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Prevalence of metabolic syndrome in Central America: a cross-sectional population-based study

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ABSTRACT

Objective. *To report the prevalence of metabolic syndrome (MetS) as found by the Central American Diabetes Initiative (CAMDI) study for five major Central American populations: Belize (national); Costa Rica (San José); Guatemala (Guatemala City); Honduras (Tegucigalpa); and Nicaragua (Managua).*

Methods. *Study data on 6 185 adults aged 20 years or older with anthropometric and laboratory determination of MetS from population-based surveys were analyzed. Overall, the survey response rate was 82.0%. MetS prevalence was determined according to criteria from the Adult Treatment Panel III of the National Cholesterol Education Program. The study's protocol was reviewed and approved by the bioethical committee of each country studied.*

Results. *The overall standardized prevalence of MetS in the Central American region was 30.3% (95% confidence interval (CI): 27.1–33.4). There was wide variability by gender and work conditions, with higher prevalence among females and unpaid workers. The standardized percentage of the population free of any component of MetS was lowest in Costa Rica (9.0%; CI: 6.5–11.4) and highest in Honduras (21.1%; CI: 16.4–25.9).*

Conclusions. *Overall prevalence of MetS in Central America is high. Strengthening surveillance of chronic diseases and establishing effective programs for preventing cardiovascular diseases might reduce the risk of MetS in Central America.*

Key words Metabolic syndrome X; Belize; Costa Rica; Guatemala; Honduras; Nicaragua; Central America.

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In recent years, Latin America has experienced a significant decrease in infectious disease morbidity and mortality. This drop has been accompanied by a rapid increase in the number of cases of cardiovascular disease and other chronic conditions (1). Metabolic syndrome (MetS), a cluster of several chronic disease risk factors, including those associated with increased risk for cardiovascular disease, type 2 diabetes, and general mortality, is of particular concern (2, 3).

Prevalence of MetS has been well documented in several countries, including Canada (24.3%) and the United States (34.3%), with variations indicating higher risk for several non-Caucasian ethnic groups (4, 5). However, few studies have examined the population-level

prevalence of cardiovascular risk factors in Central America. The Cardiovascular Risk Factor Multiple Evaluation in Latin America (CARMELA) study, conducted in several Central and South American countries, reported prevalence of hypertriglyceridemia as high as 86.0% and prevalence of high blood pressure as high as 60.0% (6). The CARMELA study also found that MetS prevalence varied from 13.7% (in Quito) to 27.0% (in Mexico City) (6).

Despite growing concern about chronic diseases, the population prevalence of MetS and its components for the entire region of Central America has rarely been assessed. The Central American Diabetes Initiative (CAMDI) was the first multi-center study on the prevalence of risk factors for chronic noncommunicable diseases in the subregion of Central America (7). The objective was to determine the prevalence of MetS and its components in five major Central American populations: Belize (national); Costa Rica (San José); Guatemala (Guatemala City); Honduras (Tegucigalpa); and Nicaragua (Managua).

MATERIALS AND METHODS

Between 2003 and 2006, a cross-sectional population-based study was conducted in the entire country of Belize and in the urban areas of San José, Costa Rica; Guatemala City, Guatemala; Tegucigalpa, Honduras; and Managua, Nicaragua (as part of CAMDI). The study was conducted by the Pan American Health Organization (PAHO) with the participation of the U.S. Centers for Disease Control and Prevention (CDC) and academic institutions, nongovernmental organizations, and the ministries of health from the participating countries.

Sampling

The authors used official geographic divisions from the census bureau in each country to determine the primary sampling units (PSUs) for the study. PSUs were randomly selected with a probability of selection proportional to the number of registered family dwellings. A family dwelling was defined as shelter for a group of persons who shared the same table when eating. The authors then divided each PSU into compact segments (CS) consisting of 11 or 12 homes. Two CS were randomly selected from each selected PSU. All residents in the CS who met the study's inclusion criteria were included in the sample frame.

The study inclusion criteria were being 20 years old or older and a permanent resident of the selected household and having provided consent to participate, documented by a signed form. Pregnant women, nursing mothers, and those <6 months postpartum were excluded from the study. All survey participants were informed about the objectives and details of the study before soliciting consent to participate. Of a total of 7 542 subjects surveyed in the CAMDI, 6 185 with anthropometric, blood pressure, and biochemical measurements were selected for the MetS study (1 050 from Costa Rica, 904 from Guatemala, 1 124 from Honduras, 1 587 from Nicaragua, and 1 520 from Belize).

The survey instrument

The survey was derived from 1) questionnaires previously used by PAHO and the Institute of Nutrition of Central America and Panama (INCAP) and 2) questionnaires published by the CDC, such as those from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health and Nutrition Examination Survey (NHANES). The survey collected information from respondents on socio-demographic characteristics, health status, and cardiovascular risk factors such as physical inactivity, diet, access to health care resources, and treatment for specific conditions. The survey questionnaire was validated in a field trial carried out before the survey, which allowed for adjustment of the language used in each question according to the population.

Anthropometric, blood pressure, and biochemical measurements

Participants were interviewed at home or in a designated place such as a health center or a school. Interviews lasted 45–60 minutes and included measurements of blood pressure, height, weight, and waist circumference. Anthropometric measurements were taken according to the method described by Lohmann et al. (8), which recommends taking each individual measurement twice. A third measurement was taken for every participant for whom the results for the first and second measurements differed by >0.5 cm for height and waist circumference or by >0.2 kg for weight.

Waist circumference was measured at the approximate midpoint between the lower rib and the top of the iliac crest, with normal breathing, two times, and repeated if the difference between the measurements was more than 2.5 cm.

Blood pressure was measured three times in succession, at five-minute intervals, with the participant seated and resting his/her left arm on a flat surface at heart level. A fourth measurement was taken for any participant for whom the highest and lowest blood pressure values differed by >10 mmHg. For participants with more than three blood pressure measurements, the average of the two closest recorded values was used. At all participant sites, interviewers were trained and standardized in anthropometric and blood pressure determinations.

Biochemical determinations

During the household visit with each survey participant, a follow-up appointment was scheduled for within seven days. Local community centers, health centers, or schools were used as examination centers. A blood sample was collected after a 14-hour fasting period to determine glycemic level, total cholesterol, triglycerides, and high-density lipoprotein cholesterol (HDL-C). Colorimetric test (Autolab, Analyzer Medical System, Rome, Italy) was used for all laboratory tests and blood samples were stored and processed within seven days of collection.

All data obtained from the survey were coded and reviewed by the interviewer and the field supervisor separately. The case report forms were digitized and the resulting datasets reviewed for inconsistent values, typographical errors, and outliers in quantitative values.

Definition of metabolic syndrome

For this study, MetS was defined according to the criteria of the Adult Treatment Panel III of the National Cholesterol Education Program (9) as the presence of three or more of the following components: 1) abdominal (central) obesity defined by a waist circumference

>102 cm in men and >88 cm in women; 2) high triglyceride levels (≥150 mg/dl or ≥1.7 mmol/L); 3) low HDL-C levels (<40 mg/dl or <1.03 mmol/L in men and <50 mg/dl of <1.29 mmol/L in women); 4) elevated blood pressure (systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥85 mmHg, or use of antihypertensive therapy); and 5) elevated fasting plasma glucose (≥5.6 mmol/L and/or pharmacological treatment).

Statistical analysis

Prevalence of MetS was estimated for all study sites collectively (i.e., prevalence for Central America as a whole) and for each site individually. Calculations were also performed individually for each MetS component risk factor. Estimates were age-standardized based on the world population distribution defined by the World Health Organization (WHO) (10). MetS prevalence was estimated by strata for various characteristics (age, gender, smoking status, marital status, education level, and alcohol consumption). Weights were assigned to all samples to make results representative of the underlying populations. All analyses were calculated with the weighted samples due to the complex sample design used in the investigation.

Participants from the CAMDI study with laboratory and anthropometric data were compared to CAMDI participants without those data; differences between those with and without that data were not statistically significant. Analyses were performed using Stata 10.1 (2009) (StataCorp, College Station, Texas, United States).

Survey weight estimations and design effect

To estimate sample weights for each country represented in the study, the inverse of probability of an individual being selected for inclusion through every step of the process used to determine the study sample (i.e., PSU and CS selection), by age group and sex, was used. A non-response weight was estimated for each age group and sex. The study design effect was 1.5. The study's protocol was reviewed and approved by the bioethical committee of each country studied. After being provided with an explanation of study objectives, methodology, measurements, and confidentiality, each participant signed an informed consent form confirming that his/her participation in the survey was voluntary.

RESULTS

Adults 20–39 years old comprised the largest age group in the study (60.6%; 95% confidence interval (CI): 58.0–63.2), followed by those 40–64 years old (31.2%; CI: 29.0–33.6). Almost half of the study participants were women (49.5%; CI: 47.7–51.3) and almost two-thirds were married (63.3%; CI: 60.8–65.8).

There was considerable variation in levels of education across countries. The proportion of participants with a university education ranged from 8.8% (in Belize) to 28.4% (in Costa Rica), and the proportion with less than a secondary school education ranged from 34.7% (in Nicaragua) to 59.3% (in Honduras). Smoking and alcohol were lowest in Belize. Smoking was highest in Guatemala, and alcohol consumption was highest in Honduras. The distribution of alcohol consumption was similar for Guatemala, Honduras, and Nicaragua versus the patterns in the other countries (Table 1).

Prevalence of metabolic syndrome

Overall prevalence of MetS in Central America was 30.3% (CI: 27.1–33.4); of those with the condition, 39.4% (CI: 36.6–42.1) were female and 21.3% (CI: 17.4–25.4) were male. Across the five countries prevalence ranged from 23.0% (CI: 18.9–27.1) (Honduras) to 35.1% (CI: 31.4–38.8) (Costa Rica).

Prevalence was slightly higher among those who were married (32.0%; CI: 28.4–35.6) versus those who were single or widowed/divorced. The highest prevalence of MetS among those widowed/divorced was in Costa Rica (36.9; CI: 32.2–41.6). Prevalence did not vary significantly by level of education but ranged from 36.3% (CI: 21.6–51.0) for those with a university education in Belize to 21.2% (CI: 13.6–28.9) for those with a secondary education in Guatemala (Table 2).

With regard to employment status, prevalence of MetS was highest (32.5%; CI: 29.3–35.7) among persons with unpaid or no work versus 28.0% (CI: 24.3–31.7) among those with paid work. Costa Rica had the highest MetS prevalence for unpaid workers and those who did not work (31.2%; CI: 25.8–36.6). The percentage of the overall population in Central America without any component of MetS was 15.8% (CI: 14.0–17.6). Costa Rica had the lowest proportion of people with no MetS component (9.0%; CI: 6.5–11.4) (Table 2).

Prevalence of individual components of metabolic syndrome

Hypertriglyceridemia was the most common individual component of MetS, affecting 48.2% of the total study population (CI: 46.0–50.5), followed by low HDL-C (48.1%; CI: 41.1–55.1). The highest prevalence of hypertriglyceridemia was in Guatemala (60.5%; CI: 54.0–67.0) and the highest prevalence of low HDL-C was in Costa Rica (59.9%; CI: 54.6–65.2). The highest prevalence of high blood pressure was in Nicaragua (41.4%; CI: 36.2–42.0) and the highest prevalence of central obesity was in Belize (45.8%; CI: 41.4–50.1) (Figure 1).

Comparison between sexes showed that hypertriglyceridemia prevalence was higher in men and low HDL-C prevalence was higher in women (Figure 2).

DISCUSSION

This first-ever multinational chronic disease prevalence study for Central America revealed three key findings. First, prevalence of MetS as a whole was as high or higher than the prevalence reported in Mexico and other developing countries (6, 11) and in many developed countries. Second, prevalence was notably higher among women than men in all five countries studied. Third, prevalence varied considerably across countries.

Higher prevalence of MetS in females versus males has not been reported in studies of MetS in developed countries, where prevalence between the sexes is very similar or higher in the male population (12). However, higher prevalence of MetS in females in Latin America has been reported in previous studies (13). Variation by sex in MetS prevalence in some developing countries was an important finding that may be attributed to differences in socio-demographic and paid work status (14–17). Lower MetS prevalence in those with paid jobs compared to those without paid jobs might be explained by previously described disparities in income and education level related to MetS prevalence (17).

MetS prevalence found in this study showed relatively little difference by education level compared to descriptions in

TABLE 1. Prevalence[a] of socio-demographic characteristics among selected Central American Diabetes Initiative (CAMDI) survey participants,[b] by country, Central America, 2003–2006

Characteristic / category	Belize (*n* = 1 520)	Costa Rica (*n* = 1 050)	Guatemala (*n* = 904)	Honduras (*n* = 1 124)	Nicaragua (*n* = 1 587)	Overall (*n* = 6 185)
Age group (years)						
20–39	61.0 (59.1–62.8)	53.6 (50.0–57.0)	62.3 (61.5–68.9)	63.2 (59.7–69.4)	65.5 (62.7–68.2)	60.6 (58.0–63.2)
40–64	29.9 (28.2–31.7)	37.2 (34.2–40.4)	29.9 (26.5–33.5)	26.5 (23.0–30.4)	28.6 (26.6–30.8)	31.2 (29.0–33.6)
≥65	9.1 (8.4–9.9)	9.2 (5.9–12.1)	4.9 (3.3–7.1)	10.2 (7.6–13.7)	5.9 (4.8–7.2)	8.2 (7.1–9.4)
Sex						
Male	35.4 (28.2–43.1)	38.1 (33.1–43.5)	26.0 (17.5–36.8)	30.3 (20.9–41.7)	37.2 (31.6–43.2)	50.5 (48.6–52.3)
Female	64.6 (56.9–71.7)	61.9 (56.5–66.9)	74.0 (63.2–82.5)	69.7 (58.3–79.1)	62.8 (56.8–68.4)	49.5 (47.7–51.3)
Marital status						
Single	25.8 (21.7–30.3)	27.7 (24.0–31.6)	15.0 (11.3–19.5)	22.5 (20.4–24.8)	32.4 (28.8–36.3)	27.0 (24.8–29.3)
Married	67.4 (62.8–71.7)	60.7 (56.2–65.0)	67.9 (56.6–77.4)	67.4 (63.7–70.9)	61.2 (57.5–64.7)	63.3 (60.8–65.8)
Widowed/divorced	6.8 (5.5–8.5)	11.7 (9.4–14.4)	17.2 (8.1–32.9)	10.1 (7.9–12.9)	6.4 (5.1–8.1)	9.7 (8.4–11.2)
Education						
None	5.0 (3.5–7.2)	1.8 (0.0–3.2)	6.2 (4.3–8.8)	7.9 (6.5–10.01)	5.7 (4.3–7.6)	4.9 (3.8–6.2)
Elementary	62.4 (55.4–68.9)	35.0 (28.4–42.1)	41.2 (35.3–47.3)	51.4 (42.3–60.5)	29.0 (24.8–33.7)	39.5 (34.2–45.0)
Secondary	23.8 (19.3–28.9)	34.9 (31.2–28.9)	34.3 (26.8–42.9)	30.8 (25.6–36.6)	46.2 (42.4–50.1)	36.4 (33.3–39.6)
University	8.8 (6.0–12.9)	28.4 (22.7–34.8)	18.2 (10.8–29.1)	9.8 (5.9–16.0)	19.0 (15.9–22.5)	19.2 (15.6–23.4)
Paid work						
Yes	44.3 (38.2–50.5)	56.4 (52.1–60.7)	73.2 (69.5–76.7)	58.6 (54.8–62.3)	47.4 (44.8–49.9)	54.3 (51.8–56.8)
No	55.7 (49.5–61.8)	43.6 (39.3–47.9)	26.8 (23.3–30.5)	41.4 (37.7–45.2)	52.6 (50.1–55.2)	45.7 (43.2–48.2)
Smoking status						
Current	8.8 (6.6–11.7)	16.9 (14.6–19.5)	21.4 (14.2–31.0)	15.8 (11.8–20.7)	19.1 (16.9–21.5)	17.0 (15.5–18.6)
Former	7.2 (5.3–9.6)	22.4 (20.0–25.0)	19.7 (15.2–25.1)	16.8 (15.7–18.0)	–[c]	13.2 (11.3–15.4)
Never	84.1 (80.4–87.2)	60.7 (57.8–63.5)	58.9 (52.2–65.3)	67.4 (62.3–72.2)	80.9 (78.5–83.1)	70.0 (67.2–72.3)
Alcohol consumption						
Yes	31.4 (24.7–38.9)	42.0 (37.0–47.3)	66.0 (55.7–75.0)	69.2 (59.0–77.8)	60.1 (54.8–65.3)	49.0 (44.6–53.6)
No	68.6 (61.1–75.3)	58.0 (52.7–63.0)	34.0 (25.1–44.3)	30.1 (22.2–41.0)	39.9 (34.7–45.2)	51.0 (46.4–55.4)

[a] % (95% confidence interval).
[b] Those with anthropometric and laboratory determinations.
[c] Data not available because question not included in the survey.

previous studies in which education was considered an indicator of disparity in MetS and cardiovascular conditions (18). This finding versus those in other countries might be a consequence of stronger influence on MetS prevalence from variables such as socioeconomic status rather than education level.

The two biggest risk factors for MetS in Central America were hypertriglyceridemia and low HDL-C levels, similar to findings in several studies conducted in Latin America (13). This could be a consequence of common cultural factors (or backgrounds) in the population, including variables such as diet and type of work (13). Prevalence of hypertriglyceridemia, one of the most important MetS components, is an important consideration in the formulation of cardiovascular preventive programs because elevated triglycerides confer increased risk (19).

The CAMDI study reported diabetes prevalence for every country in Central America (20). Of the three countries with the highest prevalence of diabetes (Belize, Costa Rica, and Nicaragua), two (Belize and Costa Rica) also had the highest MetS prevalence. The high MetS prevalence in Central American countries could 1) increase future prevalence of diabetes and other related glycemic abnormalities and 2) have a negative influence on diabetes-related complications or other health conditions.

Conclusions

The high prevalence of MetS in Central Americans 20 years old or older indicates the need for improved surveillance of cardio-metabolic diseases and the prioritization of interventions to reduce MetS-related morbidity, disability, and mortality.

The study findings indicate the need for Central American governments to establish preventive actions designed to reduce central obesity and dyslipidemia

TABLE 2. Adjusted[a] prevalence[b] of metabolic syndrome (MetS) by country, Central America, 2003–2006

Characteristic	Belize (*n* = 1 520)	Costa Rica (*n* = 1 050)	Guatemala (*n* = 904)	Honduras (*n* = 1 124)	Nicaragua (*n* = 1 587)	Overall (*n* = 6 185)
General prevalence	32.0 (27.4–36.5)	35.1 (31.4–38.8)	31.6 (26.9–36.2)	23.0 (18.9–27.1)	30.0 (26.7–32.5)	30.3 (27.1–33.4)
Sex						
Male	22.7 (16.8–28.7)	27.4 (22.1–32.6)	17.6 (11.2–23.9)	12.4 (7.5–17.3)	22.8 (18.9–26.7)	21.3 (17.4–25.4)
Female	41.1 (35.8–46.6)	42.9 (38.9–46.9)	45.5 (38.8–52.2)	33.6 (27.8–39.5)	36.4 (31.6–41.1)	39.4 (36.6–42.1)
Marital status						
Single	22.6 (18.0–27.2)	30.0 (21.1–38.9)	19.6 (10.8–28.3)	25.7 (20.8–30.6)	25.9 (21.5–30.2)	26.5 (22.3–30.7)
Married	33.7 (29.3–38.3)	36.9 (32.2–41.6)	31.3 (26.5–36.2)	24.0 (18.5–29.4)	32.1 (27.7–36.4)	32.0 (28.4–35.6)
Widowed/divorced	45.9 (28.5–63.2)	31.3 (22.9–39.8)	30.6 (21.3–39.9)	29.4 (17.9–41.0)	27.4 (16.8–38.1)	31.4 (25.0–37.8)
Education						
None	20.2 (12.6–27.8)	27.1 (13.8–40.4)	52.7 (31.7–40.4)	16.2 (9.3–23.2)	38.7 (26.5–50.9)	28.9 (19.1–38.7)
Elementary	33.4 (28.8–38.0)	37.4 (32.2–42.4)	33.4 (27.8–39.0)	23.4 (19.7–27.1)	31.7 (27.4–36.0)	31.4 (27.7–35.1)
Secondary	26.2 (20.5–31.9)	33.3 (27.9–38.8)	21.2 (13.6–28.9)	24.1 (18.8–29.6)	25.4 (20.5–30.3)	28.1 (25.0–31.1)
University	36.3 (21.6–51.0)	34.4 (28.0–40.8)	26.2 (12.8–39.7)	20.7 (10.5–31.0)	29.8 (21.5–38.0)	32.4 (27.4–37.4)
Paid work						
Yes	28.0 (22.2–33.8)	31.2 (25.8–36.6)	29.7 (25.0–34.4)	20.2 (14.7–25.7)	29.4 (23.5–35.3)	28.0 (24.3–31.7)
No	33.1 (27.9–38.4)	36.2 (29.8–42.6)	31.1 (21.7–40.4)	28.1 (23.8–32.4)	30.0 (25.2–34.9)	32.5 (29.3–35.7)
Smoking status						
Current	39.6 (24.0–55.2)	30.5 (22.6–38.4)	25.0 (15.4–34.6)	15.1 (7.1–23.0)	35.5 (27.8–43.1)	30.4 (25.1–35.8)
Former	49.8 (39.4–60.2)	33.7 (26.8–40.6)	38.9 (30.4–47.5)	–[c]	29.0 (22.2–35.8)	31.2 (26.2–36.3)
Never	30.9 (26.0–35.8)	34.2 (30.0–38.4)	27.6 (21.7–33.6)	23.3 (18.3–28.4)	29.1 (26.5–31.7)	29.7 (26.9–32.4)
Alcohol consumption						
Yes	25.9 (10.4–41.3)	27.6 (14.4–40.7)	49.9 (31.9–66.0)	4.6 (1.3–10.6)	33.2 (24.9–41.7)	30.0 (21.8–38.2)
No	32.0 (27.2–36.9)	36.0 (32.0–40.0)	31.2 (26.5–36.0)	23.6 (19.7–27.5)	28.8 (25.9–31.7)	30.6 (27.7–33.5)
Number of MetS components						
0	16.1 (13.1–19.2)	9.0 (6.5–11.4)	13.0 (9.8–16.1)	21.1 (16.4–25.9)	19.4 (17.0–21.8)	15.8 (14.0–17.6)
1	26.0 (23.7–28.4)	28.8 (25.1–32.6)	25.1 (20.3–29.8)	28.0 (24.9–31.2)	25.4 (22.4–28.5)	27.3 (25.4–29.2)
2	25.9 (23.1–28.6)	27.0 (23.8–30.2)	30.4 (25.2–35.5)	27.8 (21.2–34.3)	25.5 (22.8–28.2)	26.6 (24.5–28.7)
3	19.2 (17.0–21.5)	20.4 (16.9–24.0)	19.0 (15.0–23.1)	15.8 (12.7–19.0)	19.1 (16.1–22.0)	18.8 (16.8–20.8)
4	10.7 (7.7–13.7)	11.9 (10.1–13.6)	9.9 (4.6–15.2)	6.3 (5.0–7.6)	8.1 (6.1–10.1)	9.4 (8.1–10.6)
5	2.0 (1.3–2.8)	2.8 (1.6–3.9)	2.6 (1.1–4.1)	0.8 (0.0–1.7)	2.4 (1.2–3.6)	2.2 (1.5–2.9)

[a] Using World Health Organization world population distribution as the standard.
[b] % (95% confidence interval).
[c] Data not available because question not included in the survey.

as well as the burden of related diseases within their populations. Actions to prevent cardio-metabolic diseases should be given priority in the portfolio of preventive strategies to reduce the future consequences of MetS for population health.

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Conflicts of interest. None.

Disclaimer. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC; PAHO, or the RPSP/PAJPH; or any other institutional affiliations of the authors.

FIGURE 1. Prevalence (%) of metabolic syndrome (MetS) components by country, Central America, 2003–2006

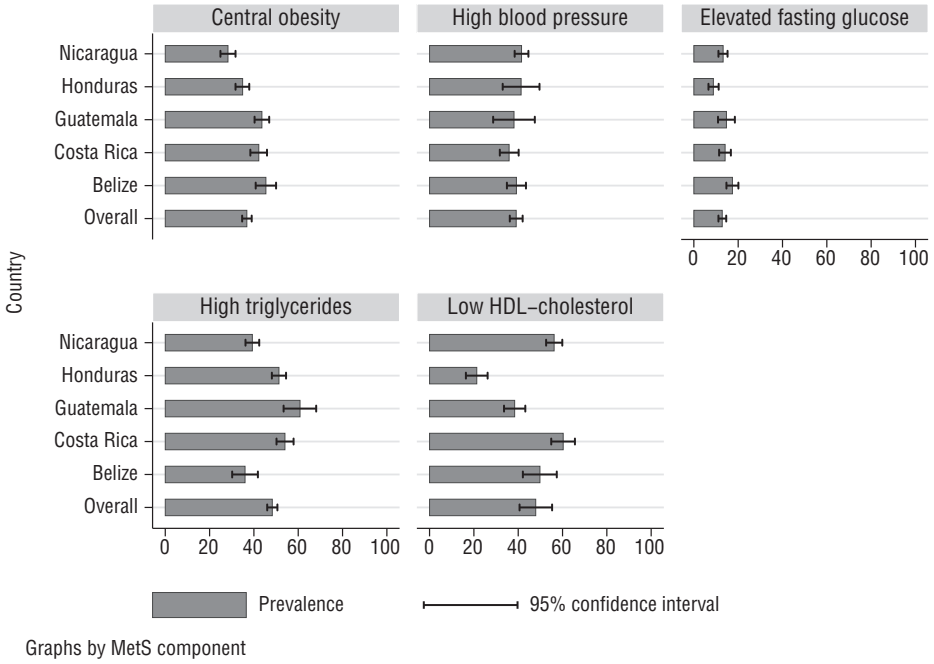
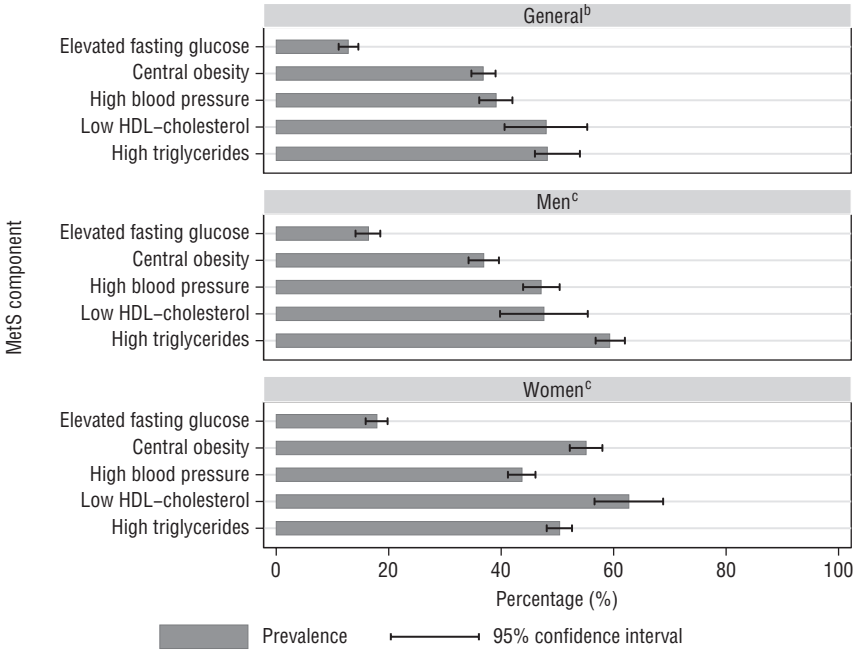


FIGURE 2. Prevalence of metabolic syndrome (MetS) components in general population and by sex, Central America,[a] 2003–2006



[a] Belize, Costa Rica, Guatemala, Honduras and Nicaragua.
[b] Standarized by age and sex.
[c] Standarized by age.

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RESUMEN

Prevalencia del síndrome metabólico en Centroamérica: un estudio transversal basado en la población

Objetivo. Notificar la prevalencia del síndrome metabólico (SMet) observada en el estudio de la Iniciativa Centroamericana de Diabetes (CAMDI) llevado a cabo en cinco importantes poblaciones centroamericanas: Belice (nacional); Costa Rica (San José); Guatemala (Ciudad de Guatemala); Honduras (Tegucigalpa); y Nicaragua (Managua).
Métodos. Se analizaron los datos de estudio obtenidos de las encuestas poblacionales dirigidas a 6 185 adultos de 20 años de edad o mayores con determinaciones antropométricas y de laboratorio relativas al SMet. En términos generales, la tasa de respuesta a las encuestas fue de 82,0%. Se determinó la prevalencia del SMet según los criterios del tercer informe del Grupo de Expertos en el Tratamiento de Adultos (Adult Treatment Panel III) del Programa Nacional de Educación sobre el Colesterol. El protocolo del estudio fue examinado y aprobado por el comité de bioética de cada uno de los países incluidos en el estudio.
Resultados. La prevalencia general estandarizada del SMet en Centroamérica fue de 30,3% (Intervalo de confianza de 95% (IC): 27,1–33,4). Se observó una amplia variabilidad según el sexo y las condiciones laborales, con mayor prevalencia en mujeres y trabajadores no retribuidos. El menor porcentaje estandarizado de población libre de cualquier componente del SMet se observó en Costa Rica (9,0%; IC: 6,5–11,4) y el mayor en Honduras (21,1%; IC: 16,4–25,9).
Conclusiones. La prevalencia general de SMet en Centroamérica es alta. Se podría reducir el riesgo de SMet en Centroamérica mediante el fortalecimiento de la vigilancia de las enfermedades crónicas y el establecimiento de programas eficaces de prevención de las enfermedades cardiovasculares.

Palabras clave Síndrome X metabólico; Belice; Costa Rica; Guatemala; Honduras; Nicaragua; América Central.