Article **Journal-Health Education and Welfare**
June 2023, Vol.7 No.12 31-34

Determination of lipid levels and their association with eating habits and customs in the municipality of Hecelchakán, Campeche

Determinación de niveles lipídicos y su asociación con los hábitos alimenticios y costumbres en el municipio de Hecelchakán, Campeche

AKÉ-CANCHÉ, Baldemar´†, LÓPEZ-GUTIÉRREZ, Tomás Joel´*, GUTIÉRREZ-ALCÁNTARA, Eduardo Jahir´ and SARABIA-ALCOCER, Betty´´

´ *Facultad de Ciencias Químico-Biológicas, Universidad Autónoma de Campeche, México.*
´´ *Facultad de Medicina, Universidad Autónoma de Campeche, México.*

ID1st Author: *Baldemar, Aké-Canché* / **ORC ID:** 0000-0003-2636-5334

ID 1st Co-author: *Tomás, López-Gutiérrez* / **ORC ID:** 0000-0002-3554-1347

ID 2nd Co-author: *Eduardo Jahir, Gutiérrez-Alcántara* / **ORC ID:** 0000-0003-3659-1693

ID 3rd Co-author: *Betty, Sarabia-Alcocer* / **ORC ID:** 0000-0002-7912-4377

DOI: 10.35429/JEHW.2023.12.7.31.34 Received January 25, 2023; Accepted June 30, 2023

Abstract

Objective: to evaluate the association of lipid levels in the population of the municipality of Hecelchakán in the state of Campeche in relation to eating habits and customs as a risk factor in young adults from 20 to 40 years and average adults from 41 to 60 years. Methodology: An observational, descriptive, cross-sectional, and retrospective clinical research study was carried out with 100 young adults (20-40 years) and middle adults (41-60 years) inhabitants belonging to the municipality of Hecelchakán in the state of Campeche. A survey was applied to determine the weight, height and BMI of the inhabitants and a venous blood sample was taken after fasting from 8 to 12 hours to analyze the lipid profile of each patient. Contribution: It was possible to observe that in the 100 inhabitants of the town of Hecelchakán that at an older age there is a tendency to find a decrease in "good" cholesterol (HDL-cholesterol (<35 mg/dL) and higher values of triglycerides, VDL and LDL cholesterol which can be attributed to the unbalanced eating habits of the population, which habitually consume pork-based foods.

Eating habits, Lipid levels, Hecelchakán

Resumen

Objetivo: evaluar la asociación de los niveles de lípidos en la población del municipio de Hecelchakán del estado de Campeche con relación a los hábitos alimenticios y costumbres como factor de riesgo en adultos jóvenes de 20 a 40 años y adultos medios de 41 a 60 años. Metodología: Se realizó un estudio de investigación clínica de tipo observacional, descriptivo, transversal y retrospectivo con 100 habitantes adultos jóvenes (20-40 años) y adultos medios (41-60 años) pertenecientes al municipio de Hecelchakán del estado de Campeche. Se aplicó una encuesta para determinar el peso, talla y el IMC de los habitantes y se les tomó una muestra de sangre venosa con previo ayuno de 8 a 12 horas para analizar el perfil lipídico de cada paciente. Contribución: Se pudo observar que en los 100 habitantes del poblado de Hecelchakán que a mayor edad hay tendencia a encontrar disminución en el colesterol “bueno” (colesterol-HDL (<35 mg/dL) y mayores valores de triglicéridos, VDL y colesterol LDL que se puede atribuir a los desbalanceados hábitos alimenticios de la poblacional consumir habitualmente alimentos a base de cerdo.

Hábitos alimenticios, Niveles de lípidos, Hecelchakán

Citation: AKÉ-CANCHÉ, Baldemar LÓPEZ-GUTIÉRREZ, Tomás Joel, GUTIÉRREZ-ALCÁNTARA, Eduardo Jahir and SARABIA-ALCOCER, Betty. Determination of lipid levels and their association with eating habits and customs in the municipality of Hecelchakán, Campeche. Journal-Health Education and Welfare. 2023. 7-12:31-34.

* Author's Correspondence: (E-mail: tojlopez@uacam.mx)
† Researcher contributing as first author.

Introduction

Cardiovascular diseases (CVD) are the leading cause of death among non-communicable diseases worldwide, with dyslipidemias being a frequent irregularity and major risk factor.

Diseases in the world, with dyslipidaemias being a frequent irregularity and a major risk factor. Cholesterol is one of the lipids of major importance for the synthesis of hormones and vitamins. Low-density lipoprotein (LDL) is the transport of cholesterol to many tissues and high-density lipoprotein (HDL) transports excess cholesterol as well as oxidized cholesterol for elimination in the liver. Thus, LDL and HDL cholesterol levels are used as a marker to establish an increase in cholesterol levels due to consumption of high-cholesterol diets, hereditary and environmental factors. Although the prevalence of dyslipidemias (blood lipid disorders characterized by increased cholesterol levels or hypercholesterolemia) is variable in each region of the world and depends on genetic, cultural, socio-economic and environmental factors, it has been estimated that on average worldwide more than 50% of the entire population has this metabolic disorder.

Bad eating habits as well as the conditioning factors demanded by today's society, such as a busy life with high levels of stress, the consumption of junk food with empty calories, mean that metabolic disorders occur more frequently in today's population. The municipality of Hecelchakán-Campeche is popularly known for the preparation of "Cochinita Pibil", a typical local dish; it is "exquisite and economical", however, this dish leads to multiple ailments due to its low nutritional level and high lipid content. Frequent and excessive intake of this product could lead to a risk of dyslipidemia due to its ingredients and way of preparation. Dyslipidemia is the starting point for the origin of cardiovascular disease (CVD), which together with type 2 diabetes mellitus (DM2), form the set of risk factors for what we call the metabolic syndrome. The aim of this study was to evaluate the association of lipid levels in the population of the municipality of Hecelchakán in the state of Campeche in relation to dietary habits and customs as a risk factor in young adults aged 20 to 40 years and middle-aged adults aged 41 to 60 years.

Methodology to be developed

The cross-sectional descriptive design, the study was carried out on 50 men and 50 women of adult age in the municipality of Hecelchakán, which is located 82 km northwest of the state of Campeche.

Information on eating habits and knowledge about healthy habits was collected from each study participant by means of a survey (Appendix 1). They were also asked to read and sign the Informed Consent form (Appendix 2).

In the second stage, the sample was taken, after fasting for 8 to 12 hours (it was noted that during this period they could only drink water) for the extraction of the venous blood sample.

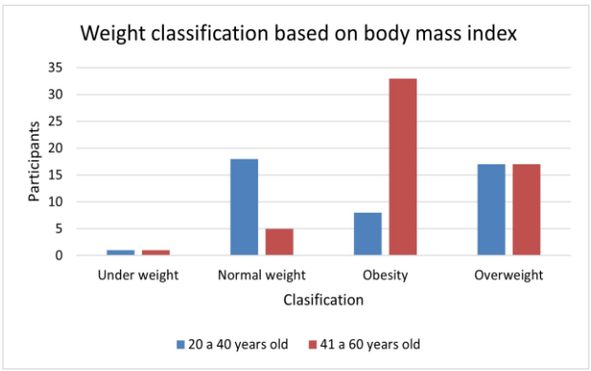
In the third time the samples were taken to a clinical analysis laboratory to determine the lipid profile (triglycerides, cholesterol, HDL (high density cholesterol), VLDL (very low density cholesterol) and LDL (low density cholesterol).

Results

The results obtained are based on surveys applied to adults and middle-aged people in the municipality of Hecelchakán in the state of Campeche who were given a blood sample to determine lipid levels. The survey is based on 16 questions with a series of multiple choices that the respondent answered according to his or her routine or habit (Annex 1).

Figure 1 indicates the average anthropometric measurements which were used for BMI determination. The results were analyzed in 2 age groups: 20 to 40 years and 41 to 60 years. The latter age range had a higher BMI (body mass index) than the age range 20 to 40 years. The results were analyzed and it was found that there is a prevalence with obesity of 8 people aged 20-40 years and 33 people with obesity aged 41-60 years, whose values are highly representative due to the fact that the highest values in both ranges oscillate between the overweight and obese categories.

ISSN 2524-2075



Graphic 1 Weight classification based on BMI

With respect to the average lipid profile level of the population, a higher concentration was found with respect to the normal value of 150 mg/dL, while the corresponding values for HDL, cholesterol and LDL are within the limits, however, the determination of VLDL was found to be elevated 31. 43 (20 to 40 years) and 38.41 (41 to 60 years) mg/dL, which is why the values obtained for these are normal in the case of VLDL, while on the other hand the cardiac risk index is within the normal range, not exceeding the normal value of 5.

Of the surveys that were carried out, 90 % mentioned that they had consumed and 42 % consumed it 1 to 2 times a week. In addition to this, 69 % usually accompany their meals with bottled soft drinks. 61 % of the participants mentioned that they have been consuming cochinita pibil for 20 to 30 years, 22 % for 11 to 20 years, 11 % for 6 to 10 years and only 6 % mentioned that they have been consuming it for up to 5 years.

Sixty-one percent of the participants mentioned that they are generally active because they are used to visiting their cornfields, which implies effort, and people go for a walk in the afternoons or have a routine that keeps them in constant physical activities.

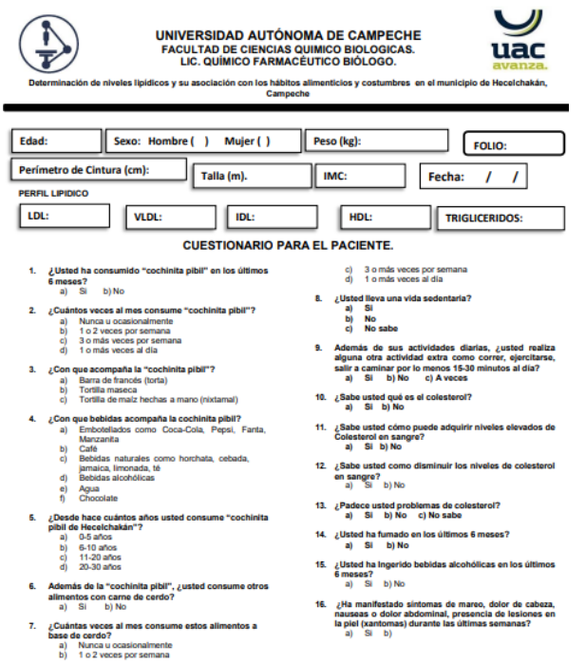
67% of the respondents mentioned that they do know what cholesterol is and 32% do not know the causes that could increase blood cholesterol and 42% would not know what to do to lower high cholesterol.

To find out if the participants were aware of their health status with respect to their cholesterol levels, they were asked if they suffer from cholesterol and 67% of the respondents were either unaware or reported not suffering from any related problems. Only 33% of the total respondents claimed to suffer from cholesterol problems.

Only 33% of the total respondents said they had consumed cochinita pibil from Hecelchakán in the last six months, while 10%, representing 10 people, had not consumed cochinita pibil in the last six months or had never consumed it.

Annexes

Annex 1 Survey



UNIVERSIDAD AUTÓNOMA DE CAMPECHE
FACULTAD DE CIENCIAS QUIMICO BIOLOGICAS.
LIC. QUÍMICO FARMACÉUTICO BIÓLOGO.

uac avanza.

Determinación de niveles lipídicos y su asociación con los hábitos alimenticios y costumbres en el municipio de Hecelchakán, Campeche

Edad: | Sexo: Hombre ( ) Mujer ( ) | Peso (kg): | FOLIO:
Perímetro de Cintura (cm): | Talla (m). | IMC: | Fecha: / /

PERFIL LIPIDICO

LDL: | VLDL: | IDL: | HDL: | TRIGLICERIDOS:

CUESTIONARIO PARA EL PACIENTE.

1. ¿Usted ha consumido "cochinita pibil" en los últimos 6 meses?
   a) Si b) No
2. ¿Cuántos veces al mes consume "cochinita pibil"?
   a) Nunca u ocasionalmente
   b) 1 o 2 veces por semana
   c) 3 o más veces por semana
   d) 1 o más veces al día
3. ¿Con que acompaña la "cochinita pibil"?
   a) Barra de francés (torta)
   b) Tortilla maseca
   c) Tortilla de maíz hechas a mano (nixtamal)
4. ¿Con que bebidas acompaña la cochinita pibil?
   a) Embotellados como Coca-Cola, Pepsi, Fanta, Manzanita
   b) Café
   c) Bebidas naturales como horchata, cebada, jamaica, limonada, té
   d) Bebidas alcohólicas
   e) Agua
   f) Chocolate
5. ¿Desde hace cuántos años usted consume "cochinita pibil de Hecelchakán"?
   a) 0-5 años
   b) 6-10 años
   c) 11-20 años
   d) 20-30 años
6. Además de la "cochinita pibil", ¿usted consume otros alimentos con carne de cerdo?
   a) Si b) No
7. ¿Cuántas veces al mes consume estos alimentos a base de cerdo?
   a) Nunca u ocasionalmente
   b) 1 o 2 veces por semana
   c) 3 o más veces por semana
   d) 1 o más veces al día
8. ¿Usted lleva una vida sedentaria?
   a) Si
   b) No
   c) No sabe
9. Además de sus actividades diarias, ¿usted realiza alguna otra actividad extra como correr, ejercitarse, salir a caminar por lo menos 15-30 minutos al día?
   a) Si b) No c) A veces
10. ¿Sabe usted qué es el colesterol?
    a) Si b) No
11. ¿Sabe usted cómo puede adquirir niveles elevados de Colesterol en sangre?
    a) Si b) No
12. ¿Sabe usted como disminuir los niveles de colesterol en sangre?
    a) Si b) No
13. ¿Padece usted problemas de colesterol?
    a) Si b) No c) No sabe
14. ¿Usted ha fumado en los últimos 6 meses?
    a) Si b) No
15. ¿Usted ha Ingerido bebidas alcohólicas en los últimos 6 meses?
    a) Si b) No
16. ¿Ha manifestado síntomas de mareo, dolor de cabeza, nauseas o dolor abdominal, presencia de lesiones en la piel (xantomas) durante las últimas semanas?
    a) Si b)

Annex 2 Letter of Informed Consent

CARTA DE CONSENTIMIENTO INFORMADO

Estimado (a) Señor(a):

Estudiantes de la Licenciatura en Químico Farmacéutico Biólogo de la Facultad de Ciencias Químico Biológicas están realizando un proyecto de investigación con supervisión del Dr. en C. Román Alberto Pérez Balan , Mtro. Baldemar Aké Canché, Mtro. Tomás Joel López Gutiérrez y la Dra. Betty Sarabia Alcocer con el objetivo de estudiar la cuantificación de los niveles de lípidos en sangre en el municipio de Hecelchakán del Estado de Campeche; en el cual se determinará si existe asociación entre el consumo de "cochinita pibil" y los niveles de colesterol y triglicéridos y así, determinar la población que se encuentre más afectada debido al consumo de la misma.

El procedimiento consiste en realizar a la población voluntaria una serie de preguntas mediante un cuestionario y seguidamente obtener una muestra de sangre mediante el método de venopunción.
Si usted acepta participar, estará colaborando con la Facultad de Ciencias Químico Biológicas de la Universidad Autónoma de Campeche con un proyecto de análisis bioquímico-clínicos y la información que usted nos proporcione será de gran importancia y utilidad, el cual se interpretara en los objetivos ya descritos.

Los riesgos potenciales que implican su participación en este estudio son mínimos. La participación en este estudio es absolutamente voluntaria. Usted está en plena libertad de negarse a participar o de retirar su participación de este en cualquier momento.

Toda la información que usted nos proporcione para el estudio será de carácter estrictamente confidencial, utilizada únicamente por el equipo de investigación del proyecto y no estará disponible para ningún otro propósito. Usted quedará identificado(a) con un número y no con su nombre. Los resultados de este estudio serán publicados con fines científicos conservando el anonimato.

Si usted tiene alguna pregunta, comentario o preocupación con respecto al proyecto, por favor comuníquese con el Dr. Román Alberto Pérez Balan, supervisor del proyecto, al siguiente correo roaperez@uacam.mx en un horario de 9:00 a.m. a 4:00 p.m.

Tras haber recibido y comprendido la información de manera verbal clara y sencilla y leer este escrito explicativo sobre la toma de muestras biológicas, he podido hacer preguntas y aclarar mis dudas sobre qué es, cómo se hace, para qué sirve, qué riesgos conlleva y por qué es importante en mi caso, doy mi consentimiento para la realización de toma de muestra de sangre y contestar el cuestionario.

Nombre:_____

Firma de conformidad: _____

Testigo: _____

Fecha: _

ISSN 2524-2075

Conclusions

The consumption of cochinita pibil and the constant consumption of pork increases blood lipid levels. In this study, 48% consumed cochinita pibil frequently and 99% had a pork-based diet, so regular consumption of pork was associated with elevated levels of LDL cholesterol and triglycerides in the blood. Participants aged 40 to 60 years, with frequent consumption, were obese and it is considered that this is due to the high consumption of this type of meat, as well as the frequency of consumption of bottled soft drinks as an accompaniment to cochinita pibil.

It is necessary to raise awareness among the inhabitants of the municipality of Hecelchakán about the care of their diet and health care by means of blood tests and constant medical studies, especially in middle-aged people between 40 and 60 years of age, who represent the greatest risk.

References

Briel M, Ignacio Ferreira-Gonzalez I, You JJ, et al. Association between change in high density lipoprotein cholesterol and cardiovascular disease morbidity and mortality: systematic review and meta-regression analysis. BMJ. 2009;338:b92 doi: 10.1136/bmj.b92.

García De Los Santos, H. G. (2022). Análisis de la relación entre recursos humanos para la salud y el control de diabetes mellitus hipertensión arterial y dislipidemia en México un estudio transversal multinivel. http://repositorio.insp.mx:8080/jspui/bitstream/20.500.12096/8070/1/F174.pdf

Ramirez, L. E. B., Muñoz, B. J. S., & Pincay, Y. E. D. (2023). Dislipidemia como factor de riesgo de enfermedades cardiovasculares y hepáticas en adultos. MQRInvestigar, 7(1), 1815-1825. https://doi.org/10.56048/MQR20225.7.1.2023.1815-1825

Guananga, S. P. P., & Olalla, V. P. V. (2022). Hábitos alimentarios y su relación con el estado nutricional y dislipidemias en niños de 6 a 11 años. *La Ciencia al Servicio de la Salud*, *13*(1), 36-46. https://repositorio.unemi.edu.ec/bitstream/123456789/6205/3/POZO%20GUANANGA%20SOFIA.pdf

Hernán, B. S. M., & Villafuerte, K. M. M. (2022). Dislipidemia como factor de riesgo de enfermedad cardiovascular en América Latina. Revista Científica FIPCAEC (Fomento de la investigación y publicación científico-técnica multidisciplinaria). ISSN: 2588-090X. Polo de Capacitación, Investigación y Publicación (POCAIP), 7(4), 591-610. https://www.fipcaec.com/index.php/fipcaec/article/view/650

Fernández-Quiroga, K., & González-Santiago, O. (2019). Dislipidemias y riesgo cardiovascular por género relacionado con el consumo de una dieta hipercalórica e inactividad física en estudiantes del Noreste de México Agosto 2018-Febrero 2019. Revista de Ciencias Farmaceúticas y Biomedicina (ISSN: 2448-8380), 35-35. https://rcfb.uanl.mx/index.php/rcfb/article/view/242

Fernández Quiroga, K., & González Santiago, O. (2018). Prevalencia de dislipidemias, sobrepeso y obesidad relacionados con actividad física en estudiantes de Químico Farmacéutico Biólogo de la UANL 2018. http://eprints.uanl.mx/24843/1/24843.pdf

Dávila Cervantes, C. A. (2020). Tendencia e impacto de la mortalidad por enfermedades cardiovasculares en México, 1990-2015. Revista Cubana de Salud Pública, 45, e1081. https://www.scielosp.org/article/rcsp/2019.v45n4/e1081/.

ISSN 2524-2075