained for the main data of interest; the continuous variables are presented with means and standard deviation and the categorical variables by proportions and confidence intervals. The dietary patterns were analyzed through tertiles in which the mean value of each tertile was assigned to each variable; then a multivariate logistic regression model, adjusted by sex and age, was used to evaluate the associations between the demographic variables and those pertaining to health and lifestyle, and the different dietary patterns. Dietary patterns were considered to be the dependent variable and socioeconomic variables were the independent one. All the analyses were done with the Stata version 14 statistical package. CI 95% was calculated and the differences were considered to be statistically significant when $p < 0.05$.

Results

Table 2 shows the sociodemographic characteristics of people from both groups (normal and overweight/obese). The mean age of the group with overweight/obesity was greater than the group with normal weight, 45.9 (sd 15 years). Distribution by sex is similar for both groups, being women the ones who predominate in the sample. With respect to formal education, maximum schooling level for people with normal weight was junior high school, while for the group with overweight/obesity, it was elementary level. Distribution by state was similar for both groups, as well as occupation. The *Seguro Popular* (Popular Insurance) was reported as the main provider of health services, followed by *IMSS* (Mexican Institute for Social Security).

Table 3 presents a comparison of health variables, inherited family background and some lifestyles. Prevalence of DM2 and AHT was double in people with overweight/obesity, compared to those with normal weight. The report on physical activity and time spent in front of a screen was similar for both groups.

Dietary Patterns

Dietary patterns were determined for both of the studied groups (normal weight and overweight/obesity). The loading factor and assigned name are presented in Table 4. A positive loading factor indicates a positive association with the factor. The

highest load in a food group is the greatest contribution of the group to a specific factor.

Patterns in the group with normal weight explain 24% of the variance in the consumption of 27 food groups. Pattern 1, Prudent, was characterized by vegetable consumption (0.45), fruits (0.35), corn derivatives (0.30), low fat dairy products (0.33), oils (0.30) and water (0.30). Pattern 2, Western, is characterized by sweet bread (0.41), Mexican dishes with fat (0.35), potato (0.33), egg (0.37), candy (0.32) and water (0.32). Pattern 3, Varied, includes sweet cereals (0.57), Mexican dishes without fat (0.30), processed meats (0.30) and snacks (0.60).

Patterns in the second group (overweight/obesity) explain 23% of the variance in consumption of the 27 food groups. Pattern 1 was characterized as Prudent. It included fruit consumption (0.48), vegetables (0.49), potato (0.30) and plain water (0.30). Pattern 2 was defined as Western and was characterized by consumption of sweet bread and cookies (0.40), bread and flours (0.41), fried Mexican dishes (0.30), red meats and chicken (0.31), egg (0.36) and fats (0.40). Pattern 3 was defined as Varied and was composed of fats (0.30), snacks (0.30), plain water (0.55) and alcoholic beverages (0.61).

When analyzing composition with respect to kilocalories and macronutrients in the different patterns, in participants with normal weight (Table 4), the Prudent pattern has a distribution that is closer to the WHO's recommendations.²² Although it is high in caloric consumption, the greatest contribution comes from fruits and vegetables; besides, it has a high fiber content. The Western and Varied patterns have a great caloric contribution coming from lipids and a low fiber consumption. The Prudent pattern exists with a high contribution of carbohydrates coming from fruits and vegetables. The Western pattern has a high caloric consumption and great contribution of lipids from consumption of bread, flours, Mexican dishes with fat. The Varied pattern reported a high consumption of sugary beverages, contributing 90% of calories.

In carrying out the regression analysis, according to the characteristics of people with normal weight, with dietary patterns by state, we found that the Prudent diet pattern was more frequent in residents of Yucatan ($p < 0.001$) and Morelos (0.001), while people living in Hidalgo were less likely to follow this pattern (< 0.001). People who followed the Varied pattern more closely were the ones in the last quartile, who were married or living in common law marriage and who spent 2 to 4 hours in front of a screen. On the other hand, those who followed this pattern less closely were men, people in the first quartile, those who had never been married and those who spent 0 to 2 hours in front of a screen.

The association between dietary patterns and the variables of the overweight/obesity group showed that those who followed the Prudent pattern more closely were in the tertile with youngest age (0.001), that is, young people and those living in the state of Yucatan (0.001). Those who followed the pattern least closely were people in the highest tertile (0.001), residents of Hidalgo and Jalisco (0.001). For the Western pattern, people in Jalisco followed the pattern more closely (0.001); on the other hand, residents of Morelos followed it least closely (0.001). Finally for the Varied pattern, those who followed it most closely were women (0.01), people in the highest quartile (0.05), residents of Hidalgo (0.05) and those with elementary level education, while people who followed it least closely were those in the lowest quartile (0.05), residing in Yucatan.

Discussion

In this investigation we were able to identify several sociodemographic variables, such as educational level (basic), sex (female), marital status (marriage) and place of residence; these were associated with dietary patterns rich in sugar, saturated fats, refined flours and low in fiber, fruits, vegetables, whole grains, white meats and plain water. These patterns have been reported as risk factors for the development of diseases such as overweight, obesity and diabetes.

Of the total sub-sample, 65% have a body mass index above 25, which means excess weight, with women having a greater prevalence; this also implies that 70% of people in the sub-sample are female. These numbers coincide with data at the national level, such as the 2012 and 2016 National Health and Nutrition Surveys, which report the presence of overweight and obesity in women.^{23,24} This suggests the need for greater consideration of the gender perspective in the implementation of actions, programs and policies for the fight against non-communicable diseases (NCD).

The studied population lived in zones with high levels of social and economic marginalization and most of them reported having a basic schooling level. The predominant occupations were housewife and employees, and close to 50% had no social security. Diverse studies have documented that in populations with economic vulnerability, the educational level is low due to school drop-out in order to work and bring income to the household; this leads to decreased work opportunities and informal labor where there is no social security.²⁵⁻²⁷

With respect to physical activity, we found that in the three groups (normal weight, overweight and obesity), 50% reported doing mild physical activity and more than 60% stated spending up to two hours in front of a screen. Thus, we could classify the population as being scarcely active. Evidence points to the fact that the Mexican population performs mild physical activity as part of their daily routine, that is, they go places, carry out activities at home and at their work, but recommendations with respect to physical activity are that in order to achieve changes in body weight, moderate to intense physical activity must be performed.^{23,28-30}

Three dietary patterns were identified in each group of the sub-sample; however, these patterns are similar for people with normal weight and for those who are overweight or obese. We found a Prudent pattern, which consists of consumption of fiber, plant-based protein, low fat and plain water. We observed a Western pattern containing saturated fats, simple carbohydrates and animal-based protein. And finally, a Varied pattern with consumption of simple carbohydrates, animal-based protein derived from processed meats, saturated fats and sodium. These results coincide with what was reported in different studies in Mexican population, as well as with studies in different countries. The existing literature has described a Prudent pattern, containing healthy foods that are a protective factor for the development of non-communicable chronic diseases (NCCD). On the other hand, the Western and Varied patterns have been described, with foods that are rich in saturated fats, sodium, simple sugars, refined flours and low in fiber, which make them a risk factor for NCCD. This type of dietary pattern tends to increase the levels of glucose, lipids and blood pressure.³¹⁻³⁴

Conclusion

Dietary patterns with similar characteristics exist, but the Varied and Western diets are more associated with the development of diseases such as DM2 and arterial hypertension (AHT), due to their food composition that is high in sugar, saturated fats, refined flours and low in fiber, unsaturated fats and plain water.

Findings on populations with economic vulnerability and with risk factors for NCD, point to a challenge for the health system to strengthen the first level of healthcare in matters pertaining to nutrition, physical and social activity, in the fight against overweight, obesity and diabetes. Pharmacological treatment must be enriched towards comprehensive care, not only centered on the patient but taking into account the patient's environment, as well as social and economic conditions, to allow for better opportunities to improve their health condition.

Abbreviations

AHT. – Arterial Hypertension

BMI. - Body Mass Index

DM2. - Diabetes Mellitus Type 2

ENSANUT. - Spanish Acronym National Health and Nutrition Survey

IMSS. - Spanish Acronym Mexican Institute for Social Security

IPAQ. - International Physical activity Questionnaire

MET. - Metabolic Equivalent Task

NCD. – Non-Communicable Disease

NCCD. - Non-Communicable Chronic Diseases

PA.- Physical activity

WHO. - World Health Organization

Declarations

Ethics approval and consent to participate:

"This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the National Public Health Institute, ethics committee. Written informed consent was obtained from all subjects/patients."

Consent for publication:

Not applicable

Availability of data and material:

The datasets generated and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests

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Tables

TABLE 2.
SOCIODEMOGRAPHICAL CHARACTERISTICS OF ADULTS WITH NORMAL WEIGHT, OVERWEIGHT AND OBESITY.

VARIABLE	CATEGORY	Average, SD, % (N 281)	CI 95%	Average, SD, % (N 506)	CI 95%
		Normal weight		Overweight / Obesity	
Sex	Man	28.8	0.23 0.34	30.43	0.26 0.34
	Woman	71.1	0.65 0.76	69.57	0.65 0.73
Age	Years old	40.1 ± 17.1	38.1 42.2	45.9 ± 15.6	44.62 47.36
	< 30	38.4	0.32 0.44	17.39	0.14 0.20
	31 – 40	18.8	0.14 0.23	22.33	0.18 0.26
	41 – 50	14.5	0.10 0.19	22.92	0.19 0.26
	51 – 60	10.6	0.75 0.14	17.79	0.14 0.21
	> 60	17.4	0.13 0.22	19.57	0.16 0.23
State	Hidalgo	23.4	0.18 0.28	27.08	0.23 0.31
	Jalisco	23.4	0.18 0.28 0.23 0.34	23.91	0.20 0.27
	Morelos	28.4	0.19 0.29	21.94	0.18 0.25
	Yucatán	24.5		27.08	0.23 0.31
Scholarship	None	8.1	0.05 0.12	9.88	0.07 0.12
	Elementary school	30.2	0.25 0.35	46.84	0.42 0.51
	Junior high school	34.5	0.29 0.40	25.49	0.21 0.29
	High school	18.1	0.14 0.23	11.66	0.09 0.14
	College	8.5	0.05 0.12	5.73	0.04 0.08
	Postgraduate course	0.3	0.00 0.25	0.40	0.00 0.01
Occupation	Worker	4.6	0.02 0.78	4.15	0.02 0.06
	Employee	23.4	0.18 0.28	21.74	0.18 0.25
	Own business	14.5	0.10 0.19	15.61	0.12 0.19
	Work home	41.9	0.36 0.47	42.29	0.38 0.46
	Unemployed	4.6	0.02 0.07	4.49	0.03 0.07
	Student	3.2	0.01 0.06	0.79	0.00 0.02
	Retired	2.1	0.00 0.04	4.55	0.03 0.06
	Other	5.3	0.03 0.08	5.93	0.04 0.08
Civil status	Married / Free union	62.6	0.56 0.68	71.94	0.67 0.75
	Divorced / Separated	9.6	0.06 0.13	8.30	0.06 0.11
	Widow (er)	11.3	0.08 0.15	8.70	0.06 0.11
	Never married	16.3	0.12 0.21	11.07	0.08 0.14
Insurance	IMSS*	24.9	0.20 0.30	35.77	0.31 0.40

	ISSSTE**	1.0	0.00	0.03	3.16	0.01	0.05
	Popular Insurance	53.3	0.47	0.59	46.1	0.41	0.50
	SEDENA***	0.3	0.00	0.02	0.2	0.00	0.01
	Private	3.9	0.02	0.06	2.1	0.01	0.03
	None	16.3	0.12	0.21	12.6	0.10	0.15
Dx_BMI	Overweight	-	-		63.43	0.59	0.67
	Obesity	-	-		36.56	0.32	0.40

*IMSS (Mexican Social Security Institute)

**ISSSTE (Institute of Social Security and Services to the State Workers)

***SEDENA (Ministry of National Defense)

TABLE 3.
LIFESTYLES, PHYSICAL ACTIVITY AND CHRONIC DISEASES IN ADULTS WITH NORMAL WEIGHT, OVERWEIGHT AND OBESITY.

VARIABLE	CATEGORY	Average, SD, % (N 281) Normal weight	CI 95%	Average, SD, % (N 506) Overweight / Obesity	CI 95%
<i>Disease</i>					
	Diabetes	8.5	0.05 0.12	15.5	0.12 0.18
	Hypertension	7.8	0.05 0.11	19.3	0.16 0.23
<i>Physical activity</i>					
	Mild	48.7	0.42 0.54	42.2	0.44 0.53
	Moderate	27.7	0.22 0.33	29.8	0.26 0.33
	Vigorous	23.4	0.18 0.28	20.9	0.17 0.24
<i>Time in front of the screen</i>					
	0 – 2 hours	60.8	0.54 0.66	62	0.57 0.66
	2 – 4 hours	21.7	0.17 0.26	19.5	0.16 0.23
	> 4 hours	12.1	0.87 0.16	15.2	0.12 0.18
<i>Smokes</i>					
	Smokes	13.5	0.09 0.18	11.4	0.08 0.14
<i>MD Family Background</i>					
	Mother	18.5	0.14 0.23	23.3	0.19 0.27
	Father	9.6	0.06 0.13	15	0.12 0.18
<i>AH Family Background</i>					
	Mother	18.5	0.14 0.23	20.5	0.17 0.24
	Father	10.3	0.07 0.14	13.8	0.11 0.17

TABLE 4.
CHARACTERIZATION OF DIET PATTERNS

Variance 24%				Variance 23%		
Normal weight diet patterns				Overweight / Obesity Diet Patterns		
<i>Variable</i>	PRUDENT	OCCIDENTAL	VARIED	PRUDENT	OCCIDENTAL	VARIED
<i>Vegetables</i>	0.45	-	-	0.48	-	-
<i>Fruits</i>	0.35	-	-	0.49	-	-
<i>Sweet Bread And Cookies</i>	-	0.41	-	-	0.40	-
<i>Sweet Cereals</i>	-	-	0.57	-	-	-
<i>Low-fat Cereals</i>	-	-	-	-	-	-
<i>Corn Derivatives</i>	0.30	-	-	-	-	-
<i>Bread and Flours</i>	-	-	-	-	0.41	-
<i>Fat Free Mexican Dishes</i>	-	-	0.30	-	-	-
<i>Mexican Dishes With Fat</i>	-	0.35	-	-	0.30	-
<i>Potato</i>	-	0.33	-	0.30	-	-
<i>Meats</i>	-	-	-	-	0.31	-
<i>Fish</i>	-	-	-	-	-	-
<i>Processed Meats</i>	-	-	0.30	-	-	-
<i>Egg</i>	-	0.37	-	-	0.36	-
<i>Low-fat Dairy Products</i>	0.33	-	-	-	-	-
<i>High-fat Dairy Products</i>	-	-	-	-	-	-
<i>Oils</i>	-	-	-	-	-	-
<i>Fat</i>	-	-	-	-	0.40	-
<i>Oilseeds</i>	0.30	-	-	-	-	0.30
<i>Snacks</i>	-	-	0.60	-	-	0.30
<i>Sweets</i>	-	0.32	-	-	-	-
<i>Water</i>	0.30	0.32	-	0.30	-	0.55
<i>Sugary drinks</i>	-	-	-	-	-	0.61
<i>Alcoholic drinks</i>	-	-	-	-	-	-
<i>Desserts</i>	-	-	-	-	-	-
VARIANCE	2.1	1.9	1.9	2.05	1.96	1.78

TABLE 5.
SOCIODEMOGRAPHICAL CHARACTERISTICS BY SCORES OF DIETARY FACTORS IN 506 ADULTS WITH NORMAL WEIGHT.

VARIABLE	TERTILE 1			TERTILE 2			TERTILE 3		
	Prudent	Occidental	Varied	Prudent	Occidental	Varied	Prudent	Occidental	Varied
Sex									
MAN	26.6	25.5	24.5	35.1	31.9	23.4	24.7	29.1	38.7***
WOMAN	73.4	74.5	75.5	64.8	68.1	76.6***	75.2	70.9	61.3
AGE									
quartile 1	29.7	27.6	18.1	27.6	24.4	26.6	25.8	31.1	38.7*
quartile 2	26.6	23.4	21.2	24.4	27.6	27.6	16.1	16.1	18.2
quartile 3	19.1	23.4	22.3	22.3	20.2	22.3	33.3	31.1	30.1
quartile 4	24.4	25.5	38.3*	25.5	27.6	23.4	24.7	21.5	12.9
STATE									
Hidalgo	9.5	23.4	26.6	20.2	23.4	20.2	40.8*	23.6	23.6
Jalisco	23.4	25.5	17.1	20.2	24.4	25.5	26.8	20.4	27.9
Morelos	34.1*	24.4	36.1	34.1	25.5	28.7	17.2	35.4	20.4
Yucatán	32.9*	26.6	20.2	25.5	26.6	25.5	15.1	23.4	27.9
SCOLARSHIP									
Elementary school	36.1	45.7	50	39.3	30.8	36.1	39.7	38.7	29.1
Junior high school	38.3	31.9	26.6	34.1	35.1	34.1	31.1	36.5	43
High school	19.1	15.9	15.9	17.1	21.2	20.2	18.2	17.2	18.2
College	6.3	6.3	7.4	9.5	12.7	9.5	10.7	7.5	9.6
civil STATUS									
Married	57.4	64.8	59.5***	61.7.	63.8	67.1	68.8	59.1	61.2
Divorced	12.7	8.5	12.7	6.3	6.3	6.3	9.6	13.9	9.6
Widow (er)	12.7	11.7	18.1	11.7	13.8	9.5	9.6	8.6	6.4
Never married	17.1	14.8	8.5	20.2	15.9	17.1	11.8	18.2	22.5***
insurance									
IMSS	37.2**	27.6	30.8	20.2	29.7	26.6	17.2	17.2	17.2
popular INSURANCE	48.9	53.1	52.1	51.1	46.8	54.2	60.2**	60.2	53.7
OtHER	1.1	3.1	6.3	8.5	6.3	5.3	6.4	6.4	4.3
None	12.7	15.9	10.6	20.2	17.1	13.8	16.1	16.1	24.7
PHYSICAL ACTIVITY									
MILD	46.8	47.8	52.1	48.9	52.1	46.8	50.5	46.2	47.3

MODERATE	29.7	30.8	27.6	26.6	23.4	25.5	26.8	29.1	30.1
INTENSE	23.4	21.2	20.2	24.4	24.4	27.6	22.5	24.7	22.5
SEDENTARISM									
0-2 hours	63.8	63.8	51.1	60.6	61.7	70.2	58.1	56.9	61.2***
2-4 hours	17.1	18.1	23.4***	23.4	22.3	20.2	24.7	24.7	21.5
MORE THAN 4 HOURS	13.8	12.7	15.9	11.7	11.7	8.5	10.7	11.8	11.8

*<0.001 **<0.01 ***<0.05

TABLE 5.
SOCIODEMOGRAPHICAL CHARACTERISTICS BY SCORES OF DIETARY FACTORS IN 506 ADULTS WITH OVERWEIGHT AND OBESITY.

VARIABLE	TERTILE 1			TERTILE 2			TERTILE 3		
	Prudent	Occidental	Varied	Prudent	Occidental	Varied	Prudent	Occidental	Varied
Sex									
MAN	36.6	31.6	25.4	26.6	24.8	27.2	27.9	35.1	38.6
WOMAN	63.3	68.6	74.5**	73.4	75.1	72.7	72.1	64.8	61.3**
AGe									
Quartile 1	36.6*	24.6	23	21.8	29.5	24.2	22.6	27	33.9***
Quartile 2	27.8	22.4	24.2	22.4	23	23	21.4	23.9	24.4
Quartile 3	17.1	26.6	19.5	23.6	23	29.5	32.1*	23.2	23.8
Quartile 4	18.3	26.6	33.1***	31.9*	24.6	23	23.8	23.2	17.8
state									
Hidalgo	17.7	27.8	33.1***	26.6	26.6	18.9	36.9*	26.7	29.1
Jalisco	21.8	37.2*	20.7	18.9	21.8	24.8	30.9*	12.5	26.1
Morelos	18.3	16.5	15.9	26.6	18.3	23.6	20.8	30.9*	26.1
Yucatán	42*	18.3	30.1	27.8	33.1*	32.5***	11.3	29.7	18.4***
scolaRSHIP									
ELEMENTARY SCHOOL	52	54.4	59.1***	53.8	56.2	55.6	64.2	59.5	55.3
JUNIOR HIGH SCHOOL	30.1	24.8	26	26	27.2	28.4	30.2	24.4	22***
HIGH SCHOOL	12.4	15.9	13	13	8.8	7.6	9.5	10.1	14.2
COLLEGE	53	4.7	1.7	7.1	7.6	8.2	5.9	5.9	8.3
civil STATUS									
MARRIED	77.5	68.6	73.3	65.6	71.6	69.8	72.6	75.6	72.6
DIVORCED	6.5	10.6	7.6	10	9.4	10	8.3	4.7	7.1
WIDOW (ER)	5.33	8.8	9.4	9.4	10.6	10	11.3	6.5	6.5
NEVER MARRIED	10.6	11.8	9.4	14.7	8.2	10	7.7	13.1	13.6
INSURANCE									
IMSS	37.2	35.5	38.4	33.7	37.8	39	36.3	33.9	29.7
POPULAR INSURANCE	43.7	41.4	44.9	46.1	45.5	43.7	48.2	51.1	49.4
OTHER	7.1	5.3	6.5	6.5	5.9	4.7	2.9	5.3	5.3
NONE	11.8	17.7	10	13.6	10.6	12.4	12.5	9.5	15.4
PHYSICAL ACTIVITY									

MILD	43.2	51.4	50.3	52.6	45.5	43.7	51.7	50.6	55.5
MODERATE	31.8	27.2	27.2	30.7	33.1	33.7	26.7	29.1	28.5
INTENSE	24.8	21.3	22.4	16.5	21.3	22.4	21.4	20.2	17.8
SEDENTARISM									
0-2 HOURS	67.4	60.9	67.4	57.4	69.8	63.3	61.3	55.3	55.3
2-4 HOURS	15.9	17.1	15.3	19.5	18.3	20.1	23.2	23.2	23.2
MORE THAN 4 HOURS	14.2	17.7	14.2	18.9	10	14.2	15.5	17.8	17.2

*<0.001 **<0.01 ***<0.05