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Smoking Habit in Adult Population from Maracaibo City, Venezuela

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Abstract

Objective: The aim of this study was to determinate the epidemiology of smoking in adults from Maracaibo.

Materials and methods: A descriptive, cross-sectional research study, framed in the study Prevalence of Metabolic Syndrome in Maracaibo city conformed by 2,212 adults of both genders; based on the medical information the individuals were classified in smokers, non-smokers and former smokers. Quantitative variables were expressed as medians and qualitative variables as absolute and relative frequencies, using χ^2 for significance and Z test for difference of proportions.

Results: In general analysis 14.8% were smokers, 15.4% were former smokers, and the remaining individuals were non-smoking (69.8%). Cigarette is the most prevalent tobacco derivative (98.7%). The higher proportion of cigarette smokers are male (χ^2 = 36.70; p < 0.01), however the proportion of women between 40-59 years matched the men´s proportion (χ^2 = 143.20; p < 0.01). Smoking was associated with marital status (χ^2 = 45.67; p < 0.01), academic status (χ^2 = 17.07; p = 0.01), occupation (χ^2 = 32.04; p < 0.01), type of employment (χ^2 = 138.25; p < 0.01) alcohol consumption (χ^2 = 99.15; p < 0.01) and Body Mass Index Classification (χ^2 = 38.5; p < 0.01).

Conclusion: Smoking is an important public health issue in our population, associated with certain sociodemographic and metabolic conditions, additional studies are needed to evaluate, in a multi-variant context, the individual influence of the associated factors.

Keywords

Smoking, Consumption patterns, Smokers, Former smokers, Employment status

Introduction

Tobacco consumption is one of the leading causes of preventable death worldwide, representing approximately 6 million deaths per year [1,2]. Forward-looking statements are even more alarming estimating that by 2030 the annual deaths attributable to smoking will increase to 8 million [3]. The harmful effects of smoking in the human body depends directly on the amount of cigarettes and timing of smoking [3], as well as the changes in lifestyle of those who smoke [4], with special influence on mortality from chronic and degenerative diseases such as cervical cancer [5], lung [6] and cardiovascular diseases [7], which represent 63% of all deaths worldwide [3,6]. In this way, it produces a significant economic impact due to public spending demand and according to the latest report, it had increased to more than two billion dollars by 2009 [8].

The understanding of the deleterious effects of tobacco over smoker's health has led to some measures that help controlling this habit. The WHO Framework Convention Tobacco Control (FCTC) [9] has become one of the most rapidly embraced treaties in the history of the United Nations, as the first step in the global fight against the epidemic of smoking. In this treaty are summarized all the measures to stop this epidemic. In accordance to those measures our country has increase tobacco prices by higher taxes as one of the most effective individual ways to reduce the tobacco consumption and encourage consumers to quit. In addition, they have been banned certain forms of advertising and promotion, however direct advertising in national print media and internet outlets are allowed [9].

In despite of these efforts, the Pan American Health Organization reported in 2011 that in Venezuela 33.9% of the population over 15-years-old are smokers [10], 61.6% represented by males and 38, 4% by females. While these statistics are similar to the prevalence of smoking reported in the US (29%), it is considerably higher than those reported by the organizations in Latin American countries like Mexico (16%) and Colombia (17%). These reports lead to the implementation of tobacco smoke exposures law in public and closed work places throughout the country, creating completely smoke-free environments [10]. Although smoking is still a public health problem in our country, epidemiological data in Maracaibo is limited. Therefore, the aim of this study was to determine the prevalence of smoking and the associated sociodemographic characteristics in adults from Maracaibo.

Materials and Methods

Ethical considerations

Individuals were included in the study after being consented, gathering a complete medical history, physical examination and obtained blood samples by a trained staff. Every procedure was approved by the ethics committee of the Endocrine and Metabolic Diseases Research Center "Dr. Felix Gomez".

Sample selection

The Maracaibo City Metabolic Syndrome Prevalence Study was

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a cross sectional, randomized and multistage sampling study which aimed to identify and assess the epidemiological behavior of metabolic syndrome and its associated risk factors in 2,230 individuals over 18 years [11]. For the analysis of smoking habits, 9 individuals were excluded due to unclear information about age of onset or smoking time consumption, resulting in a preliminary sample of 2,221 individuals. After reviewing the use of tobaccos derivatives, it was found that only 9 individuals (0.4%) consumed cigars which were excluded from statistical analysis, ending with a final sample of 2,212 subjects.

Clinical evaluation

During collecting information, the main demographic characteristics and ethnic group were asked. Marital status was classified into five categories: single, married, cohabiting, divorced and widowed. The employment condition was classified into two categories: employed and unemployed. The educational status was classified as: a) unlearned: individuals without learning b) elementary school: those with basic and middle education c) high school d) College/University: those who had technical, colleges or university study or degree. Socioeconomic status was classified according to the categories proposed by Mendez-Castellano [12]. This tool allows stratification of the population according to four variables: occupation of the head of household, educational level of the subject's parents, income source, and housing conditions. Each of these items is rated in a Likert-type scale from 1 to 5 (1 representing the best possible scenarios and 5 the worst). The scores for each item are tallied into a total integrated score ranging from 4 to 20 points, categorized as follows: Stratum I or High Class (4-6 points); Stratum II or Middle-High Class (7-9 points); Stratum III or Middle Class (10-12 points); Stratum IV or Relative Poverty (13-16 points), and Stratum V or Critical Poverty (17-20 points).

Blood pressure (BP) was taken with individual sitting down with their feet on the floor, determined through the auscultatory method with a calibrated mercury sphygmomanometer, identifying Korotkoff's phases I and V systolic and diastolic BP, respectively. Results were classified by the Eighth Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-8) guidelines [13].

A bioelectric scale was used to obtain weight (Tanita, TBF-310 GS Body Composition Analyzer, Tokyo, Japan). Height was measured using a calibrated metric measurement tape, with the subject standing up barefoot. Body Mass Index (BMI) was calculated with the following formula: [weight/height^2], according to their BMI, subjects were sorted in 3 categories: (a) BMI ≤ 24.9; (b) 25-29.9; and (c) ≥ 30 kg/m^2 [14].

Tobacco habit description

We inquired about the use of cigarettes, cigars, pipe and chewing tobacco requested in detail the age of onset, frequency, time consumption and time without smoking. The frequency of cigarette consumption was express in cigarettes per day [15] and the others variables were expressed in years. The pattern of cigarette smoking was defined as [16] : a) non-Smoker to every individual who denied their consumption or have consumed < 100 cigarettes during their lifetime, b) Smoker to those individuals who have consumed ≥ 100 cigarettes during their life, or if tobacco consumption has been suspended for a period not exceeding 1 year prior the study, c) Former Smoker who has consumed a number ≥ 100 cigarettes during their lifetime, but has stopped the habit for a time period ≥ 1 year prior to the study.

Physical activity

The International Physical Activity Questionnaire (IPAQ) was used as a method to quantifying physical activity [17,18], taking into account the following domains: work, transportation, household/gardening and leisure-time. Through this questionnaire was determined the consumed metabolic equivalents (METS) calculated according to the average result of time for each activity and the sum of these 4 scores were formulated.

Based on the total score of METs/min/week obtained, those with 0 METs per domain were considered physically inactive. Individuals with some degree of physical activity (≥ 1 MET) were categorized into quintiles according to gender, obtaining a total of six categories: physical inactivity (METs = 0), very low (Q1), low (Q2), moderate (Q3), high (Q4) and very High (Q5).

Alcohol consumption

For the assessment of alcohol consumption, individuals were asked about the amount of alcohol intake monthly, defining drinkers as those who consumed at least one drink per month. These individuals were asked to report an approximate average amount and frequency of alcohol intake. After this estimation, a current consumer was defined as the consumption of ≥ 1 gram (g) of alcoholic beverages per day [19].

Definitions

The metabolic syndrome was defined by the criteria from the IDF/NHLBI/ AHA/WHF/IAS/IASO-2009 consensus [20], whereas subjects having the following characteristics were operatively classified as having Type 2 diabetes mellitus: a) a previously established diagnosis and b) those without personal history but with fasting glucose ≥ 126 mg/dL. By the other hand, non-diabetic subjects were classified as follows: a) norm glycemic: individuals with fasting glucose < 100 mg/dL; and b) impaired fasting Glucose: fasting glucose in the range of 100-126 mg/dL [21].

Statistics analysis

Data were evaluated by using the Statistic al Package for Social Sciences (SPSS) v.20 (SPSS Inc. Chicago, IL). Quantitative variables were expressed as median (p25-p75), being compared using the Mann-Whitney U test (when 2 groups were compared) or Kruskal-Wallis (when 3 or more groups were compared). The qualitative variables were expressed as absolute and relative frequencies, using Chi-square and proportions Z test to determine the respectively association and differences of proportions, being statistical significant when p < 0.05.

Results

Prevalence of tobacco derivatives consumption

The preliminary sample consisted of 2,221 individuals, distributed in 1170 women (52.7%) and 1051 men (47.3%); whose average age were 38-years-old (25-51 years old). From this sample, 30.1% (n = 668) reported having smoked cigarette in their lives; while consumption of cigars represented only 0.4% (n = 9). After excluding individuals who consumed only cigars, the final sample was 2,212 individuals (52.7% women and 47.3% men), of which 69.8% were non-smokers (n = 1,544), 14.8% were smokers (n = 328) and 15.4% former smokers (n = 340), male group were predominant in the smokers and former smokers groups (χ^2 = 36.694; p < 0.001); (Figure 1- Panel A).

The average age of non-smokers individuals was 35-years-old (24-48 years old), in contrast with 40-years-old (28-50 years old) for smokers, and 48-years-old (36-56 years old) in former smokers (p < 0.01). The frequency of daily consumption for the smokers was 6 cigarettes/day (2-10) very similar to former smoker with a frequency of 4 cigarettes/day (2-10) p = 0.28. The average time for consumption in smokers was 16 years (6-28 years), significantly superior to the 10 years (4-20 years) observed in former smokers (p < 0.001). All other features concerning the consumption pattern are described in table 1.

Cigarette consumption according to age groups

When analyzing cigarette smoking pattern according to age, it was shown that 40-49 and 50-59 years old groups age have the highest percentage of individuals that consumed cigarettes (18.8% [n = 8] and 18.9% [n = 68] respectively). Moreover, individuals in the groups age of 50-59 and ≥ 60 years old showed the highest percentage of former smokers (28.1% [n = 105] and 24.1% [n = 57] respectively, χ^2 = 143.19; p < 0.001); figure 1- Panel B. However, it is important to point out

Table 1: Smoking pattern characteristics in the adult population. Maracaibo, Venezuela.

	Percentil					p
	p5th	p25th	p50th	p75th	p95th	
Age (Years)						< 0.0*
Non-Smokers	18	24	35	48	67	
Smokers	20	28	40	50	60	
Former smokers	23	36	48	56	69	
Age of initiation (years)						0.08**
Smokers	14	16	19	25	36	
Former smokers	14	16	18	24	35	
Intensity (Cigarette/day)						0.28**
Smokers	1	2	6	10	20	
Former smokers	1	2	4	10	40	
Time smoking (Years)						-
Smoker	1	6	16	28	40	
Time without smoking (Years)						-
Non-Smoker	0.6	3	10	20	35	

*Kruskal Wallis test; **U Mann-Whitney test.

that the frequency of smokers is higher among males before 40-years-old while from this age onwards, frequency is equal between genders (Figure 2).

Cigarette consumption according to socio demographic variables and psychobiological habits

Among psychobiological variables, alcohol consumption was associated with smoking, showing higher coexistence of both habits in the population 54.0% (n = 177), a higher proportion than the one found in the former smokers (39.4%; n = 134) and non-smokers (26.7%; n = 413); χ^2 = 99.147, p < 0.001. In regards to marital status, the highest proportion of non-smokers was observed in singles with 46.3% (n = 710), while married individuals were the largest proportion of former smokers with 52.2% (n = 179), (χ^2 = 45.67; p < 0.001). Another variable associated with smoking was the educational status, where individuals who had completed only high school are current smokers with a rate of 35.6% (n = 118) and those who finished a technical/college career had 35.2% (n = 544) for non-smoker and 38.4% (n = 133) for former smokers y (χ^2 = 17.07; p < 0.001); table 2. After evaluating cigarette consumption based on occupation, a significant statistical association was observed (χ^2 = 132.85; p < 0.001), showing higher percentages for smokers and former
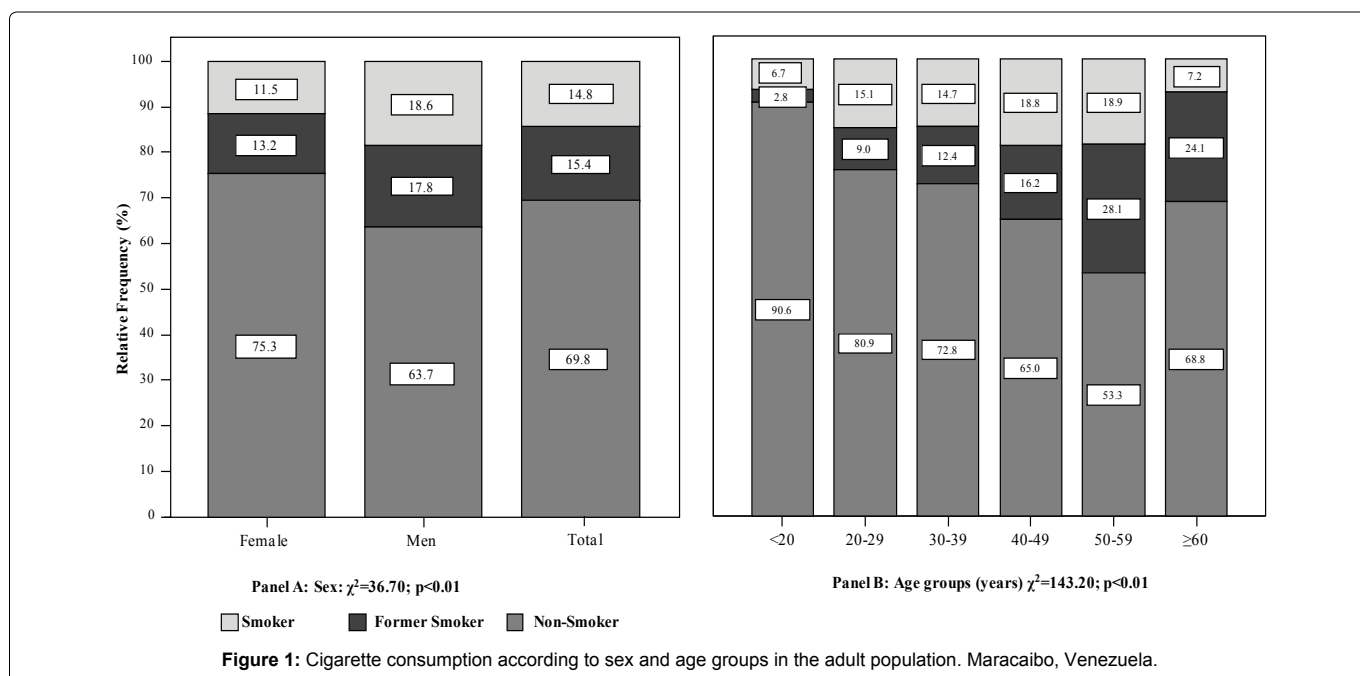

Panel A: Sex: χ^2=36.70; p<0.01

Panel B: Age groups (years) χ^2=143.20; p<0.01

☐ Smoker   ■ Former Smoker   ■ Non-Smoker

Figure 1: Cigarette consumption according to sex and age groups in the adult population. Maracaibo, Venezuela.
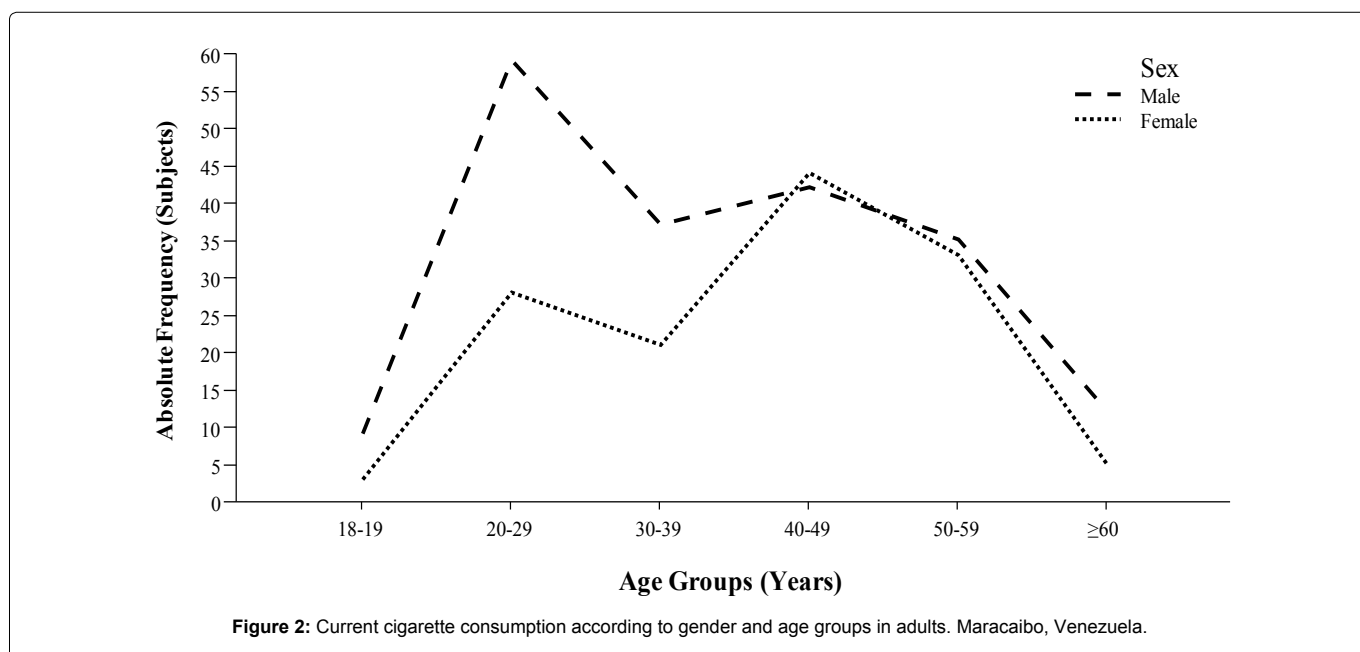

Figure 2: Current cigarette consumption according to gender and age groups in adults. Maracaibo, Venezuela.

Table 2: Social demographic and clinical characteristics of cigarette smoking patterns in adults. Maracaibo, Venezuela.

	Non-Smoker (n = 1544)		Smoker (n = 328)		Former smoker (n = 340)		Total (n = 2212)		χ^2 (*p*)*
	n	%	n	%	n	%	n	%	
Ethnic groups									9.65 (0.29)
Mixed race	1166	75.5	261	79.6	253	74.4	1680	75.9	
Hispanic white	245	15.9	39	11.9	64	18.8	348	15.7	
Afro-Venezuelan	43	2.8	12	3.7	11	3.2	66	3.0	
Amerindians	80	5.2	14	4.3	11	3.2	105	4.7	
Others	10	0.6	2	0.6	1	0.3	13	0.6	
Marital status									45.67 (< 0.01)
Single	710	46.3	139	42.0	101	29.4	950	43.0	
Married	569	37.1	125	37.8	179	52.2	873	39.6	
Coinhabiting	146	9.5	38	11.5	31	9.0	215	9.7	
Divorced	52	3.4	21	6.3	20	5.8	93	4.2	
Widowed	56	3.7	8	2.4	12	3.5	76	3.4	
Educational status									17.07 (0.01)
Illiterate/Incomplete primary school	110	7.1	31	9.4	39	11.3	180	8.1	
Primary school	352	22.8	78	23.6	85	24.6	515	23.2	
High school	538	34.8	118	35.6	89	25.7	745	33.5	
Grad school	544	35.2	104	31.4	133	38.4	781	35.2	
Socioeconomic status									12.63 (0.13)
Strata I: Upper class	23	1.5	6	1.8	7	2.1	36	1.6	
Strata II: Upper-Middle class	306	19.8	47	14.3	57	16.8	410	18.5	
Strata III: Middle class	603	39.1	128	39.0	141	41.5	872	39.4	
Strata VI: Working class	544	35.2	123	37.5	123	36.2	790	35.7	
Strata V: Extreme poverty	68	4.4	24	7.3	12	3.5	104	4.7	
Working condition									32.04 (< 0.01)
Unemployed	703	45.5	96	29.3	129	37.9	928	42.0	
Employed	841	54.5	232	70.7	221	62.1	1284	58.0	
Alcohol consumption§									99.15 (< 0.01)
No	1131	73.3	151	46.0	206	60.6	724	32.7	
Yes	413	26.7	177	54.0	134	39.4	1488	67.3	
Physical activity. Leisure time									4.973 (0.89)
Inactive	938	60.8	207	63.1	201	59.1	1346	60.8	
Very low	116	7.5	24	7.3	26	7.6	166	7.5	
Low	126	8.2	25	7.6	28	8.2	179	8.1	
Moderate	113	7.3	31	9.5	28	8.2	172	7.8	
High	118	7.6	20	6.1	27	7.9	165	7.5	
Very high	133	8.6	21	6.4	30	8.8	184	8.3	

*Chi Square test; §Alcohol consumption: ≥ 1gr/day.

Table 3: Working occupation according to cigarette smoking pattern in adults. Maracaibo, Venezuela.

	Non-Smoker (A)		Smoker (B)		Former smoker (C)		Subtotal (B+C)		Total		χ^2 (*p*)*
	n	%	n	%	n	%	n	%	n	%	
Occupation											138.25 (< 0.01)
Workmen	163	54.9	75	25.3	59	19.9	134	45.1	297	100.0	
Transportation	39	49.4	18	22.8	22	27.8	40	50.6	79	100.0	
Traders	95	58.3	31	19.0	37	22.7	68	41.7	163	100.0	
Craftmen	40	63.5	12	19.0	11	17.5	23	36.5	63	100.0	
Engineers/Architects	28	66.7	8	19.0	6	14.3	14	33.3	42	100.0	
Office work	197	66.6	53	17.9	46	15.5	99	33.4	296	100.0	
Police/Military	114	66.7	25	14.6	32	18.7	57	33.3	171	100.0	
Household activities	289	73.2	45	11.4	61	15.4	106	26.8	395	100.0	
Teacher	74	74.0	10	10.0	16	16.0	26	26.0	100	100.0	
Not specified	47	77.0	6	9.8	8	13.1	14	23.0	61	100.0	
Health personnel	58	73.4	7	8.9	14	17.7	21	26.6	79	100.0	
Student	363	86.6	35	8.4	21	5.0	56	13.4	419	100.0	
Retired/Incapacitated	37	78.7	3	6.4	7	14.9	10	21.3	47	100.0	
Total	**1544**	**69.8**	**328**	**14.8**	**340**	**15.4**	**668**	**30.2**	**2212**	**100.0**	

*Chi square test.

smokers individuals who worked in the area of transportation 50.6% (= 40); workmen 45.1% (n = 134) traders 41.7% (n = 68); craft men 36.5% (n = 23); meanwhile, students were the category that showed the lowest percentage with 13.4%. The others categories are show in table 3.

Cigarette consumption and clinical metabolic alterations

Regarding the analysis of clinical metabolic alterations, overweight and obesity were more frequent in the former smokers in comparisons with current smokers ($\chi^2 = 132.85$; p < 0.001). A similar behave was observed in hypertensive individuals, subjects with metabolic syndrome and impairment fasting glucose. In those subjects with diabetes, the proportions between current and former smokers were similar (current smokers: 16.8% vs former smokers: 15.7%), table 4.

Table 4: Clinical and metabolic alterations according to cigarette smoking pattern in adults. Maracaibo, Venezuela.

	Non-Smoker		Smoker		Former smoker		
	n	%	n	%	n	%	χ² (p)
BMI classification (kg/m²)							38.5 (< 0.01)
< 24.99	529	76.6	101	14.8	58	8.7	
25-29.99	531	67.8	115	14.8	134	17.4	
≥ 30	484	64.8	112	15.1	148	20.1	
JNC-8 classification							28.72 (< 0.01)
Normotensive	643	73.9	124	14.4	100	11.7	
Prehypertensive	565	67.1	137	16.4	137	16.5	
Hypertensive	336	66.0	67	13.4	103	20.6	
Glycemic status							19.26 (< 0.01)
Normoglycemic	1143	71.5	223	14.1	228	14.4	
Impaired fasting glucose	106	57.0	32	17.2	46	25.8	
Type 2 diabetes mellitus	293	67.5	73	16.8	66	15.7	
Metabolic syndrome							37.99 (< 0.01)
Absent	953	74.5	166	13.2	154	12.3	
Present	591	62.7	162	17.2	186	20.1	
Total	1544	69.8	328	14.8	340	15.4	

Discussion

Cigarette smoking is a major public health problem worldwide [3,22]. The importance of epidemiological surveillance is not only in the partnership it has with several pathologies that impact negatively on the physical and mental well-being of consumers [22], but also the trained personnel required and the public expense of caring for those affected as a result of complications from this habit. Despite the implementation of policies aimed to decreasing tobacco consumption[9], the morbidity and mortality rates remain alarming as confirmed by WHO in 2011 [3]. The prevalence of this habit has been extensively studied worldwide, finding wide regional variations. The frequency in our city (14.8%) was similar to that observed in the National Health Interview Survey (NHIS), a study conducted in American individuals over 18 years of age, where it was estimated that 19% of the population consumed cigarettes [23]. However, data published by the Latin American Consortium for the Study of Obesity (LASO) [24] states that smoking is more prevalent in Latin America in contrast with the US population according to data released by the NHANES 1999-2004 (25.8% vs. 21.0%) [25].

In studies individually designs for Latin American countries the polls have become a very important element for collecting data relating to smoking. In Brazil, Almeida, et al. [26] have collected data from nearly 40,000 subjects (≥ 15 mean age) reporting a prevalence of 17.5% for cigarette smoking by 2008. Furthermore, these data collection tools have allowed doing a practical follow up to the population over time, as reported in an Argentinean study [27] with a sample of 34,372 adults, which reported a smoking prevalence ranging between 29.7% and 27.1% over the time period between 2005 and 2009. Although epidemiological studies concerning about the epidemiological behavior of smoking in our country are limited, WHO estimates its prevalence at 19.4% by 2011 [28].

When assessing their distribution by gender, our data is similar to the worldwide data [1,29]. Sreeramareddy, et al. [30] in a study conducted with 15,190 individuals of both genders from Nepal, they found a higher proportion of male smokers compared to females (56.5% CI: 54.1-58.8 vs. 19.6% CI: 18.3-21.0). However, projections indicated that the number of women smokers could increase to approximately 532 million by 2025 [31]. This behavior is observed in our population, specifically in subjects older than 40 years, where the frequency of smoking women equals men. This could be due to several factors that potentially boost consumption of cigarettes in this group of women, including greater access to cigarettes, rising purchasing power, greater autonomy, social determinants such as marital status (increased frequency in divorced women or widows), and changes in the socio-cultural paradigms which traditionally prevented them from smoking and today it is a more socially acceptable habit, a phenomenon particularly noticeable in developing countries [32].

One of the key points in tobacco control includes the use of measures aimed to decreasing the availability of cigarettes to young people [33,34], because approximately 1 in 5 individuals started cigarette smoking among 18-21 years old [35] and less than 2% initiates over 27-years-old [31]. In our study, the median age of onset of this habit was 19-years-old (16-25 years) for smokers, similar results to those reported in Malaysia [36] Kuwait [37] and Thailand [38]. However, there is a concern about the average age of first use among young consumers because it is diminishing, meaning a decrease in the age when consumption begins. As for the distribution of cigarette smoking by age groups, our results resemble the findings of Li, et al. [39], who stated that the largest proportion of current consumers individuals are between 45 and 64-years-old.

Meanwhile, in our population it was observed that the education of the individual is strongly associated with smoking, similar to the results of Li, et al. [39], who reported that the prevalence of cigarette smoking was higher among subjects who attended high school (63.2%), which coincides with our study (35.6%) and lower in those who were graduates in college, university or have postgraduate degrees (44%) similar to the behavior reported in the study by Zhang, et al. [40], specifically in the male group. The cause of this behavior in individuals with a superior educational status may be due to the intellectual differences that cause disparity in the capacity to know the harmful effects of smoking on health and possibly reduced vulnerability to advertising campaigns [41].

Marital status is another factor associated with smoking that influences the epidemiological behavior for this habit and previous published studies were agree with our findings [36], where the highest percentage of smokers was conform by divorced followed by singles individuals, while widows were identified as the group with fewer smokers. Also, in our analysis an association between employment status and smoking were found, the result showed that those employees were the most in the category of smokers, unlike that seen in Britain where it was found that unemployed seeking work were those with an increased incidence of smoking [42]. In assessing by occupations it was reported that 33% of individuals with manual and routine occupations smoked, similar to those that showed our population in which these activities were most prevalent with respect to active consumption of smoking and ex-smoker [42]. With respect to physical activity, no association was found in our population; several studies have reported that physical activity increases the likelihood to smoking cessation in young individuals [43] however, in adults the results have been controversial [44].

In regards to the associated metabolic factors, the higher prevalence of obesity and metabolic syndrome in former smoker individuals demonstrated not only the effect in the body weight gain after quit smoking, this is possibly related to a higher caloric intake

linked to changes in the central nervous system neurotransmitters [45]. Also it has an effect over metabolic parameters like lipids, insulin resistance and inflammation as it was previously reported and that can be directly influence by tobacco consumption [46]. It is important to be determinate in further research studies in our population if a reversion in the smoking habit exists and how long it takes to be evident.

Finally, due to the high prevalence of chronic diseases previously reported in our city [47,48], including metabolic syndrome with an incidence of 42% in the population, it is important to know the frequency of various modifiable cardio metabolic risk factors, with the purpose of establishing national public health strategies aimed to reducing the incidence of the associated diseases and morbidity and mortality rates. Tobacco consumption represents one of the most important psychobiological habits due to its relationship with different chronic diseases and considering the very few data available in our city, this study shows the main epidemiological characteristics associated, representing one of the biggest studies in the region. However, new analysis is needed in order to determinate the impact of each variable in a multi-variant context as well as research studies that analyses the causality with cardio metabolic diseases.

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Conflict of Interest

The authors have no conflicts of interest to declare.

References

1. Landea M, Salazar M, Marillet A, Novello M, Carbajal H, et al. (2011) Prevalencia de Tabaquismo y Factores de Riesgo Cardiovascular en el Casco Urbano de una Localidad Rural de la Provincia de Buenos Aires. Rev Am Medicina Respiratoria 11: 110-116.

2. Zhang L, Curhan GC, Hu FB, Rimm EB, Forman JP (2011) Association between passive and active smoking and incident type 2 diabetes in women. Diabetes Care 34: 892-897.

3. (2011) Report on the Global Tobacco Epidemic 2011: Warning About the Dangers of Tobacco, World Health Organization.

4. Yathish T, Manjula C, Deshpande S, Gayathree L (2011) A study on the association of coronary artery disease and smoking by a questionnaire method. Journal of Clinical and Diagnostic Research for Doctors 5: 264-268.

5. Roura E, Castellsagué X, Pawlita M, Travier N, Waterboer T, et al. (2014) Smoking as a major risk factor for cervical cancer and pre-cancer: results from the EPIC cohort. Int J Cancer 135: 453-466.

6. Tashkin DP, Murray RP (2009) Smoking cessation in chronic obstructive pulmonary disease. Respir Med 103: 963-974.

7. Jareño J, Muñoz M, Carrillo B, Ángel Maldonado J, Ignacio de Granda O, et al. (2013) Estudio de compuestos orgánicos volátiles en aire exhalado en una población clínicamente sana: efecto del tabaquismo. Arch Bronconeumol 49: 457-461.

8. ITC Malaysia National Report. Findings from Wave 1 to 4 Surveys (2005-2009). University of Waterloo, Waterloo, Ontario, Canada; University Sains Malaysia, Pulau Pinang, Malaysia; and Ministry of Health, Putrajaya, Malaysia. ITC Project March 2012.

9. (2003) Convenio Marco de la OMS para el Control del Tabaco. Organización Mundial para la Salud de.

10. Blanco A, Caixeta R, Sandoval R, Caixeta R, Gonzalez J (2011) Informe sobre Control del Tabaco en Venezuela. Organización Panamericana de Salud.

11. Bermúdez V, Marcano RP, Cano C, Arráiz N, Amell A, et al. (2010) The Maracaibo city metabolic syndrome prevalence study: design and scope. Am J Ther 17: 288-294.

12. Méndez Castellano H, Méndez MC (1986) Estratificación social y biología humana: Método Graffar modificado. Arch Ven Pueric Pediatr 49: 93-104.

13. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb c, et al. (2014) 2014 Evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 311: 507-520.

14. (2003) World Health Organization, The World Health Report 2003, Geneva, Switzerland.

15. Bjartveit K, Tverdal A (2005) Health consequences of smoking 1-4 cigarettes per day. Tob Control 14: 315-320.

16. Berlin I, Lin S, Lima JA, Bertoni AG (2012) Smoking Status and Metabolic Syndrome in the Multi-Ethnic Study of Atherosclerosis. A cross-sectional study. Tob Induc Dis 10: 9.

17. Ainsworth BE, Haskell WL, Whitt MC, Irwin ML, Swartz AM, et al. (2000) Compendium of physical activities: an update of activity codes and MET intensities. Med Sci Sports Exerc 32: S498-504.

18. (2005) Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ).

19. Im HJ, Park SM, Choi JH, Choi EJ (2014) Binge drinking and its relation to metabolic syndrome in korean adult men. Korean J Fam Med 35: 173-181.

20. Alberti K, Eckel R, Grundy S, Zimmer PZ, Cleeman JI, et al. (2009) Harmonizing the Metabolic Syndrome: A Joint Interim Statement of the International Diabetes Federation Task Force on Epidemiology and Prevention: National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; International Association for the Study of Obesity. Circulation 120: 1640-1645.

21. Chamberlain JJ, Rhinehart AS, Shaefer CF Jr, Neuman A (2016) Diagnosis and Management of Diabetes: Synopsis of the 2016 American Diabetes Association Standards of Medical Care in Diabetes. Ann Intern Med 164: 542-552.

22. Minichino A, Bersani FS, Calò WK, Spagnoli F, Francesconi M, et al. (2013) Smoking behaviour and mental health disorders--mutual influences and implications for therapy. Int J Environ Res Public Health 10: 4790-4811.

23. Centers for Disease Control and Prevention (CDC) (2012) Current cigarette smoking among adults - United States, 2011. MMWR Morb Mortal Wkly Rep 61: 889-894.

24. Miranda JJ, Herrera VM, Chirinos JA, Gómez LF, Perel P, et al. (2013) Major cardiovascular risk factors in Latin America: a comparison with the United States. The Latin American Consortium of Studies in Obesity (LASO). PLoS One 8: e54056.

25. Centers for Disease Control and Prevention (CDC) (2007) Cigarette smoking among adults--United States, 2006. MMWR Morb Mortal Wkly Rep 56: 1157-1161.

26. Almeida L, Szklo A, Sampaio M, Souza M, Martins LF, et al. (2012) Global Adult Tobacco Survey data as a tool to monitor the WHO Framework Convention on Tobacco Control (WHO FCTC) implementation: the Brazilian case. Int J Environ Res Public Health 9: 2520-2536.

27. Ferrante D, Linetzky B, Kon?no J, King A, Virgolini M, et al. (2011) Encuesta Nacional de Factores de Riesgo 2009: Evolución de la Epidemia de Enfermedades Crónicas no Transmisibles En Argentina. Rev Argent Salud Pública 2: 34-41.

28. (2015) World Health Organization. Country Profile Venezuela (Bolivarian Republic of). WHO Report on the Global Tobacco Epidemic, 2015.

29. Franco-Marina F, Lazcano-Ponce E (2010) Adult smoking trends in Mexico between 1988 and 2008. Salud Publica Mex 52 Suppl 2: S108-119.

30. Sreeramareddy CT, Ramakrishnareddy N, Harsha Kumar H, Sathian B, Arokiasamy JT (2011) Prevalence, distribution and correlates of tobacco smoking and chewing in Nepal: a secondary data analysis of Nepal Demographic and Health Survey-2006. Subst Abuse Treat Prev Policy 6: 33.

31. Mackay J, Amos A (2003) Women and tobacco. Respirology 8: 123-130.

32. Al-Kubaisy W, Abdullah NN, Al-Nuaimy H, Halawany G, Kurdy S (2012) Epidemiological study on tobacco smoking among university students in Damascus, Syrian Arab Republic. East Mediterr Health J 18: 723-727.

33. Paoletti L, Jardin B, Carpenter MJ, Cummings KM, Silvestri GA (2012) Current status of tobacco policy and control. J Thorac Imaging 27: 213-219.

34. Bernat DH, Klein EG, Forster JL (2012) Smoking initiation during young adulthood: a longitudinal study of a population-based cohort. J Adolesc Health 51: 497-502.

35. Lando HA, Thai DT, Murray DM, Robinson LA, Jeffery RW, et al. (1999) Age of initiation, smoking patterns, and risk in a population of working adults. Prev Med 29: 590-598.

36. Lim HK, Ghazali SM, Kee CC, Lim KK, Chan YY, et al. (2013) Epidemiology of smoking among Malaysian adult males: prevalence and associated factors. BMC Public Health 13: 8.

37. Memon A, Moody PM, Sugathan TN, el-Gerges N, al-Bustan M, et al. (2000) Epidemiology of smoking among Kuwaiti adults: prevalence, characteristics, and attitudes. Bull World Health Organ 78: 1306-1315.

38. (2009) Global Adult Tobacco Survey (GATS): Thailand country report. World Health Organization.

39. Li Q, Hsia J, Yang G (2011) Prevalence of smoking in China in 2010. N Engl J Med 364: 2469-2470.

40. Zhang DM, Hu Z, Orton S, Wang JJ, Zheng JZ, et al. (2013) Socio-economic and psychosocial determinants of smoking and passive smoking in older adults. Biomed Environ Sci 26: 453-467.

41. Centers for Disease Control and Prevention (CDC) (2009) Cigarette smoking among adults and trends in smoking cessation - United States, 2008. MMWR Morb Mortal Wkly Rep 58: 1227-1232.

42. (2014) Statistics on Smoking. Health and Social Care Information Centre, Lifestyle statistics team, England.

43. Horn K, Dino G, Branstetter SA, Zhang J, Noerachmanto N, et al. (2011) Effects of physical activity on teen smoking cessation. Pediatrics 128: e801-811.

44. Bize R, Willi C, Chiolero A, Stoianov R, Payot S, et al. (2010) Participation in a population-based physical activity programme as an aid for smoking cessation: a randomised trial. Tob Control 19: 488-494.

45. Bush T, Lovejoy JC, Deprey M, Carpenter KM (2016) The effect of tobacco cessation on weight gain, obesity, and diabetes risk. Obesity (Silver Spring) 24: 1834-1841.

46. Chiolero A, Faeh D, Paccaud F, Cornuz J (2008) Consequences of smoking for body weight, body fat distribution, and insulin resistance. Am J Clin Nutr 87: 801-809.

47. Bermúdez V, Pacheco M, Rojas J, Córdova E, Velázquez R, et al. (2012) Epidemiologic behavior of obesity in the Maracaibo City metabolic syndrome prevalence study. PLoS One 7: e35392.

48. Bermudez V, Rojas J, Salazar J, Calvo MJ, Morillo J, et al. (2014) The Maracaibo city metabolic syndrome prevalence study: primary results and agreement level of 3 diagnostic criteria. Revista Latinoamericana de Hipertensión 9: 1-15.

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