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Review Article

CHARACTERIZATION OF TYPE 2 DIABETES MELLITUS IN ADULTS OF THE PROSPERA PROGRAM IN THE LOCALITY OF ZONTECOMATLÁN, GUERRERO, MÉXICO

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A R T I C L E   I N F O

A B S T R A C T

Objective: To determine the characterization of Type 2 Diabetes Mellitus in adults from the Prospera Program in the community of Zontecomatlán, Guerrero. *Method:* the design was quantitative, cross-sectional, with a convenience sample of 98 adults from Zontecoman, from the prospera program, the instrument designed by Tuomilehto and Lindström was used, with adaptations according to the NOM For the Prevention, Treatment and Control of Diabetes Mellitus In Primary Care, and according to current anthropometric standards, the SPSS version 21 statistical package was used for data capture and analysis. *Results:* the age was between 20 and 80 years, 78% female, 21% male, 30% dedicated to crafts, 27% to the countryside, 36% are housewives and 5% practice another profession, 45% without studies, 40 % primary, 5% secondary and high school and only 3% completed or continue studying the degree, the measurements of the periabdominal perimeter, in women it was 90 to 99 cm, in men it was 80 to 89 cm, 69% did not perform any type of activity that involves movement of 30 min a day, 30% yes, in the consumption of vegetables 3% consume daily and 97% no, most do not take medication for blood pressure (93.9%), 6.1% yes, most do not have Family history of DM2, while 4 report having a family history in their siblings and 12 in their parents with DMT-2, most do not present clinical manifestations of polydipsia, polyphagia or polyuria, and age does not influence their occurrence. *Conclusions:* adults should attend diabetes and hypertension control, perform daily exercise for at least 30 minutes a day, in addition, improve eating habits, emphasizing reducing the consumption of sugary drinks, increasing the intake of cereals, tubers, fruits and vegetables.

INTRODUCTION

Type 2 Diabetes Mellitus is a chronic disease and is considered a public health problem, the new figures estimate that in 2011 there were 366 million people with T2DM in the world and 46% of undiagnosed cases, this figure will increase up to 552 million by 2030, with low- and middle-income countries facing the highest growth in the disease. (International Diabetes Federation, 2013). One in seven deaths is related to this disease, in 2015 there were 90,000 deaths due to T2DM. (Federal, 2016). It has been estimated that the life expectancy of individuals with diabetes is reduced by between 5 and 10 years. (Hernández Ávila, Pablo Gutiérrez, & Reynoso Noverón, 2013).

Mexico currently occupies ninth place in the world in the prevalence of T2DM, this is an alarming site and even more so when they report that by the year 2025, the country will occupy the sixth or seventh place (Arredondo & De Icaza, 2011).

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This is due to unhealthy lifestyles that are highly prevalent among Mexican children, adolescents, and adults, leading to a significant increase in obesity and overweight, the main modifiable risk factor for diabetes. (Hernández Ávila, Pablo Gutiérrez, & Reynoso Noverón, 2013).

In the state of Guerrero, we find that the mountain region has a higher percentage of its population with T2DM with 68.3%, (Federación Mexicana de Diabetes, 2014). These data are sufficient to understand the magnitude of the problem, unfortunately the actions that have been implemented have not been sufficient to combat this epidemic in this population. That is why more educational programs are needed for patients and the community to raise awareness about diabetes and Type 2 Diabetes Mellitus. Its consequences; a crucial step in getting people to truly try to change their lifestyle. For IDF The earlier a person is diagnosed and treatment begins, the more likely they are to prevent harmful and costly complications, therefore the need for proper diagnosis and care is urgent. (International Diabetes Federation, 2013), since in its initial stage it does not produce symptoms and when it is detected late and is not properly treated, it causes serious health complications.

The challenge for society and health systems is enormous, due to the economic cost and loss of quality of life for these people and their families, as well as for the economies of countries and health systems. (Hernández Ávila, Pablo Gutiérrez, & Reynoso Noverón, 2013). In the socioeconomic sphere, 264 thousand years of healthy life have been lost due to premature death and 171 thousand due to disability in diabetics over 45 years of age. (Hernández Romieu, ElnecavéOlaiz, Huerta Uribe, & Reynoso Noverón, 2011).

The higher cost of diabetes is due to hospitalizations, an expense that has been shown to double when there are complications of the disease, these complications are largely preventable and that with a fruitful education and a good program for early detection of complications is more than indispensable.

METHODOLOGY

The type of study was quantitative, cross-sectional, observational, analytical, the study population was the adult population of Zontecomatlán, municipality of Olinalá in the state of Guerrero, beneficiaries of the Prospera Program, place of study: Zontecomatlán, municipality of Olinalá, Guerrero, in a period from April 10 to 13, 2019, a non-probabilistic convenience sample of 98 people from the Prospera Program of the Zontecomatlán community was carried out, the technique for data collection was a personal interview, the test instrument was used to determine the risk of developing type 2 diabetes mellitus and the health secretary's questionnaire on risk factors. (See annex 1).

The first designed by Tuomilehto and Lindström, with adaptations according to the NOM For the Prevention, Treatment and Control of Diabetes Mellitus in Primary Care, and according to current anthropometric standards. This instrument had sensitivity of 0.78 and 0.81, specificity of 0.77 and 0.76, and positive predictive value of 0.13 and 0.05 in the two cohorts studied by the authors, for data capture and analysis the SPSS version 21 statistical package was used.

RESULTS

78% belong to the female gender and 21% male. Regarding their occupation, 30% of the participants are dedicated to handicrafts, 27% to the field and predominate with 36% are housewives, in a scarce 5% are people who exercise another profession, with respect to 45% did not study schooling, 40% studied elementary school, 5% studied secondary and high school, and only 3% completed or are still studying a bachelor's degree.

Table 1

	Percentage
Gender	
Female	78.6%
Male	21.4%
Levelofstudies	
No studies	45.9%
Primary	40.8%
Secondary	5.1%
Baccalaureate	5.1%
Bachelor´sdegree	3.1%
Occupation	
Artisan	30.6%
Farmer	27.6%
Housewife	36.7%
Other	5.1%
Total	100.0

Source: questionnaire of risk factors of the Secretary of Health, 2010.

Regarding the body mass index, it was found that the group with the most weight problems is that of 45 to 64 years, presenting more frequency of overweight.

Table 2 Distribution by age group of the Body Mass Index

| Age groups	Body Mass Index				Total
	Normal	Overweight	Obesity grade 1	Obesitygrade 2	
20-44	29	20	10	2	61
45-64	7	9	8	0	24
65-80	7	4	2	0	13
Total	43	33	20	2	98

Source: questionnaire of risk factors of the Secretary of Health, 2010.

Regarding the measurement of periabdominal perimeter, it was found that the most predominant measurement in women was 90 to 99 cm. while in men it was 80 to 89 cm.

**Table 3** Gender of the participants

Female	%	Male	%	Total	%
70-79	13	13.3%	1	1.0%	14	14.3%
80-89	22	22.4%	10	10.2%	32	32.7%
90-99	24	24.5%	8	8.2%	32	32.7%
100-109	13	13.3%	2	2.0%	15	15.3%
110-120	5	5.1%	0	0.0%	5	5.1%
Total	77	78.6%	21	21.4%	98	100.0%

Source: questionnaire of risk factors of the Secretary of Health, 2010.

Graph 1. Distribution of waist circumference by gender
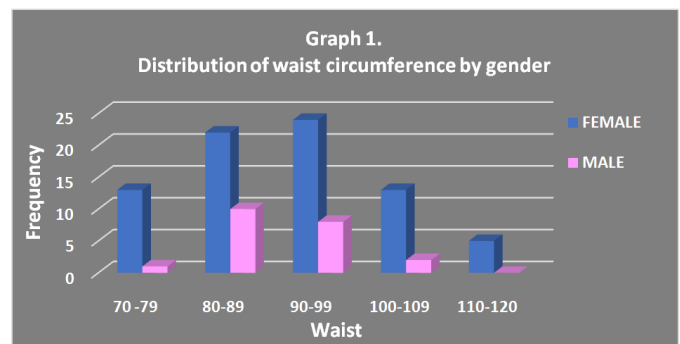
Source: questionnaire of risk factors of the Secretary of Health, 2010.

It was determined that 69% do not carry out any type of activity that involves movement of at least 30 min a day, the remaining 30% affirmed doing exercise.

Graph 2. Daily Exercise Distribution
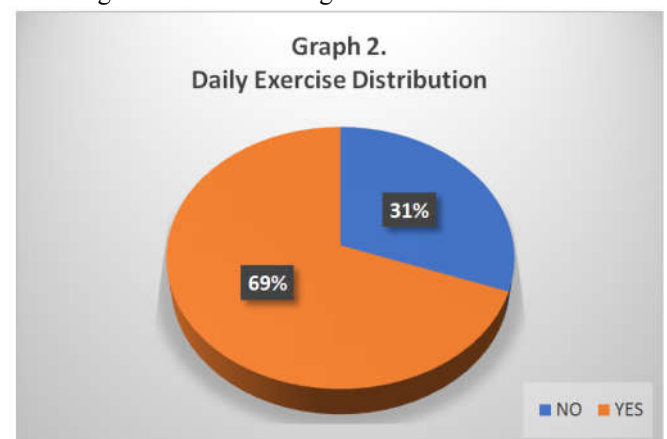
Source: questionnaire of risk factors of the Secretary of Health, 2010.

Regarding the consumption of vegetables, it was found that only a scant 3% eat vegetables daily and 97% do not.

Graph 3.
**Distribution of Frequency of Consumption of Vegetables**
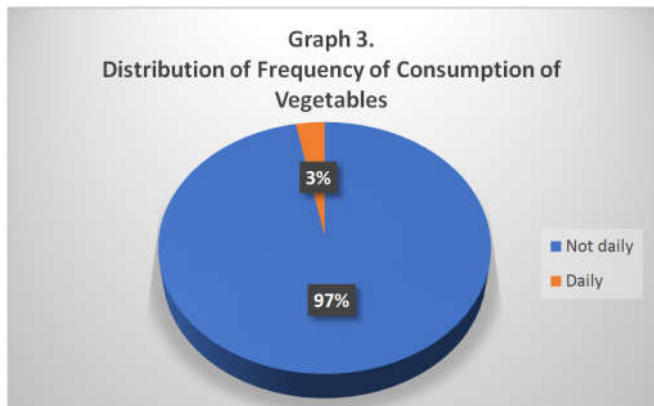
Source: questionnaire of risk factors of the Secretary of Health, 2010.

Regarding the treatment to control blood pressure, most of the participants reported that they did not take blood pressure medications (93.9%), while 6.1% were undergoing treatment.

Graph 4.
**Distribution of participants who have Tx for TA**
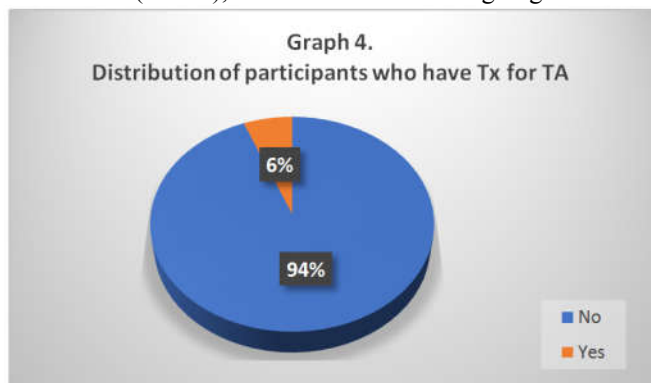
Source: questionnaire of risk factors of the Secretary of Health, 2010.

Family history with DM2 of the participants, most of them did not have a family history of DM2 (82 participants), while 4 participants reported having a family history in their siblings and 12 having their parents with DMT-2.

Graph 5.
Distribution of participants with a family history of DM2
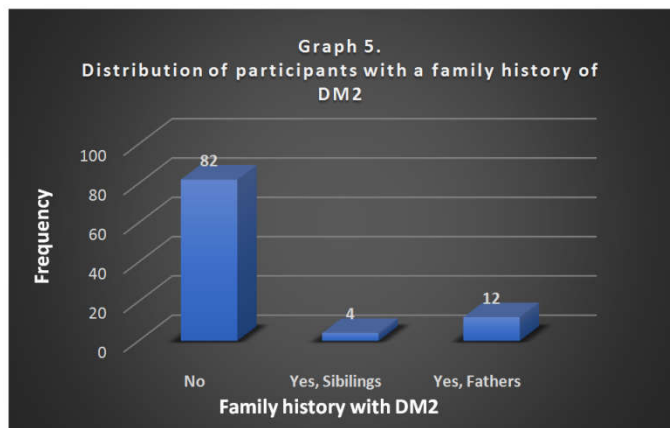
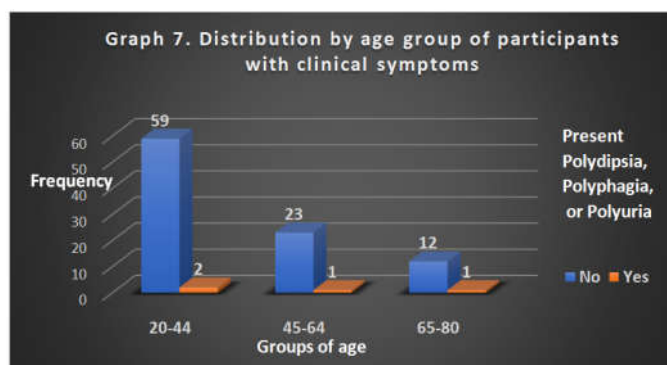Source: questionnaire of risk factors of the Secretary of Health, 2010.

It was found that most of the participants did not present clinical manifestations of polydipsia, polyphagia or polyuria (95.9%), and only 4.1% did present these symptoms.

Graph 6. Distribution of the participants who present symptoms of polydipsia, polyphagia or polyuria
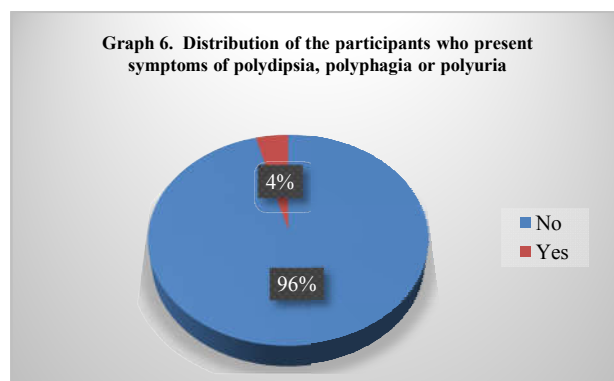
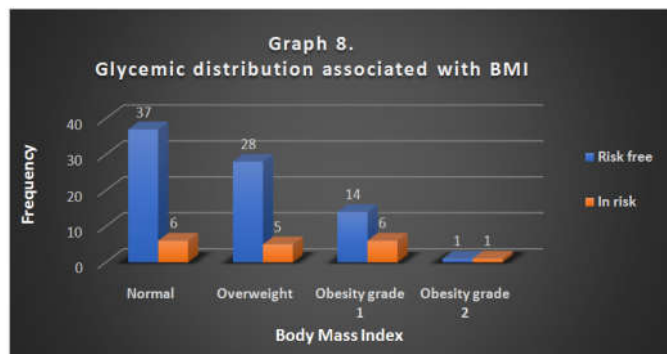Source: questionnaire of risk factors of the Secretary of Health, 2010.

Statistic analysis

Of all the participants, it was found that age does not influence the occurrence of polydipsia, polyphagia and polyuria. ($X2$. 766).

Graph 7. Distribution by age group of participants with clinical symptoms
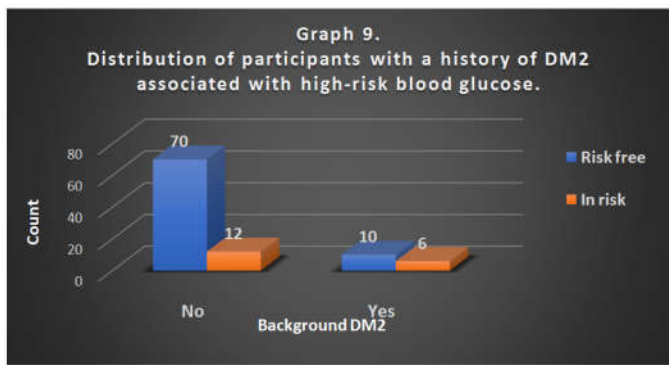

Source: questionnaire of risk factors of the Secretary of Health, 2010.

According to the analysis, it was found that the association between overweight and obesity with risk glycemia is null. (Tau-c .131).

Graph 8.
**Glycemic distribution associated with BMI**

Source: questionnaire of risk factors of the Secretary of Health, 2010.

It was found that family history with type 2 diabetes mellitus does influence the presence of risk glycemia (X^2 .031), however, the association between family history of risk glycemia is null (Tau- b .218).

Source: questionnaire of risk factors of the Secretary of Health, 2010.

Of the total of the participants, it was found that performing daily exercise does not influence them to present risk glycemia in people between 20 and 80 years of age. (X^2 .399)
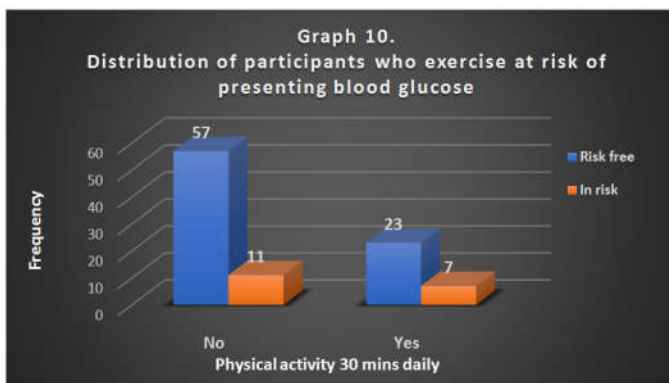
Source: questionnaire of risk factors of the Secretary of Health, 2010.

It was also found that the association of presenting high blood pressure measurements with suffering from risk glycemia is null (Tau-c .218).

However, it does influence that participants who had one, two, three or both elevated intakes present risk glycemia (X^2 .004).

Table 4 Distribution of participants who presented elevated HA takes at risk of presenting glycemia

High HA takes	Glicemia de riesgo		Total
	Risk free	In risk	
0	65	8	73
1 take	2	3	5
2 takes	7	3	10
3 takes	2	0	2
4 takes	4	4	8
Total	80	18	98

Source: questionnaire of risk factors of the Secretary of Health, 2010.

DISCUSSION

Diabetes mellitus is one of the main causes of morbidity and mortality today, as well as an important cardiovascular risk factor and poor prognosis in individuals with established cardiovascular disease.

In relation to the variables analyzed, as in the study by Paz, Romero, no statistically significant association was found between the variables, it was found that the female gender presents the metabolic alteration in a higher percentage than the male gender; In his study, the most affected age range was 50-59 years, while in this study 45-54 years prevailed; Regarding the range of waist circumference, it was found more frequently that of> 80 cm in women, this study having similarity in the result.

In Mexico there is no statistic in the case of prediabetes and, therefore, this alteration is not known, despite the fact that in other countries this issue has been investigated in depth.

In our study, it is important to start statistics to reduce costs in the treatment of patients with diabetes and the treatment of the complications generated by it, which clearly leave health institutions without a budget.

CONCLUSIÓN

Most of them are women and less than a quarter are men, more than a quarter are engaged in handicrafts and field work, and more than a quarter of women are housewives, almost half study primary school, the group with the most weight problems is 45 to 64 years old, the most predominant measurement of periabdominal perimeter in women was 90 to 99 cm, while in men it was 80 to 89 cm, most adults do not perform any type of activity that involves movement of at least 30 min daily, But more than a quarter said that they exercise, almost all of them do not consume vegetables daily, most adults report that they do not take blood pressure medications, and they also do not have a family history of DM2, some report having a family history in their siblings and 12 in their parents, the weight of the participants in the research ranged from 39.6 to 90.1 kg as minimum and maximum weights respectively. A median of 62,900 and a standard deviation of 11.21 were found. Most do not present clinical manifestations of polydipsia, polyphagia or polyuria, of all the participants it was found that age does not influence the occurrence of polydipsia, polyphagia and polyuria, According to the analysis, it was found that the association between overweight and obesity with risk glycemia is null, in addition to that the family history with type 2 diabetes mellitus does influence the presence of risk glycemia, however, the association between family history to suffer from glycemia risk is null, Of the total of the participants who perform daily exercise, it does not influence them to present risk blood glucose in people between 20 and 80 years of age, it was also found that the association of having high blood pressure intakes with suffering risk blood glucose is null, however, it does influence so that participants who had one, two, three or both elevated takes present risk glycemia.

References

Arredondo, A., & De Icaza, E. (2011). Costos de la Diabetes en América Latina: Evidencias del Caso Mexicano. *ELSEVIER*. Recuperado el 3 de Marzo de 2017, de http://www.sciencedirect.com/science/article/pii/S10983 01511014380

Bermudez, V., Salazar, J., Rojas, J., Añez, R., González, R., Torres, W., . . . Cabrera, M. (2014). Prevalencia de diabetes mellitus tipo 2 factores asociados en la ciudad de Maracaibo, Venezuela. *Revista Latinoaméricana de Hipertensión, 9*(2), 14-25. Recuperado el 20 de noviembre de 2016, de http://www.redalyc.org/articulo.oa?id=170240765003

Federación Internacional de Diabetes. (27 de Mayo de 2013). ATLAS de la DIABETES de la FID. *fundacion diabetes*, 1-162. Recuperado el 11 de Marzo de 2017, de file:///C:/Users/Particular/Downloads/spanish-6th.pdf

Federación Mexicana de Diabetes. (23 de Septiembre de 2014). *INEGI*. Recuperado el 11 de Marzo de 2017, de INEGI: http://fmdiabetes.org/diabetes-en-guerrero/

Federal, S. d. (07 de Abril de 2016). Combatir la diabetes, prioridad para el gobierno federal/comunicado de prensA. 1-4. México, México, México: El Universal. Recuperado el 08 de Noviembre de 2016, de https://www.gob.mx/salud/prensa/combatir-la-diabetes-prioridad-para-el-gobierno-federal-narro-robles

González, M. A., Dennis, R. J., Devia, J. H., Echeverri, D., Briceño, G. D., Gil, F., . . . Mora, A. (25 de Junio de 2012). Factores de riesgo cardiovascular y de enfermedades crónicas en población caficultora. *Revista de salud pública, 14*(3), 390-403.

Hernández Ávila, M., Pablo Gutiérrez, J., & Reynoso Noverón, N. (2013). Diabetes melitus en México. El estado de la epidemia. *SciELO, 55*. Recuperado el 3 de Marzo de 2017, de http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0036-36342013000800009

Hernández Romieu, A. C., Elnecavé Olaiz, A., Huerta Uribe , N., & Reynoso Noverón , N. (2011). Análisis de una encuesta poblacional para determinar los factores asociados al control de la diabetes mellitus en México. *SciELO, 53*(1). Recuperado el 3 de Marzo de 2017, de http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0036-36342011000100006

Ibañez, L., Sanzana, R., Salas, C., Navarrete, C., Cartes Velásquez, R., Rainqueo, A., . . . Celis Morales, C. (23 de Julio de 2014). Prevalencia de sindrome metabólico en individuos de etnia Mapuche residentes en zonas rurales y urbanas de Chile. *Revista Medica de Chile*, 953-960. Recuperado el 16 de Noviembre de 2016, de http://www.scielo.cl/pdf/rmc/v142n8/art01.pdf

Martins Reis, T. C., Chagas Barbosa, R., Andrade Ribeiro, J. d., Mendes Cangussu, D., Souza Souza, L., Dias Veloso, O., . . . Caldeira Prates , A. (octubre de 2016). Exceso de peso y factores asociados: un estudio de base poblacional. *Scielo*(44), 51-62. Recuperado el 10 de diciembre de 2016, de http://scielo.isciii.es/pdf/eg/v15n44/clinica3.pdf

OMENT. (27 de Diciembre de 2016). *ENSANUT.* Recuperado el 11 de Marzo de 2017, de ENSANUT: http://oment.uanl.mx/ultimas-cifras-de-diabetes-en-mexico-ensanut-mc-2016/

Ramirez , D., Gonzalez Gutierrez , R., Cedeño , K. A., Angulo , A. I., Moliné, M. E., Salazar , J. J., . . . Bermudez, V. (2014). Prevalencia de diabetes mellitus tipo 2 y prediabetes en paciente adultos que asisten al servicio de nutrición integral en una franquicia de servicios de salud en la ciudad de Maracay, Venezuela. *Revista Latinoamericana de Hipertensión, 9*(4), 1-8.

Sarabia Alcocer, B., Can Valle, A. R., & Guerrero Ceh, J. G. (junio de 2015). Identificación de factores de riesgo de la dabetes mellitus tipo 2 en adultos de 30 a 60 años de edad en la comundad de Isla Aguada, municipio de CIudad del Carmen, Campeche. *Revista Iberoamericana para la investigación y el desarrollo educativo, 5*(10). Recuperado el 20 de noviembre de 2016, de https://dialnet.unirioja.es/servlet/articulo?codigo=5435234

Secretaria de Salud . (2012). NOM-043-SSA2-2012, Servicios basicos de salud. Promocion y educacion para la salud en materia alimentaria.

Secretaria de Salud. (2009). NOM-030-SSA2-2009, Para la prevención, detección, diagnóstico, tratamiento y control de la hipertensión arterial sistémica.

Secretaria de Salud. (2010). NOM-015-SSA2-2010, Para la prevencion tratamiento y control de la diabetes mellitus.

Secretaria de Salud. (2012). NOM-037-SSA2-2012, Para la prevencion y tratamiento y control de las dislipidemias.

Secretaria de Salud. (2016). NOM -008-SSA3-2016, Para el tratamiento integral del sobrepeso y la obesidad.

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