Revista Iberoamericana de las Ciencias Sociales y Humanísticas

RICSH

ISSN: 2395 - 7972

Estilo de vida e influencia en el desorden alimenticio un estudio de caso en el municipio de Malpaso, Chiapas, México

Lifestyle and influence on eating disorder a case study in the municipality of Malpaso, Chiapas, Mexico

Estilo de vida e influência no transtorno nutricional um estudo de caso no município de Malpaso, Chiapas, México

Octavio Grajales Castillejos
Universidad Autónoma de Chiapas, México
estadi@unach.mx

Sonia Ifigenia Villalobos López
Universidad Autónoma de Chiapas, México
Soniavil15@hotmail.com

Julio Guillén Velázquez
Universidad Autónoma de Chiapas, México
guillenv@unach.mx

Resumen

Este artículo muestra los resultados de un estudio de caso sobre el estilo de vida e influencia en el desorden alimenticio en derechohabientes que acudieron durante el periodo de la investigación a una Unidad Médica Familiar (UMF) ubicada en el municipio de Malpaso, Chiapas. **Objetivo**: determinar el estilo de vida e influencia en el desorden alimenticio en derechohabientes que acudieron a la consulta de medicina familiar en la UMF no. 41 de Malpaso, Chiapas. **Materiales y métodos**: se aplicó un cuestionario y, posteriormente, se contrastó con el instrumento FANTASTIC, ambos diseñados para determinar los estilos de vida. **Resultados y discusión***:* se determinó que, en general, los sujetos de estudio tienen un estilo de vida "malo", el cual se manifiesta en enfermedades crónico-degenerativas como diabetes mellitus tipo 1 (DM1), diabetes mellitus tipo 2 (DM2), hipertensión arterial

sistémica (HAS), dislipidemias, hiperuricemia y cáncer, por citar algunas. Asimismo, se encontró que 53.1% tiene sobrepeso, 26.8% tiene obesidad grado I, 8.4% obesidad grado II, 1.4% obesidad grado III y sólo 11.9% tiene peso normal. Al contrastar los resultados del cuestionario con el instrumento FANTASTIC, se corroboró que el estilo de vida de los encuestados es malo y con un alto consumo de alimentos ricos en calorías. **Conclusiones**: los sujetos de estudio de la presente investigación están en riesgo permanente de fallecer de manera prematura por tener un estilo de vida malo, que se verá reflejado en el corto y mediano plazo en la mayoría de los casos, con la aparición de enfermedades crónico-degenerativas.

Palabras claves: Estilo de vida, desorden alimenticio, sobrepeso, obesidad.

Abstract

This article shows the results of a case study about the lifestyle and influence on eating disorder in patients who came during the investigation period to Family Medical Unit (FMU) located in the municipality of Malpaso, Chiapas. **Objective**: to determine the lifestyle and influence on the alimentary disorder in patients who attended the family medicine consultation at FMU No. 41 of Malpaso, Chiapas. **Materials and methods:** a questionnaire was applied and later contrasted with the FANTASTIC instrument, both designed to determine lifestyles. **Results and discussion**: it was determined that, in general, the study subjects have a "bad" lifestyle, which is manifested in chronic degenerative diseases such as: DM1, DM2, HAS, dyslipidemias, hyperuricemia, CA, to name a few. It was also found that 53.1% are overweight, 26.8% have obesity grade I, 8.4% are obesity grade II, 1.4% are obesity grade III and only 11.9% are normal weight. When comparing the results of the questionnaire with the FANTASTIC instrument, it was corroborated that the lifestyle of the respondents is bad and with a high consumption of foods rich in calories. **Conclusions**: the subjects of the study of this research run a permanent risk of dying prematurely for having a bad lifestyle, and this will be reflected in short and medium term in most cases, with the appearance of chronic degenerative diseases.

Keywords: Lifestyle, eating disorder, overweight, obesity.

Revista Iberoamericana de las Ciencias Sociales y Humanísticas

RICSH

ISSN: 2395 - 7972

Resumo

Este artigo mostra os resultados de um estudo de caso sobre o estilo de vida e a influência sobre o transtorno alimentar em beneficiários que participaram durante o período da investigação para uma Unidade Médica Familiar (UMF) localizada no município de Malpaso, Chiapas. Objetivo: determinar o estilo de vida e a influência sobre o transtorno alimentar nos titulares de direitos que frequentaram a prática familiar no UMF no. 41 de Malpaso, Chiapas. Materiais e métodos: um questionário foi aplicado e, posteriormente, foi contrastado com o instrumento FANTÁSTICO, ambos projetados para determinar estilos de vida. Resultados e discussão: foi determinado que, em geral, os sujeitos do estudo têm um estilo de vida "ruim", que se manifesta em doenças crônico-degenerativas como diabetes mellitus tipo 1 (DM1), diabetes mellitus tipo 2 (DM2), hipertensão arterial (HAS), dislipidemias, hiperuricemia e câncer, para citar alguns. Do mesmo modo, verificou-se que 53,1% estão com sobrepeso, 26,8% têm obesidade grau I, 8,4% obesidade grau II, 1,4% obesidade grau III e apenas 11,9% têm peso normal. Ao contrastar os resultados do questionário com o instrumento FANTÁSTICO, foi corroborado que o estilo de vida dos entrevistados é ruim e com alto consumo de alimentos ricos em calorias. Conclusões: os sujeitos do estudo da presente investigação estão em permanente risco de morrer prematuramente por ter um estilo de vida ruim, que se refletirá no curto e médio prazo na maioria dos casos, com a aparência de doenças crônicas. - degenerativa.

Palavras-chave: Estilo de vida, transtorno alimentar, excesso de peso, obesidade.

Fecha Recepción: Octubre 2016 **Fecha Aceptación:** Abril 2017

ISSN: 2395 - 7972

Introduction

Undoubtedly, the lifestyle of a person or social group is reflected in social relationships and health status. The bad lifestyles and the disordered consumption of foods rich in fats and sugars lead to excess weight and obesity in people of all ages, as well as the appearance of diseases such as high blood pressure, diabetes mellitus and other heart conditions. .

It is evident that each country has its own lifestyle and food customs that characterize them; Many of them are informed of the consequences of a disorderly life, in terms of lifestyles and diet. Therefore, they should promote their habits through constant exercise, thus reducing the early appearance of overweight and obesity in children and adolescents. Currently, derived from international policies, such as that of the WHO, some countries have established in their public policies strategies to counteract overweight and obesity; However, the customs, the educational level and the lack of economic resources to carry out a sufficient, balanced, balanced and innocuous diet have made it very difficult to diminish this trend in countries such as Mexico and the United States of America, since, for several years, have presented problems of obesity and overweight.

In urban areas is where this phenomenon is most appreciated, due to sedentary lifestyle, fast foods made with excess reuse oils in most cases, excessive consumption of alcohol, bottled sodas and junk foods such as chips, industrialized treats , bread and cookies made with refined flours, chocolates, among other foods high in calories, in addition to being low in vitamins and minerals. Despite having healthy foods such as meat, dairy products, fruits and vegetables, most people who live in urban areas prefer to eat processed foods on the street. One of the reasons is the low cost; on the other hand, the high supply of fast-prepared foods, which are generally high in fat (tacos, empanadas and bottled drinks in most of the states of Mexico).

Bad lifestyles, high energy content diets and sedentary lifestyle are determining factors in excessive weight gain in people, mainly adults, which have as a consequence cardiovascular and other chronic degenerative diseases. The present case study reveals the lifestyles and type of diet that a group of people living in a particular Chiapas municipality (Malpaso) have, which, like other municipalities in the state, consume foods with a high energy content such as tacos, empanadas, toasts, hamburgers and hotdogs, as well as other regional foods prepared at home, such as pozol (a drink made with corn, cocoa, sugar and cinnamon), tamales and traditional sweets, to name a few for frequent consumption.

Lifestyle

Dr. Morales Calatayud understands by lifestyles the set of behaviors that a specific individual consistently practices and maintains in their daily lives, and that may be relevant for the maintenance of their health, or that puts them at risk for the disease. Wilson defines it as the set of individual decisions that affect health and over which there is some degree of voluntary control (Calvo, 2004). The sedentary lifestyle, more and more frequent, is an important determinant of obesity as shown by a cross-sectional study of 5,814 individuals that shows that sedentary lifestyle was directly associated with the metabolic syndrome and body mass index (Cabrera, 2007).

Lifestyles are identified by patterns of behavior that affect the life of an individual or a group of people and have the same customs, attitudes, values and rules. Reaven (1998), in the 1980s, observed that dyslipidemia, arterial hypertension and hyperglycemia were conditions frequently associated with an inadequate lifestyle. Other authors have highlighted that, in subjects who accuse behaviors and preferences related to a healthy lifestyle as a balanced diet, regular practice of physical activity, lower consumption of alcohol, tobacco or other drugs, the risk of presenting cardio-metabolic pathologies was less than compare with their peers who showed an inappropriate lifestyle (Ramírez, 2012).

In this context, it is very important to identify the customs of each individual or social group in particular so that the corresponding governmental instances can intervene in the prevention of those diseases that can be avoided, through strategies that help to raise awareness among the population in collective and individually, and that contribute to the reduction of risk and occurrence of preventable diseases caused by bad lifestyles, which contribute to people of all ages suffering from overweight and obesity and, consequently, to the appearance of diseases mentioned above.

Overweight is defined as excess body weight compared to height and obesity as excess body fat (Amador, 2000). Obesity is a chronic, complex and multifactorial disease that can be prevented. It is a process that usually begins in childhood and adolescence, which is established by an imbalance between intake and energy expenditure (Fernández, 2005). On the other hand, obesity was considered by the World Health Organization (WHO) in 1998 as a nutritional disease and worldwide epidemic. For a disease to manifest clinically, it is necessary that it develops in an adverse environment, in which lifestyle, diet and socioeconomic aspects play an important role (Casanueva, 2001).

Since a decade ago, the figures are alarming since approximately more than one billion people in the world are overweight, of which about 300 million are obese. These are immense figures that are handled by WHO and that have reached the character of a global epidemic (Martínez, 2006). The Institute of European Food Studies (IEFS) promoted, in 1997, a study with the objective of determining the proportion and sociodemographic characteristics of the obese population, as well as their attitudes towards food and physical exercise. In it, the 15 Member States of the European Union participated, through the selection of samples of 1,000 subjects over 15 years of age from each country. Among other sociodemographic variables, weight and height were asked, calculating the body mass index (BMI) of each individual. The results obtained in the IEFS study were: the United Kingdom showed the highest prevalence of obesity and overweight (12%), followed by Spain (11%), Germany (8%), being lower in Italy, France and Sweden (7 %). Likewise, it was observed

that the prevalence of obesity is higher among women than among men, with the prevalence of overweight being higher among men. (Varo, 2002)

By 2012, most of the countries of Latin America and the Caribbean, overweight already affected more than half of the adult population, due to the high economic and social cost of this problem. The Organization of the United Nations for Food and Agriculture (FAO) estimates that Chile, Mexico and the Bahamas lead with 63, 64 and 69%, respectively. The proportion of women with obesity exceeds that of men and, in more than 20 countries, the difference is greater than 10 percentage points (FAO, 2013).

In 2016, more than 1.9 million adults aged 18 years and over were overweight, of which more than 650 million were obese, which represents 39% of adults in this age range (39% of men and 40% of women) were overweight. Specifically, about 13% of the world's adult population (11% of men and 15% of women) were obese (WHO, 2016).

In Latin America, the prevalence of obesity is increasing in a similar way to more developed societies, although the marked cultural, economic and racial heterogeneity of its population generates conditions in which obesity can coexist. In the city of Buenos Aires, the Argentine Society of Obesity and Eating Disorders (SAOTA) conducted a population survey, according to which 27.63% of women and 43.15% of men were overweight, and 10.44% of women and 12.18% of males, obesity (Montero, 2002).

According to the IMC cut-off points proposed by the WHO, the prevalence of overweight and obesity in Mexico in adults aged 20 years or older was 71.3% (representing 48.6 million people). The prevalence of obesity (BMI ≥30 kg / m2) in this group was 32.4% (IC95% = 31.6, 33.3) and overweight was 38.8% (IC95% = 38.1, 39.6). Obesity was higher in the female sex (37.5%, 95% CI = 36.5, 38.6) than in the male (26.9%, 95% CI = 25.7, 28.0), in contrast to the overweight, in which the male sex had a prevalence of 42.6%, (IC95% = 41.3, 43.8) and the feminine of 35.5%, (IC95% = 34.5, 36.5). The combined prevalence of

overweight and obesity is only 3.6 percentage points higher in women (73.0%, 95% CI = 72.0, 74.0) than in men (69.4%, 95% CI = 68.2, 70.6). The age group with the highest prevalence of obesity is that of adults aged 40 to 49 years (40.5% CI95% = 38.8, 42.2), however, in the highest degrees of obesity (grade II and III), observed a higher prevalence in adults 50 to 59 years (14.3%, IC95%=12.8, 15.9) (Barquera, 2013).

In the city of Guanajuato, Mexico, a study of teacher health assessment was conducted during the period May-October 2005. It was found that only a third of the total participants had normal weight. The prevalence of overweight was 51% in men and 36% in women; meanwhile, obesity affected 20% of men and 22% of teachers (Rodríguez, 2006).

In Morelia, Michoacán, with the study of eating habits of the sample obtained from 300 people surveyed, 60% of mild obesity, 13.3% of severe obesity and 7.3% of acute obesity were found (Arias, 2006). In a comparison established by Martorell among nine countries in Latin America, Mexico ranked second in obesity prevalence (according to body mass index> 30) with a value of 10.4% among women aged 15-49 years (Villa, 2004). In Chiapas, through the results of ENSANUT 2006, it is shown that 26.9% of adolescents are overweight and the combined prevalence of overweight and obesity for urban localities was 29.9%.

Fat is the root of the problem because the adipocyte of abdominal adipose tissue has, in addition to its energy reserve function, a secretory activity of various adipokines that make it an authentic endocrine organ. Among these products are: a) The non-esterified fatty acids (NEFA), whose excess facilitates the appearance of insulin resistance. b) Various cytokines (TNF, adiponectin, leptin), which act as insulin antagonists and, in the case of leptin, as a regulating factor of appetite and energy balance. c) The inhibitory factor of plasminogen activation (PAI-1) and various inflammatory adipocytokines, which together contribute to the establishment of a prothrombotic and proinflammatory state as the increase of the ultrasensitive serum reactive C-reactive protein (CRPU). For these reasons, excess fat increases the risk of stroke, musculoskeletal disorders, facilitates sleep apnea, as well as cancer and multiplied by three the risk of hypertension, dyslipidemia, coronary heart disease and type 2 diabetes (Bellido, 2006).

Zacarías (2004) considers that obesity is the most powerful risk factor for diabetes mellitus type 2, and the prevalence is 2.9 times higher for overweight men than in overweight patients between 20 and 75 years of age. Weight gain is associated with an increase in insulin synthesis and a higher likelihood of resistance to insulin, which leads to hyperinsulinemia and, finally, type 2 diabetes. Obese patients have increased levels of free fatty acids that can be increased. Interfere with insulin sensitivity in the muscle. Rodríguez (2003) alludes to the fact that instruments to measure lifestyle are scarce: the FANTASTIC questionnaire is a generic instrument designed in the family medicine department of McMaster University of Canada, in order to help primary care physicians to know and measure the lifestyles of their patients. It is a standardized questionnaire with 25 closed items that explore nine domains about physical, psychological and social components of lifestyle.

- Family-friends
- Physical activity
- Nutrition
- Tobacco-toxins
- Alcohol
- Sleep-seatbelt-stress
- Personality type
- Interior (anxiety, worry, depression)
- Career (work)

The Spanish version of the instrument was obtained through English-Spanish translation and Spanish-English translation by expert translators -independent and blinded- until obtaining similar versions in English; It was approved by a panel of health professionals for better understanding by Mexican patients.

In this context, the nutritional disorder brings with it the excessive consumption of foods high in calories and, consequently, the early appearance of overweight and obesity, which trigger chronic-degenerative, complex and multifactorial diseases. It is a process that

usually begins in childhood and adolescence, which is established by an imbalance between intake and energy expenditure (Torres, 2004). Obesity is an important problem, to the point of being defined as a pandemic, since it affects people from five continents. According to WHO data, more than one billion people are overweight and a third of them are in clinical obesity. Developing countries are affected in these trends with a greater degree of acceleration compared to developed countries. The problem of obesity has been described as the most important within the nutritional conditions with direct involvement in the development of chronic diseases such as diabetes mellitus type 2, dyslipidemias, hypertension, cardiovascular diseases etc. In a comparison established by Martorell among nine countries in Latin America, Mexico ranked second in the prevalence of obesity (Villa, 2004). In Mexico, the Mexican Society of Nutrition and Endocrinology (SMNE) concludes, after reviewing the available epidemiological studies, that obesity has become one of the greatest public health problems in our country by conditioning the expression of the two pathologies which cause the greatest number of deaths: diabetes mellitus type 2 and cardiovascular diseases. From this disease, the absolute need to create national health programs that promote prevention and decrease in prevalence. In order for these programs to be implemented, the active and committed participation of all the actors involved in the educational, economic, strategic planning and medical care processes will be required. (Arellano, 2004).

Based on observations of the behavior of this pathology in the study population, comorbidity, its difficult control and high cost, have marked an interest to carry out the present study and perform activities whose purpose is to improve eating habits and increase the physical activity in the population, through education for health, as actions that allow improving the determinants of health, training and informing, training people, developing activities that favor the participation and interaction of the patient and their family, say, that the family doctor practices a participatory and dynamic health education. In this way, you must teach people to make their own decisions about their health, with better knowledge of the cause.

Matherials

The objective of the study was to determine the lifestyle and its influence on the nutritional disorder in right-holders who attended the family medicine clinic in the UMF no. 41 of Malpaso, Chiapas, through the application of a questionnaire that allowed identifying the BMI and some chronic-degenerative diseases and, later, contrasting it with the FANTASTIC instrument.

Methodology

For the development of the research, it was decided to carry out a case study, since, according to the assumptions of Latorre (1996), it fulfills the following advantages that it indicates in the use of the case study:

- It can be a way to deepen a research process based on the first analyzed data.
- It is appropriate for small-scale research, within a limited framework of time, space and resources.
- It is an open method to return to other personal conditions or different institutions.
- It leads to decision-making, to getting involved, to unmasking prejudices or preconceptions, etc.

Process

The study consisted. in its first phase. in interviewing a convenience sample of 148 beneficiaries who met the selection criteria. With prior consent, a questionnaire was applied that measured sociodemographic variables, family, habits, diet and clinical data to which validity of content, appearance and content was carried out by two experts. Anthropometric measurements were made (weight, height, BMI, weighed with previous adjustment in scale with stadiometer, height was obtained with the patient standing at a Frankort angle, without shoes and minimal clothing).

In a second phase, the FANTASTIC instrument was applied in a self-administered manner in a classroom of the unit, where the research was carried out on the same 148

beneficiaries. Differences were sought in the ratings of the instrument stratifying the patients by sex and age groups, as well as differences in the values of somatometric parameters between worse and better qualification; the median of the ratings and the five levels of qualification proposed by the creators of the instrument was taken as the cut-off point. The items present five response options with a numerical value of 0 to 4 for each one, and are scored by means of a Likert scale, with a score of 0 to 100 points for the whole instrument:

- <39 points = danger exists
- 40 to 59 points = bad
- 60 to 69 points = regular
- 70 to 84 points = good
- 85 to 100 points = excellent

Results and discussion

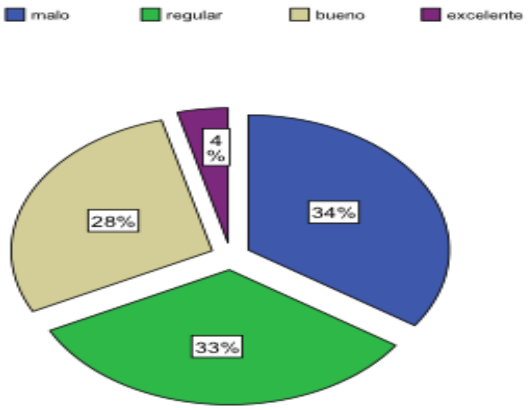
We surveyed 148 beneficiaries of the Mexican Institute of Social Security (IMSS), who went to the Family Medical Unit No. 41 of Malpaso, Chiapas, which found that 76.4% is male and 23.6% is female.

- The age range of the respondents is 19-30 years, which corresponds to 8.1%, 31-40 years to 12.2%, 41-50 years to 15.5%, 51-60 years to 13.5% and over 60 years to 50.7%
- Schooling is 47% in basic education, 50% has a baccalaureate, 0.9% finished their higher education, 0.7% reported not having studied and 1.4% did not respond.

Specifically, the use of FANTASTIC was the instrument to determine the lifestyle of the patients who attended the family medicine clinic in the UMF No. 41 of Malpaso, Chiapas. During the months of November 2014 to July 2015, the results were as follows:

Regarding the search for differences in the ratings of the stratified instrument, the results are not very encouraging, since the majority are located in the bad and regular grades, just over a quarter of them classified as good and only a minimum part as excellent. , according to the parameters established by the FANTASTIC (see Figure 1).

Figure 1. Resultados del FANTASTIC.

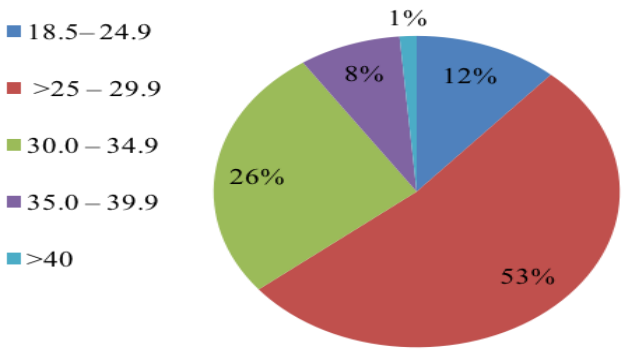


Source: Instrumento aplicado a pacientes en estudio en la UMF 41, Malpaso Chiapas.

The parameter to know the weight-height relationship of the respondents, was determined through the body mass index (BMI), which shows that 11.9% have normal weight, 53.1% are overweight, 26.8% have obesity grade I, 8.4% obesity grade II and 1.4% obesity grade III (see Figure 2).

When analyzing this same information by sex, it was found that 54 out of 100 women are overweight and 53 out of 100 are men. On the other hand, 43 out of 100 women have some type of obesity, while, of men, 40 out of 100 suffer from it.

Figure 2. Índice de masa corporal.



Source: Encuesta aplicada a pacientes en estudio en la UMF 41, Malpaso, Chiapas.

Regarding the chronic-degenerative diseases presented by the beneficiaries, it was found that more than half of the respondents suffer from a disease (56.1%), which indicates the magnitude of the problem. On the other hand, patients reported that 25% of their relatives also have some of these conditions, which suggests that some of these diseases could be due to hereditary issues (see Table 1).

Table 1. Padece alguna enfermedad del grupo de estudio.

Variable	Encuestado	Familiar
Diabetes mellitus tipo 1 (DM1)	.7	.7
Diabetes mellitus tipo 2 (DM2)	7.4	5.4
Hipertensión arterial sistémica (HAS)	22.3	7.4
Dislipidemias	19.6	7.4
Hiperuricemia	4.7	2.7
Cáncer	1.4	1.4
Ninguna	43.9	75.0
Total	100.0	100.0

Source: Encuesta aplicada a pacientes en estudio en la UMF 41

As for the food disorder, the consumption of junk foods and other high energy content, such as sugars and fats, are frequently consumed by respondents, as they referred to it. An example of this is the consumption of fried tacos every day or three times a week (20.9%). Likewise, it is observed that 30.4% consume soft tacos three to four times a week.

In addition, the majority (66.9%) reported taking bottled drinks at least three times a week; the intake of cookies is 34.5%.

Regarding the consumption of meats, it was identified that the majority of respondents (68.2%) eat red meat more than three times a week. This is due to the frequent consumption of tacos and other dishes made with meat. It is striking that the consumption of fish is sporadic, since the product is not expensive because, in the municipal seat of Malpaso, there is availability of fish for being on the side of the Grijalva River.

The consumption of vegetables is insufficient, since only 38.6% do so more than three times a week; the rest (61.l4%) do it once a week. Fruit intake is even scarcer, since only 23.6% eat fruit more than three times a week. On the other hand, milk consumption is high (61.4%), since the respondents reported doing it at least three times a week.

Regarding the consumption of corn tortillas, 84.5% of the respondents consume them every day. Additionally, 18.3% reported taking cocoa pozol (a drink made from cooked corn, cinnamon and cocoa), which increases the consumption of calories.

Conclusions

The World Health Organization considers that at least 80% of premature deaths from coronary heart disease and cerebrovascular disease could be avoided with a healthy diet, regular physical activity and avoiding the use of tobacco.

Consequently, the study subjects of the present investigation are at permanent risk of dying prematurely by having a bad lifestyle, which will be reflected in the short and medium term in most cases, with the onset of diseases chronic-degenerative diseases such as diabetes mellitus type 1 (DM1), diabetes mellitus type 2 (DM2), systemic hypertension (HAS), dyslipidemias, hyperuricemia and cancer, to name a few.

In general, the results show the bad lifestyle of the study subjects, both in FANTASTIC, and in the survey applied to identify overweight and obesity.

The eating disorder is present, since the consumption of foods rich in calories is high in the diet of the respondents. Also, it was identified that men are the most affected, due to the fact that most of the time they spend outside the home, so their intake of junk products increases, as well as the consumption of tobacco and alcohol.

Finding the right method to determine the lifestyle and type of diet carried by various social groups around the world is not the problem. In fact, today there are several methods that allow good results. The problem in itself lies in how to influence so that these social groups have a healthy lifestyle, without interfering in their culture and that, in addition, contributes to diminish the risks of suffering from chronic-degenerative diseases at an early age, since the context , habits and customs are very complex and specific in each social group immersed in this problem.

Bibliography

Amador, M. (2000) "La obesidad en la adolescencia" OPS: 2000: Publicación científica no. 576.125.

Arellano Montaño, S., y Cols. (2004) La Obesidad en México. Sociedad Mexicana de nutrición y endocrinología. Octubre 2004 vol. 12,(4)supl.3,pp 80-87.

Arias Llerenas RA., Bautista Montaño, E., Bocanegra Hernández, R. (2006) Hábitos alimenticios en personas con obesidad de 30 a 50 años de edad en Morelia Michoacán. Univ. Michoacán san Nicolás de Hidalgo, Mayo 2006.

Barquera, S., Campos-Nonato I. Hernández-Barrera L., Pedroza-Tobías A., Rivera-Dommarco JA., (2013) Prevalencia de obesidad en adultos mexicanos, ENSANUT 2012. Salud Pública Mex 2013;55 supl 2:S151-S160.

Bellido y cols. (2006) El paciente con exceso de peso: guía práctica de actuación en Atención Primaria Rev Esp Obes 2006; 4 (1): 33-44

Cabrera de León A., Rodríguez Pérez Mc., Rodríguez Benjumeda L., (2007) Sedentarismo: tiempo de ocio activo frente al porcentaje del gasto energético. Rev. Esp. Cardiol. 2007; 60(3):244-50.

Calvo González, A., Fernández Machin LM., Guerrero Guerrero, L., (2004) Estilos de vida y factores de riesgo asociados a la cardiopatía isquemia. Rev. Cubana Méd. Gen intgr 2004;20(3): 1-13.

Casanueva, E., Morales M. (2001) Nutrición del adolescente. En: Nutriología Médica. 2ª. Ed. México. Panamericana. 2001. 88-101

Fernández Segura ME. Manejo practico del niño obeso y con sobre peso en pediatría de atención primaria. Rev.foro pediátrico 2005;vol II,sup 1:61-69.

FAO. 2013. El Estado Mundial de la Agricultura y la Alimentación. FAO, Roma.

Latorre, A., Del Rincón, D., & Arnal, J. (1996). *Bases metodológicas de la investigación educativa.* Barcelona: GR92.

Martínez Sopena, J. (2006) Paz redondo del rio M. Valoración del estado nutricional del obeso: estimación de la masa grasa. Boletín de la sociedad pediátrica de Asturias,Cantabria.2006;46:275-291.

Montero, JC. (2002) Epidemiología de la obesidad en siete países de América latina. Form contin nutr obes 2002; 5(6):325-30.

Organización Mundial de la Salud, 2016: consultada en: http://www.who.int/mediacentre/factsheets/fs311/es/

Reaven, GM. Banting lecture 1988. Role of insulin resistance in human disease. Diabetes. 1988;37:1595-607.

Ramírez-Vélez, R., & Agredo Zúñiga, R. (2012) Fiabilidad y validez del instrumento "Fantástico" para medir el estilo de vida en adultos colombianos. Rev. salud pública, 14(2) 2, p. 226-237, doi:https://doi.org/10.1590/S0124-00642012000200004

Rodríguez Guzmán L, Díaz Cisneros FJ, Rodríguez Guzmán E. (2006) Sobrepeso y obesidad en profesores, Anales Fac. Med. Lima. 2006;76(3): 224-227.

Rodríguez Moctezuma R, López Carmona C, Munguía Miranda JL. (2003) Validez y consistencia del instrumento Fantastic. Rev. med. IMSS 2003; 41(3):211-220.

Torres Tamayo M. (2004) ¿Cuáles son los factores de riesgo a que conlleva la obesidad?. Endocrinología y nutrición Oct-Dic 2004; 12 (4):s114-s116.

Varo, J., Martínez-González, M. A. y Martínez, J. A. (2002). "Prevalencia de obesidad en Europa." Anales del Sistema Sanitario de Navarra 25(1): 102-108.

Villa, A. R., Escobedo, M. H., & Méndez-Sánchez, N. (2004). Estimación y proyección de la prevalencia de obesidad en México a través de la mortalidad por enfermedades asociadas. Gac Méd mex, 140(2), S21-26.

Zacarías Castillo R, Mateos Santa cruz N. (2004) ¿Cuáles son las complicaciones médicas de la obesidad?. Rev. endocrinología y nutrición. Oct-dic 2004;12(4) supl 3:109-113.

Rol de Contribución	Autor(es)
Conceptualización	Octavio Grajales Castillejos
Metodología	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Software	Octavio Grajales Castillejos
Validación	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Análisis Formal	Octavio Grajales Castillejos
Investigación	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Recursos	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Curación de datos	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Escritura - Preparación del borrador original	Octavio Grajales Castillejos
Escritura - Revisión y edición	Octavio Grajales Castillejos Julio Guillén Velázquez Sonia Ifigenia Villalobos López
Visualización	Octavio Grajales Castillejos
Supervisión	Octavio Grajales Castillejos
Administración de Proyectos	Octavio Grajales Castillejos
Adquisición de fondos	Octavio Grajales Castillejos