

Waist Circumference and Diabetes Risk in Colombian Population

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Introduction.

Increased waist circumference is a cardiovascular risk factor. Currently, we have the cutoff value of International Diabetes Federation (IDF) or by Latin-American standards; Colombia has no studies showing the relationship between increased waist circumference and the risk of diabetes. This study aims to show the relationship between increased waist circumference by IDF criteria or Latin-American criteria and the risk of diabetes.

Methodology.

Cross-sectional study where multivariate analysis was performed using two models: waist circumference increased by IDF criteria (≥ 90 cm in male and ≥ 80 cm in female) and waist circumference by Latin-American criteria (≥ 94 cm in male and ≥ 90 cm in female) and risk of diabetes; adjusted for age, sex, HDL cholesterol, and body mass index (relevant variables in univariate analysis).

Table No1 Baseline Characteristics N= 2200 patients

Variable	Diabetes		p
	NO (n=1530 (69,55%))	YES (n= 670 (30,45%))	
Female n(%)	761 (49,74)	276 (41,19)	<0,001
Male n (%)	769 (50,26)	394 (58,81)	
Age (Mean (SD))	65,43 (12,44)	66,19 (12,01)	0,18
Weight Kgs (Mean (SD))	71,11(12,77)	74,31(13,23)	<0,001
Hypertension n(%)	1316 (86,01)	440 (65,67)	<0,001
Waist Circumference Increased by IDF criteria n(%)	1305 (85,41)	606 (90,72)	0,001
Waist Circumference Increased by Latin-American criteria n (%)	1036 (67,80)	512 (76,65)	<0,001
Body Mass Index Kg/m2 (Mean (SD))	28,40 (4,89)	29,05(28,68)	
A1c % (Mean (SD))	6,03 (0,51)	7,74 (1,72)	<0,001
Creatinine mg/dl (Mean (SD))	1,43 (1,26)	1,64 (0,82)	0,48
Albumin Excretion Rate mg/gr (Mean(SD))	79,23 (46,88)	71,91 (44,37)	0,04
Total Cholesterol mg/dl (Mean (SD))	198,87 (39,86)	188,20 (45,61)	<0,001
LDL Cholesterol mg/dl (Mean (SD))	124,27 (32,91)	116,49 (38,02)	<0,001
HDL Cholesterol mg/dl (Mean(SD))	46 (12,80)	42,21 (11,14)	<0,001
Triglycerides mg/dl (Mean (SD))	100,50 (110,04)	105,15 (150,40)	0,40

Results:

2200 patients were included: 30,45% (670 patients) with type 2 diabetes, of which 90,72% had increased waist circumference by IDF criteria and 76,65% by Latin-American criteria.

In the 1st model, it was found: as independent factors associated with diabetes: Male gender OR = 1.30 (95%CI 1,05 -1,6, p = 0,014) and increased waist circumference by IDF criteria OR = 1,44 (95%CI 1,02-2,04, p = 0,038); as a protective factor HDL cholesterol OR = 0,97 (95%CI 0,96-0,98, p <0,001).

In the 2nd model, it was found: Male gender OR = 1,31 (95%CI 1,06-1,61, p = 0,01) and increased waist circumference by Latin-American criteria OR = 1,42 (95%CI 1,12 -1,79; p = 0,003); as a protective factor HDL cholesterol OR = 0,97 (95%CI 0,96-0,98, p <0,001).

Table No 2 Univariate analysis of factors related to Type 2 Diabetes

Variables	OR	CI 95%	p
Age	1,005	0,99-1,012	0,18
Age stratum			
15 to 30 years	1		
31 to 50 years	0,84	0,38-1,83	0,66
51 to 70 years	1,15	0,56-2,34	0,69
> 70 years	1,12	0,55-2,29	0,74
Male gender	1,41	1,17-1,69	<0,001
Waist circumference increased by IDF criteria	1,67	1,24-2,24	0,001
Waist circumference by Latin-American criteria	1,55	1,26-1,92	<0,001
Hypertension	0,99	0,82-1,19	0,94
Triglycerides >150 mg/dl	1,37	1,005-1,88	0,046
Creatinine	1,19	0,72-1,95	0,49
LDL Cholesterol	0,99	0,990-0,996	<0,001
HDL Cholesterol	0,97	0,96-0,98	<0,001
Body Mass Index	1,002	1,001-1,004	0,004

Table No 3 Model 1 multivariate analysis of Waist circumference increased by IDF criteria and factors related to risk of Type 2 Diabetes

Variable	OR	CI 95%	p
Age	1,00	0,99 -1,01	0,407
Male gender	1,30	1,05- 1,6	0,014
HDL Cholesterol	0,97	0,96- 0,98	<0,001
Waist circumference increased by IDF criteria	1,44	1,02- 2,04	0,038
Triglycerides >150 mg/dl	1,00	0,99-1,003	0,112
Body Mass Index	0,97	0,91- 1,02	0,302

Variable	OR	CI 95%	p
Age	1	0,99- 1,013	0,383
Male gender	1,31	1,06- 1,61	0,01
HDL Cholesterol	0,97	0,96- 0,98	<0,001
Waist circumference increased by Latin-American criteria	1,42	1,12- 1,79	0,003
Triglycerides >150 mg/dl	1	0,99- 1,003	0,256
Body Mass Index	0,98	0,92- 1,04	0,592

Conclusion: Increased waist circumference by IDF or Latin-American criteria may be associated independently to the risk of diabetes in Colombian population

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