Supplement:

Figure S1. Forest plot of age in patients with Chagas cardiomyopathy vs. indeterminate disease. CCC: Chagas cardiomyopathy

00 51 44 49 98 47 15 47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	52.3 62.5 46.88 645.32 48.07 59.4 45.35 445.35 445.35 48.2 45.35 48.2 45.35 48.2 66.8 66.8 66.8 66.8 66.8 66.8 66.8 6	11.8 12.6 10.23 12.37 10.5 12.56 10.30 10.3 8.15 10.56 11.64 6.8 10.3 9.8 11.32 8.1 11.7 8.6 11.32 8.1 11.7 11.7 11.7 11.6 11.7 11.6 11.7 11.7	13 13 30 100 22 87 133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27 53	54.6 50 38.73 50.55 48.4 59 51 41 48.4 48.3 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5 54	7 6 10.71 13.04 10 9 12 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		-0.22 [- 0.23 [- 0.78 [0.46 [0.15 [- 0.45 [0.40 [0.33 [- 0.71 [- 1.49 [0.36 [0.65 [0.83 [0.96 [- 0.46 [0.42 [- 0.61 [0.84 [0.33 [- 0.06 [- 0.06 [- 0.06 [- 0.06 [- 0.06 [- 0.06 [- 0.078 [- 0.08	0.44, 0.33, 0.18, 0.34, 0.08, 0.19, 8.30, 2.71, 1.43, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.47] 0.89] 1.23] 0.74] 0.65] 0.81] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] 0.92] 1.10]	1.07 1.08 1.13 1.15 1.12 1.14 1.06 1.07 1.10 1.15 1.14 1.15 1.15 1.15 1.15 1.15 1.15
58 50 51 44 49 69 84 47 15 47 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 36 66 66 66 66 66 66 66 66 66	46.88 56.45 49.9 63.3 55.96 50.5 58.38 39.6 45.32 48.07 56.3 54.3 38.5 64.9 59.9 45.35 48.35 52.4 48.35 52.4 48.35 53.4 48.35 53.4 48.35 53.4 48.35 53.4 53.4 53.4 53.4 53.4 53.4 53.4 5	10.23 12.37 9.7 10.5 12.56 1 3.03 10.3 8.15 10.56 10.3 9.8 15.3 11.32 11.32 8.1 17 8.61 9.06 11.64 11.64	30 100 22 87 133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	38.73 50.55 48.4 59 51 41 48.4 48.3 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	10.71 13.04 10 9 12 1 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8		0.78 [0.46 [0.15 [0.45 [0.40 [0.	0.33, 0.18, 0.34, 0.08, 0.19, 8.30, 2.71, 1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59,	1.23] 0.74] 0.65] 0.81] 0.61] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.13 1.15 1.12 1.14 1.16 0.94 1.07 1.10 1.15 1.14 1.15 1.14 1.15 1.15 1.16
00 51 44 49 98 47 15 47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	56.45 49.9 63.3 55.96 50.5 50.5 83.6 45.32 48.07 59.47 56.3 54 38.5 45.35 45.35 48.35 48.5 59.9 35.4 52 45.35 48.5 48.5 59.9 35.4 59.9 35.4 59.9 40.9 4	12.37 9.7 10.5 12.56 1 3.03 8.15 10.56 11.64 6.8 10.3 11.32 8.1 17 8.61 9.06 11.64	100 22 87 133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	50.55 48.4 59 51 41 48.4 48.3 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	13.04 10 9 12 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17		0.46 [0.15 [- 0.45 [0.40 [9.45 [3.39 [-0.71 [1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [-0.41 [0.84 [0.33 [0.33 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.34 [0.33 [0.34 [0	0.18, 0.34, 0.08, 0.19, 8.30, 2.71, 1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.74] 0.65] 0.81] 0.61] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.15 1.12 1.14 1.16 0.94 1.07 1.10 1.15 1.14 1.15 1.14 1.15 1.15 1.15
51 44 49 99 98 47 15 47 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 6	49.9 63.3 555.96 50.5 58.38 39.6 45.32 48.07 59.47 566.3 54 38.5 64.9 59.9 35.4 52 45.35 45.35 45.35 45.35 45.35 46.31 59.48	9.7 10.5 12.56 1 3.03 10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61	22 87 133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	48.4 59 51 41 48.4 48.3 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	10 9 12 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8		0.15 [- 0.45 [0.40 [9.45 [3.39 [-0.71 [1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [0.61 [0.84 [0.33 [0.33 [0.84 [0.33 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.34 [0.33 [0.34 [0.34 [0.33 [0.34 [0.34, 0.08, 0.19, 8.30, 2.71, 1.43, 0.93, 0.03, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33, 0.61,	0.65] 0.81] 0.61] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.12 1.14 1.16 0.94 1.07 1.10 1.15 1.14 1.05 1.12 1.15 1.15 1.15
44 896 98 47 15 47 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 6	63.3 55.96 50.5 58.38 39.6 45.32 48.07 59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 64.9 59.9 35.4 52 45.35 64.9 59.9 35.4 52 45.35 64.3 52 45.32 52 45.32 52 52 52 52 52 52 52 52 52 52 52 52 52	10.5 12.56 1 3.03 10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 19.06 11.78 11.61	87 133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	59 51 41 48.4 48.3 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	9 12 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		0.45 [0.40 [9.45 [3.39 [-0.71 [1.49 [0.36 [0.65 [0.83 [-0.42 [-0.61 [0.84 [0.33 [0.33 [0.33 [0.33 [0.34 [0.33 [0.33 [0.33 [0.34 [0.33 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.33 [0.34 [0.08, 0.19, 8.30, 2.71, 1.43, 0.93, 0.03, 0.047, 0.80, 0.30, 0.59, 0.33, 0.61,	0.81] 0.61] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.14 1.00 1.00 1.00 1.10 1.14 1.14 1.15 1.14 1.15
996 98 47 15 47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 6	55,96 50.5 58.38 39.6 45.32 48.07 59.47 56.3 54 38.5 64.9 59.9 45.35 48.5 52 45.35 48.5 52 45.35 48.5 52 45.35 48.5 52 45.35 48.5 52 45.35 48.5 53.4 54.5 55.35	12.56 1 3.03 10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61	133 46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	51 41 48.4 48 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	12 1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8		0.40 [9.45 [3.39 [-0.71 [- 1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [0.61 [0.84 [0.33 [-	0.19, 8.30, 2.71, 1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0,61] 10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.16 0.94 1.00 1.10 1.10 1.14 1.14 1.15 1.15 1.16
98 47 15 47 99 91 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 6	50.5 58.38 39.6 45.32 48.07 59.47 56.3 54 38.5 64.9 59.9 35.4 45.35 48 53.41 59.48 42.05 53.1 45	1 3.03 10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	46 35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	41 48.4 48 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	1 2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		9.45 [3.39 [-0.71 [- 1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	8.30, 2.71, 1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	10.60] 4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	0.9-1.00 1.00 1.11 1.11 1.12 1.13 1.14 1.15 1.16 1.17
47 15 47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 6	58.38 39.6 45.32 48.07 59.47 66.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	3.03 10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	35 15 21 58 53 12 23 73 81 96 37 23 24 30 27	48.4 48 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	2.76 12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		3.39 [-0.71 [- 1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	2.71, 1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	4.06] 0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.00 1.00 1.10 1.10 1.10 1.10 1.10 1.10
15 47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	39.6 45.32 48.07 59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	10.3 8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	15 21 58 53 12 23 73 81 96 37 23 24 30 27	48 33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	12.52 8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		-0.71 [- 1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	1.43, 0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.01] 2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.0° 1.1° 1.1° 1.0° 1.1° 1.1° 1.1° 1.1°
47 97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 66	45.32 48.07 59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	8.15 10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61	21 58 53 12 23 73 81 96 37 23 24 30 27	33 44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	8.14815 9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		1.49 [0.36 [0.65 [0.83 [0.96 [-0.42 [-0.61 [0.84 [0.33 [-0.34 [-0.33	0.93, 0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	2.06] 0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.10 1.11 1.00 1.11 1.11 1.11 1.10
97 99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	48.07 59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	10.56 11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	58 53 12 23 73 81 96 37 23 24 30 27	44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8		0.36 [0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.15 1.05 1.15 1.15 1.15 1.15 1.16
99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	53 12 23 73 81 96 37 23 24 30 27	44.4 52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	9.8 11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8		0.36 [0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	0.03, 0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.68] 0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.15 1.05 1.15 1.15 1.15 1.15 1.16
99 14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	59.47 56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	11.64 6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	53 12 23 73 81 96 37 23 24 30 27	52 51.9 44 42.3 55 51 32.2 53 48.4 43.5	11 1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61		0.65 [0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	0.31, 0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	0.99] 1.61] 1.45] -0.04] 0.92] 1.10]	1.1/ 1.0/ 1.1/ 1.1/ 1.1/ 1.1/ 1.0/
14 68 43 90 77 11 27 28 60 79 99 22 28 15 35 35	56.3 54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	6.8 10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	12 23 73 81 96 37 23 24 30 27	51.9 44 42.3 55 51 32.2 53 48.4 43.5	1.7 10.3 8.5 17.1 8.88889 9.8 17 10.8 10.61	ļ	0.83 [0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	0.05, 0.47, 0.80, 0.30, 0.59, 0.33,	1.61] 1.45] -0.04] 0.92] 1.10]	1.00 1.11 1.11 1.11 1.11 1.00
68 43 90 77 11 27 28 60 79 99 22 28 15 35 35 6	54 38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	10.3 9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61	23 73 81 96 37 23 24 30 27	44 42.3 55 51 32.2 53 48.4 43.5	10.3 8.5 17.1 8.88889 9.8 17 10.8	ţ.	0.96 [-0.42 [- 0.61 [0.84 [0.33 [-	0.47, 0.80, 0.30, 0.59, 0.33, 0.61,	1.45] -0.04] 0.92] 1.10] 1.00]	1.15 1.15 1.15 1.15 1.06
43 90 77 11 27 28 60 79 99 22 28 15 35 35	38.5 64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	9.8 15.3 11.32 8.1 17 8.61 9.06 11.78 11.61	73 81 96 37 23 24 30 27	42.3 55 51 32.2 53 48.4 43.5	8.5 17.1 8.88889 9.8 17 10.8 10.61	١.	-0.42 [- 0.61 [0.84 [0.33 [-	0.80, 0.30, 0.59, 0.33, 0.61,	-0.04] 0.92] 1.10] 1.00]	1.1:
90 77 11 27 28 60 79 99 22 28 15 35 35 6	64.9 59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	15.3 11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	81 96 37 23 24 30 27	55 51 32.2 53 48.4 43.5	17.1 8.88889 9.8 17 10.8 10.61	}	0.61 [0.84 [0.33 [-	0.30, 0.59, 0.33, 0.61,	0.92] 1.10] 1.00]	1.1
77 11 27 28 60 79 99 22 28 15 35 35	59.9 35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	11.32 8.1 17 8.61 9.06 11.78 11.61 11.05	96 37 23 24 30 27	51 32.2 53 48.4 43.5	8.88889 9.8 17 10.8 10.61	•	0.84 [0.33 [-	0.59, 0.33, 0.61,	1.10] 1.00]	1.1
11 27 28 60 79 99 22 28 15 35 6	35.4 52 45.35 48 53.41 59.48 42.05 53.1 45	8.1 17 8.61 9.06 11.78 11.61 11.05	37 23 24 30 27	32.2 53 48.4 43.5	9.8 17 10.8 10.61	<u>.</u>	0.33 [-	0.33, 0.61,	1.00]	1.0
27 28 60 79 99 22 28 15 35 35 6	52 45.35 48 53.41 59.48 42.05 53.1 45	17 8.61 9.06 11.78 11.61 11.05	23 24 30 27	53 48.4 43.5	17 10.8 10.61	<u>=</u>		0.61,		
28 60 79 99 22 28 15 35 35	45.35 48 53.41 59.48 42.05 53.1 45	8.61 9.06 11.78 11.61 11.05	24 30 27	48.4 43.5	10.8 10.61		-0.06 [-		0.49]	1.1
60 79 99 22 28 15 35 35	48 53.41 59.48 42.05 53.1 45	9.06 11.78 11.61 11.05	30 27	43.5	10,61	-				
79 99 22 28 15 35 35	53.41 59.48 42.05 53.1 45	11.78 11.61 11.05	27				-0.31 [-	0.85,	0.23]	1.1
99 22 28 15 35 35	59.48 42.05 53.1 45	11.61 11.05		54			0.46 [0.03,	0.90]	1.13
99 22 28 15 35 35	59.48 42.05 53.1 45	11.61 11.05			10.9		-0.05[-		0.38]	1.13
22 28 15 35 35 6	42.05 53.1 45	11.05		52	11		0.65 [0.99]	1.1
28 15 35 35 6	53.1 45		32	36.8	10.8148	-			1.021	
15 35 35 6	45	pro 18				-	0.47 [-			1.1
35 35 6			25	49.8	9.2	=	0.33 [-		0.86]	1.1
35 6	60.89	12	17	38	16	=	0.48[-		1.16]	1.0
6		12.03	20	49.2	10.54	<u>.</u>	1.00 [1.57]	1.10
	42.5	2.3	47	41.4	2.3		0.47 [0.91]	1.13
	44	8.7	5	42.5	5.5	-	0.18 [-	0.90,	1.27]	0.9
42	47	8	83	44	9		0.34 [-		0.71]	1.1
14	63.6	8.8	14	49.7	9.8	-	1.45 [2.26]	1.0
06	52.1	1.7	84	45.3	1.4		4.30 [4.82]	1.1
17										
	49.7	11.8	18	41.4	10.7				1.39]	1.0
						-				1.13
			7			-				1.0
25	49	10	21	60	12	•			-0.38]	1.0
16	48	11.77	10	42	8	-	0.55 [-	0.23,	1.33]	1.0
15	50.85	13.19	265	45.37	14.75		0.39 [0.21,	0.57]	1.1
28	32	11.1111	274	27	8.88889		0.55 [0.16,	0.94]	1.1-
27	49.8	2.12	46	52	1.5	•				1.1
						_				1.10
						-				
										1.13
						-				1.0
		2.46				-				1.0
74	59.2	10	72	55.7	8.3		0.38 [0.05,	0.70]	1.1
31	43	4.6	50	41	5.6		0.38 [-	0.07,	0.83]	1.1
10	52	17	8	53	17	-	-0.06 [-	0.94,	0.83]	1.0
10	51	7	10	42	16	-	0.70[-	0.17,	1.56)	1.0
12	62.7	7.7	13	42.2	11.7	-			2.921	1.0
									-	1,13
						_				1.1
										1.0
						.				1.0
						-				1.1)
47	51	13	72	48	12				0.61]	1.1
27	59.76	12.1	66	55.6	12.7		0.34 [0.04,	0.63]	1.1
17	49.7	11.8	18	41.4	10.7	-	0.72 [0.05,	1.39]	1.0
26	53.45	3.12	17	46	3	-	2.38 [1.60.	3.161	1.0
						_				1.1
						_				1.10
							-			
						_			-	1.1
						_				0.6
			169						-0.00]	1.19
12	63.9	10.2	48	58.6	7.8		0.54 [0.22,	0.85]	1,1
18	41.8	9.2	52	39.8	9		0.22 [-	0.11,	0.54]	1.19
96	55.82	10.51	59	45.4	13.3		0.89 [0.55,	1.23]	1.1
32	58	9	27	53	2				1.25]	1.1
		9.89	233	36	10.3704				0.90]	1.10
03			90			_			,	1.1
						-				1.13
										0.9
						_				1.1
82	56.8	9.9		47.27		_			1.09]	1.1)
44	44.89	4.23	8	47	3.4	-	-0.50 [-	1.25,	0.24]	1.0
48	54.48	10.75	16	57.8	11.9		-0.30 [-	0.86,	0.26]	1.1
28	57.4	12.5	11	48.3	12.2	-	0.72 [0.02,	1.42]	1.0
13	44	10.3704	17	39	7.40741	-			1.27]	1.0
									,	1.1
						_				1.0
						_				
									,	1.1
						•				1.1
15	45	10.2	21	40.6	6.9	-	0.51 [-	0.15,	1.17]	1.0
96	47.06	10.74	505	39.3	13.2		0.63 [0.48,	0.77]	1.1
143	61,5	11.3	180	55,5	12.7				0.691	1,1
						_				1.1
									,	
										1.1
						_				1.1
28	53	10.6	25	49.8	9	=			0.85]	1.1
14	48.2	11.9	12	49	8.2	-	-0.07 [0.82,	0.67]	1.0
77	44.4	9.3	347	41.1	8.7		0.37 [0.21,	0.53]	1.1
						A				
nn/ -	10 05	00				Ţ	0.00 [J.41,	0,81]	
		02								
	322 177 25 616 16 16 16 16 16 16 16 16 16 16 16 16	32 50.71 37 37 37 37 38 38 38 38 38 38 38 38 38 38 38 38 38	32 50.73 2.28 73 7 12 74 7 10 10 10 10 10 10 10 10 10 10 10 10 10	32 50.73 2.28 34 7 37 12 7 7 37 12 7 10 21 16 48 11.77 10 18 48 11.77 10 18 50.85 13.19 265 26 32 11.1111 274 27 48.8 2.12 46 10 65.5 2.15 27 28 47.65 13.34 22 10 65.5 2.16 72 10 55.2 10 72 10 55.2 10 72 10 52 17 8 10 51 77 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 17 10 10 10 52 10 10 10 52 10 1	32 50.73 2.28 34 51.7 77 37 12 7 34 18 48 11.77 10 42 18 48 11.177 10 42 26 32 11.1111 274 252 26 32 11.1111 274 252 27 49.8 2.12 48 52 26 57.86 8.4 14 60 30 62 15 27 61 34 4.6 52 32 40 65.5 1.34 22 32 40 65.2 10 72 55.7 41 0.55 1.7 10 42 52 41 0.50 1.7 10 42 52 53 51 9 48.6 50 41 40 69 69 55.9 51 7 10 42 52 53 </td <td>32 50.73 2.28 34 51.7 1.9 17 37 12 7 34 11.7 18 48 11.77 10 42 8 28 38 11.119 27 8.8889 14.75 28 32 11.1111 274 28.8889 27 49.8 2.12 46 52 1.52 14.75 10 12 86 52 1.52 16 52 1.61 11 12 47.68 12.24 46 52 1.61 11 12 47.68 12.24 46 52 1.61 11 12 47.69 13 43 4.6 50 13 43 4.6 50 3 3 43 4.6 50 43 1.6 50 17 10 55 17 7 42 45 50 17 10 52 43 16 52 43 48 52 3</td> <td>92 50.73</td> <td>32</td> <td>32</td> <td>92 50.73</td>	32 50.73 2.28 34 51.7 1.9 17 37 12 7 34 11.7 18 48 11.77 10 42 8 28 38 11.119 27 8.8889 14.75 28 32 11.1111 274 28.8889 27 49.8 2.12 46 52 1.52 14.75 10 12 86 52 1.52 16 52 1.61 11 12 47.68 12.24 46 52 1.61 11 12 47.68 12.24 46 52 1.61 11 12 47.69 13 43 4.6 50 13 43 4.6 50 3 3 43 4.6 50 43 1.6 50 17 10 55 17 7 42 45 50 17 10 52 43 16 52 43 48 52 3	92 50.73	32	32	92 50.73

Random-effects REML mode

Figure S2. Forest plot of sex in patients with Chagas cardiomyopathy vs. indeterminate disease. CCC: Chagas cardiomyopathy. The proportion of males and the standard deviation (SD) are indicated.

Study	N	Mean 526	SD 115	N 13	Mean 38	SD 135		with 95% 0		0.9
Abel et al. 2001 Albareda et al. 2006	19 63	.526	.063	13 29	414	.091		1.15 [0.41, 1.99 [1.46,	1.90] 2.51]	0.9
Ameida et al. 2018	31	.42	.089	17	.353	.116		0.66 [0.07,	1.26]	0.9
Nives et al. 2009 Aparecida et al. 2010	42 58	.595 .638	.076	9	.333	.157		2.74 [1.85,	3.63] 0.51]	0.9
Apt et al. 2016	100	.32	.047	100	.21	.041	_	2.48 [2.12,	2.85]	0.9
Nyo et al. 2015 Bautista-López et al. 2013	44	.568	.075	87	.391	.052		2.90 [2.40,	3.41]	0.9
sautista-Lopez et al. 2013 Bravo-Tobar et al. 2015	98 47	.52	.05	46 35	.565	.073 .08	-	-0.77 [-1.13, 0.75 [0.30,	1.20	0.9
Clark et al. 2015	47	.45	.073	21	.143	.076		4.11 [3.25,	4.96]	0.9
Costa et al. 2009 Curvo et al. 2018	97 99	.49	.051	58 53	.466 .453	.065		0.42[0.09,	0.75]	0.9
Survo et al. 2018 Sutrullis et al. 2013	12	917	.05	14	.453	121	-	5.86 [4.10,	7.62]	0.9
D'Ávila et al. 2018	68	.662	.057	23	.348	.099		4.46 [3.66,	5.26]	0.9
De Melo et al. 2012 De Moura Braz et al. 2014	20 11	.5 .636	112	20 20	.45 .35	111	-	0.44 [-0.18, 2.29 [1.38,	1.05]	0.9
De Moura Braz et al. 2014 Del Puerto et al. 2010	43	.512	.076	73	466	.107	_	0.70 [0.32,	1.09	0.9
Dias et al. 2013	90	.522	.053	81	.593	.055		-1.31 [-1.64,	-0.98]	0.9
Cheverria et al. 2020 Sabbro et al. 2011	177	.55 .545	.037	96	.344	.048	_=	4.99 [4.50,	5.47]	0.9
-appro et al. 2011 Faé et al. 2000	11	.604	.15	37 66	.424	.075		2.53 [1.70, 3.72 [3.27,	3.36] 4.18]	0.9
erreira et al. 2018	99	.42	.05	53	453	.068	_		-0.24]	0.9
rade et al. 2013	315	.613	.027	118	453	.046		4.80 [4.42,	5.19]	0.9
Garcia-Alvarez et al. 2010 Garg et al. 2016	22 28	.45 .571	.106	32 25	406 56	.087	-	0.46 [-0.09, 0.11 [-0.42,	1.00]	0.9
Georg et al. 2017	35	.571	.084	20	.4	.11		1.79 [1.15,	2.43]	0.9
Giménez et al. 2003	35	.286	.076	47	.319	.068	_		-0.02]	0.9
Biraldo et al. 2013 Bomes et al. 2012	21 6	.476 .167	.109	21	.238	.093		2.30 [1.53, -3.52 [-5.34,	3.08]	0.9
Somes et al. 2018	13	.385	.135	8	.375	.171	_	0.06 [-0.78,	0.91]	0.9
Somes et al. 2016	42	.381	.075	83	.458	.055	_	1.23 [-1.63,	-0.83]	0.9
Sómez-Olarte et al. 2019 Sonzález et al. 2014	14 81	.5 .543	.134	14 34	.429	.132		0.52 [-0.21, 2.95 [2.40,	1.25]	0.9
Sonzález et al. 2014 Sonzález et al. 2018	106	.543	.055	84	.353	.082			-1.45]	0.9
Suedes et al. 2016	17	.647	.116	18	.556	.117	_=	0.76 [0.09,	1.44]	0.9
Gusmão et al. 1982	56	.5	.067	46	.587	.073			0.81]	0.9
Heringer-Walther et al. 2006 Higuchi et al. 2009	32 17	41 647	.087 116	34 7	.235 .429	.073 .187		2.16 [1.56, 1.51 [0.56,	2.76]	0.9
liguchi et al. 2018	25	.8	.08	21	.429	.108	_	3.89[2.91,	4.87]	0.9
luiz et al. 2019	215	.553	.034	265	.46	.031	_	2.87 [2.61,	3.12]	0.9
Ceating et al. 2015 Chan et al. 2016	210 47	.605	.034	341 46	.496	.027		3.65 [3.37, 3.63 [2.97,	3.92] 4.29]	0.9
arocca et al. 2017	42	.095	.045	14	.357	.128		-3.49 [-4.37,		0.9
assen et al. 2018	103	.34	.047	27	.333	.091	_	0.12 [-0.30,	0.54]	0.9
asso et al. 2015 aucella et al. 1996	19 23	.632	.111	24	.375 .682	.099		2.42 [1.63,	3.20] -1.29]	0.9
idani et al. 2018	43	442	.076	35	.514	.084	-		0.43]	0.9
ópez et al. 2006	40	.6	.077	24	.25	.088	-	4.26 [3.36,	5.15]	0.9
orena et al. 2010	30 74	.367 .486	.088	9 72	.444	.166		-0.69 [-1.43, 3.19 [2.71,	0.06]	0.9
.uz et al. 2016 Aarques et al. 2006	31	.613	.058	72 50	306	054	-	3.19 [2.71, 2.49 [1.90,	3.68]	0.9
∕lelo et al. 2005	12	.5	.144	13	.538	.138	_	-0.26 [-1.02,	0.50]	0.9
Airanda et al. 2019	40	.5	.079	40	.525	.079	_	-0.31 [-0.75,	0.12]	0.9
Noreira et al. 2008 Nundaray Fernández et al. 2014	59 66	.407	.064	52 30	.462 .567	.069	-	-0.82 [-1.21, 1.20 [0.74,	1.66	0.9
Muñoz-San Martin et al. 2018	41	.366	.075	45	.222	.062		2.08 [1.56,	2.61]	0.9
Junoz Saravia et al. 2013	89	.539	.053	48	.21	.059		5.93 [5.15,	6.72]	0.9
Vegrão et al. 2009 Vonaka et al. 2019	15 28	.643	.103	12	167	.108		5.83 [4.11, -0.52 [-1.24,	7.55]	0.8
loya-Rabelo et al. 2018	42	.476	.077	17	.294	.111		2.04 [1.38,	2.71]	0.9
lunes et al. 2013	47	.66	.069	72	.444	.059		3.40 [2.83,	3.97]	0.9
Okamoto et al. 2014 Passos et al. 2019	127	.551	.044	66 6	.439	192		2.21 [1.84, 0.78 [-0.31,	1.87]	0.9
Pereira et al. 2018	17	353	.116	18	.556	117			0.94]	0.9
érez-Fuentes et al. 2007	25	.6	.098	34	.5	.086	_	1.08 [0.54,	1.63]	0.9
Pérez-Mazliah et al. 2018 Puvó et al. 2002	16 12	.813	.098	23 9	.348	.099	_=	4.62 [3.42, 1.88 [0.87,	5.82] 2.89]	0.9
ruyo et al. 2002 Ramasawmy et al. 2009	169	.55	.038	76	.355	.055		1.88 [0.87, 4.42 [3.95,	4.901	0.9
Reis et al. 2017	212	.458	.034	48	.5	.072			-0.64]	0.9
Ripol et al. 2018	12	.5	.144	9	.333	.157	_=	1.07 [0.18,	1.96]	0.9
Rocha et al. 2006 Rocha et al. 2019	118 56	.559	.046	52 27	.596 .481	.068			-0.35] -0.43]	0.9
Rodeles et al. 2016	96	.5	.051	59	.322	.061		3.22 [2.74,	3.70]	0.9
Salomone et al. 2001	32	.344	.084	27	.333	.091		0.12 [-0.38,	0.63]	0.9
Sánchez-Montalvá et al. 2016 Sandri et al. 2019	27 95	.667	.091	458 97	.297	.021		12.58 [11.69, 12.68 [2.29,	3.46]	0.9
sandri et al. 2019 Saravia et al. 2011	95 71	.507	.059	30	.633	.048		1.82[2.31,		0.9
Schapachnik et al. 1980	79	.658	.053	17	.353	.116		4.45 [3.63,		0.9
Silva et al. 2017 Silva et al. 2007	103 46	.495 .543	.049 .073	90 44	.333	.05 .074		3.26 [2.83, -0.65 [-1.07,		0.9
Silva et al. 2007 Simoes et al. 2000	46 25	.68	.073	12	.75	.125		-0.65 [-1.07, -0.66 [-1.35,		0.9
Soares et al. 2016	24	.292	.093	7	.571	.187	-	-2.29 [-3.29,	1.29]	0.9
Sousa et al. 2017	145	.586	.041	95	.421	.051		3.64 [3.22,		0.9
Storino et al. 2002 Falvani et al. 2006	115 30	.435	.046	79 8	.481	.056		-0.91 [-1.21, 2.65 [1.68,		0.9
Thomas et al. 2012	38	.421	.08	28	.286	.085	<u>-</u>	1.62 [1.07,		0.9
Torreao et al. 2015	48	.479	.072	16	.188	.098	_	3.64 [2.79,	4.48]	0.9
forres et al. 2010 Jellendahl et al. 2016	120 28	.41	.045	116	31 182	.043		2.26 [1.94, 4.59 [3.36,	2.59] 5.82]	0.9
/asconcelos et al. 2009	13	.53	.138	17	.182	11			2.75]	0.9
/enegas et al. 2009	17	.294	.111	20	.5	.112	_	1.81 [-2.56,		0.9
/ercosa et al. 2007 /icco et al. 2014	33 70	.424 .557	.086	20 30	.5 .4	.112		-0.78 [-1.34, 2.25 [1.72,		0.9
/illacorta et al. 2006	37	.378	.059	16		.121		0.03 [-0.55,		0.9
/illar et al. 2004	15	.6	.126	21		.108	_	1.44 [0.72,	2.17]	0.9
/lotti et al. 2009	296	.439	.029		422	.022		0.68 [0.54,		0.9
/itelli-Avelar et al. 2008 /izzoni et al. 2018	21 343	.429	.108	11 180	.364	.145	-	0.52 [-0.20, 1.07 [0.88,	1.24]	0.9
/olpato et al. 2017	68	.662	.057	23	.348	.099		4.46 [3.66,	5.26]	0.9
Vallukat et al. 2010	57	.825	.05	96	.271	.045	_ +	11.75 [10.39,		0.8
Wang et al. 2010 Ward et al. 1999	59 66	.475	.065	52 17	.269 .471	.062		3.22[2.65,		0.9
Vard et al. 1999 Zafra et al. 2008	143	.333	.058	17	311	121	-	1.83 [2.43,		0.9
ago et al. 2019	28	.53	.094	25	.46	.1	_		1.26]	0.9
Cerlotti et al. 1994	14	.714	.121	12	.667	.136	_	0.36 [-0.40,	1.11]	0.9
	277	.827	.025	347	.72	.024		4.37 [4.08,	4.66]	0.9
?ickeretal. 1990 Overa∎	2//						<u> </u>	1.56 [1.07,	0	

Table S1. Search Terms

Database	Search Terms	Results (n)	Date Searched
PubMed	("Chagas Cardiomyopathy" [Mesh] OR (chagas OR chagas*)) AND (cardiomyopath* OR cardiopathy OR trypanosomiasis OR myocarditis OR "heart failure" OR cardiac)) AND (risk[tw] OR risks[tw] OR risk factors[mesh] OR driver[tw] OR drivers[tw] OR predict*[tw] OR suscep*[tw] OR predict*[tw] OR biomarker[tw] OR biomarkers[tw] or indicat*[tw] OR progress*[tw] OR disease progression[mesh] OR onset[tw] OR occur*[tw] OR develop*[tw] OR chronic*) NOT (animals[mesh] NOT humans[mesh]) NOT (letter[pt] OR comment[pt] OR editorial[pt])	5754	3/4/20
EMBASE	('Chagas cardiomyopathy'/exp OR (chagas OR Chagas*)) AND (cardiomyopath* OR cardiopathy OR trypanosomiasis OR myocarditis OR "heart failure" OR cardiac)AND (risk:ti,ab,de,tn OR risks:ti,ab,de,tn OR driver:ti,ab,de,tn OR driver:ti,ab,de,tn OR driver:ti,ab,de,tn OR determinant:ti,ab,de,tn OR suscep*:ti,ab,de,tn OR predict:ti,ab,de,tn OR biomarker:ti,ab,de,tn OR biomarkers:ti,ab,de,tn OR progress:ti,ab,de,tn OR driver:ti,ab,de,tn OR driver:ti,ab,de,tn OR cocur*:ti,ab,de,tn OR chagaster or	4012	3/18/20
LILACS	(Chagas OR chagasic) and (risk or risks or "risk factor" or "risk factors" or driver or drivers or determinant or determinants or susceptibility or predict or predictor or predictors or biomarker or biomarkers or indicator or indicators or progress or progression or "disease progression" or onset or occur or occurrence or develop or development or chronic) and (cardiomyopathy or cardiopathy or trypanosomiasis or myocarditis or "heart failure" or cardiac)	460	3/20/20
Clinicaltrials.gov	(vertical OR congenital) AND (risk OR risks OR driver OR drivers OR determinant OR predict OR predictor OR indicate OR indicator OR susceptible OR susceptibility) Chagas Disease	2	3/20/20

Table S2. Evidence table of included studies.

Study	Population	Study Design	Disease Categories	Age (years)	Sex
Abel 2001	Patients at the Heart Institute (InCor), São Paulo, Brazil	Cross- sectional	IND (n=13): T. cruzi seropositive individuals with a normal EKG and bimensional echocardiography CCC (n=19): T. cruzi seropositive patients with severe heart failure, dilated cardiomyopathy, all other causes excluded	IND: 54.6 ± 7.0 CCC: 52.3 ± 11.8	IND: 5 males CCC: 10 males
Albareda 2006	Patients at the Instituto Nacional de Parasitología Dr. Mario Fatala Chabén and at the Chagas disease Section, Cardiology Department, Hospital Interzonal General de Agudos Eva Perón, Argentina	Cross- sectional	IND (n=29): seropositive individuals with normal ECG and CXR CCC: -G1 (n=29): seropositive individuals with normal CXR but abnormal ECG -G2 (n=13): seropositive individuals with abnormal ECG and heart enlargement on CXR -G3 (n=21): seropositive individuals with abnormal ECG, heart enlargement on CXR, and clinical or radiological evidence of HF Graded by Kuschnir grading system	IND: 46.3 (31-66)* CCC: -G1: 56.3 (37-71)* -G2: 54.5 (41-74)* -G3: 61.8 (43-82)* *Given as median (range)	IND: 12 males CCC: 35 males
Albareda 2015	Chagas disease Section, Cardiology Department, Hospital Interzonal General de Agudos Eva Perón, Argentina	Cross- sectional	IND (n=13): seropositive individuals with normal ECG and CXR CCC: -G1 (n=12): seropositive patients with normal CXR but abnormal ECG (G1, n=12) -G2-3 (n=12): seropositive patients with abnormal ECG, heart enlargement on CXR, and clinical or radiological evidence of HF Graded by Kuschnir grading system	IND: 50±6 CCC: -G1: 49±14 -G2-3: 56±11	-
Almeida 2018	Patients from Ambulatório de Doença de Chagas e Insuficiência Cardíaca do Pronto Socorro Cardiológico de Pernambuco (PROCAPE), Brazil	Cross- sectional	IND (n=17): seropositive individuals with no cardiac symptoms or alterations CCC: -CARD1 (n=20): seropositive individuals with mild cardiac disease, showing alterations in ECG or echocardiogram with preserved global ventricular function (Stage B1 of I Latin American Guidelines for the Diagnosis of Treatment of Chagas' Heart Disease) -CARD2 (n=11): seropositive individuals with severe cardiac disease, with ventricular dysfunction and prior or current symptoms of heart failure (Stage C)	-	IND: 6 males CCC: -CARD1: 7 males -CARD2: 6 males
Alves 2009	Outpatient Unit of the Group for Studies into Chagas' Disease (GEDoCh and Clinical Hospital of Campinas State University (HC/UNICAMP), Brazil	Cross- sectional	IND (n=9): unspecified CCC (n=42): unspecified	IND: 2 individuals over 67 years old CCC: 15 individuals over 67 years old	IND: 3 males CCC: 25 males

Aparecida 2010	Patients at the UNICAMP	Cross- sectional	IND (n=30): seropositive, asymptomatic individuals with normal thorax radiography, ECG, and	IND: 36.09 ± 7.31	IND: 19 males
2010	University Hospital, Brazil	sectional	echocardiography and absence of esophageal and/or colonic involvement	(females); 40.26 ± 12.2 (males)	CCC: 37 males
			CCC: -Mild cardiopathy (n=30): seropositive individuals with at least one of the following: null or mild symptoms, AV first-degree block, intraventricular conduction abnormalities (defined as RBBB and/or left anterior hemiblock, isolated and unifocal atrial extrasystole, isolated and unifocal ventricular extrasystole)	-Mild cardiopathy: 43.42 ± 11.73 (females); 44.22 ± 9.86 (males) -Severe cardiopathy: 53.11	
			-Severe cardiopathy (n=28): seropositive individuals with at least one of the following: evidence exertional dyspnea, AV second-degree or third-degree block, multifocal atrial extrasystole, multifocal ventricular extrasystole, atrial fibrillation, presence of systolic dysfunction defined by echocardiography, cardiac hypertrophy defined by echocardiography, evidence of thromboembolic disease with characterized cardiac emboli source in echocardiography	± 6.7 (females); 48.63 ± 10.86 (males)	
Apt 2015	Patients in the IV region (Coquimbo),	Cross- sectional	IND (n=50): patients with chronic Chagas disease and no ECG alterations	IND: 49.6 (20-76)	IND: 10 males CCC: 20
	Chile	Chile CCC (r ECG al	CCC (n=50): patients with chronic Chagas disease and ECG alterations, with other important causes of cardiopathy excluded	CCC: 58.3 (30-81) CCC patients were older than IND patients (p=0.001).	males
Apt 2016	Patients from the provinces of	Cross- sectional	IND (n=100): patients with chronic Chagas disease and no ECG alterations	IND: 50.55 ± 13.04	IND: 21 males
	Choapa and Limarí, Chile			CCC: 56.45 ± 12.37 CCC patients were older than IND patients (p=0.0012).	CCC: 32 males
Apt 2019	Individuals in the Coquimbo	Cross- sectional	IND (n=45): seropositive individuals with a normal ECG	IND: 47.1 (20-76)	IND: 34 males
	Region, Cine	Region, Chile	CCC (n=45): seropositive individuals with ECG changes	CCC: 57.8 (30-79) CCC patients were older than IND patients (p<0.001).	CCC: 32 males
Araujo- Jorg 2002	Patients at the Instituto de	Cross- sectional	IND (n=22): seropositive individuals with NYHA functional class I	IND: 48.4 ± 10	-
	Pesquisa Clínica Evandro Chagas, Rio de Janeiro, Brazil	io de Janeiro, -Ca crazil -Ca	CCC: -Card 1 (n=34): seropositive individuals with ECG changes and slight or no heart dysfunction (NYHA functional class II)	CCC: -Card 1: 50.5 ± 9 -Card 2: 48.8 ± 11	
			-Card 2 (n=17): seropositive individuals with ECG and/or ECO changes and moderate to severe heart dysfunction (NYHA functional classes III-IV)		
Arguello 2012	Patients at the Chagas disease Section of Hospital Interzonal General de	Cross- sectional	IND (n=48): seropositive individuals with normal ECG and CXR CCC: -G1 (n=10): seropositive patients with normal CXR but abnormal ECG	IND: 50 (35-67) CCC: -G1: 48 (36-56) -G2: 51 (42-64)	-
	Agudos "Eva Perón," Buenos Aires, Argentina		-G2 (n=12): seropositive patients with abnormal ECG and heart enlargement on CXR	-G3: 55 (46-68) Mean ages were not	
			-G3 (n=17): seropositive patients with abnormal ECG, heart enlargement on CXR, and clinical or radiological evidence of HF	significantly different between groups.	

Ayo 2015	Individuals in	Subset	IND (n=87): seropositive individuals without the below	IND: 59.0 ± 9.0	IND: 34 males
	the State of Parana, Brazil treated at the University Hospital of Londrina and the Chagas Disease Laboratory of the State University of Maringa	of case control study	ECG changes CCC (n=44): seropositive individuals with ECG changes characteristic of Chagas disease (such as RBBB, left anterior hemi-block, unspecific ventricular repolarization disorders and ventricular and supraventricular premature beats)	CCC: 63.3 ± 10.5	CCC: 25 males
Batista 2018	Patients from Ambulatório de Doença de Chagas e Insuficiência Cardíaca do Pronto Socorro Cardiológico de Pernambuco (PROCAPE), Brazil	Cross- sectional	IND (n=110): seropositive individuals without cardiac symptoms and with normal ECG and ECHO CCC: -Mild cardiopathic (n=163): seropositive individuals with structural heart disease, as evidenced by ECG or ECHO, but with normal global ventricular function and neither current nor previous signs and symptoms of CHF -Severe cardiopathic (n=133): seropositive individuals with ventricular dysfunction and current or previous symptoms of CHF	IND: 51 ± 12 CCC: -Mild cardiopathic: 60 ± 13 -Severe cardiopathic: 60 ± 11	-
Bautista- López 2013	Individuals at the Fundación Cardiovascular de Colombia (FCV), Bucaramanga, Colombia from 2002-2006	Cross- sectional	IND (n=46): seropositive, asymptomatic patients with normal ECG, ECHO, and CXR CCC: -Group 2 (n=49): seropositive patients with abnormal ECG but normal ECHO and CXR -Group 3 (n=49): seropositive patients with severe ventricular arrhythmias and dilated cardiomyopathy on CXR, with or without evidence of CHF on ECHO	IND: 41 ± 1 CCC: -Group 2: 45 ± 1 -Group 3: 56 ± 1 Individuals in group 2 and 3 were older than IND individuals (p<0.05 for both).	IND: 26 males CCC: 51 males
Bravo- Tobar 2015	Individuals from Unda municipality, Venezuela	Cross- sectional	IND (n=35): seropositive, asymptomatic individuals with no ECG or ECHO evidence of cardiac involvement CCC: -Phase II (n=29): seropositive, asymptomatic individuals with ECG or ECHO evidence of cardiac involvement -Phase III (n=18): seropositive individuals with heart failure	IND: 48.4 ± 2.76 CCC: -Phase II: 52.9 ± 2.88 -Phase III: 67.22 ± 3.25 Individuals in Phase III were older than individuals in other groups.	IND: 12 males CCC: 19 males There was no significant association between sex and clinical phase.
Cetron 1993	Individuals in Fortaleza, Brazil from 1990-1992	Subset of a case- control study	IND (n=12): seropositive individuals who were asymptomatic (free of overt signs or symptoms of cardiac or mega-gastrointestinal disease) CCC (n=45): seropositive individuals who were symptomatic (palpitations, dyspnea, syncope, or pulmonary embolus) with documented ECG changes and a CXR or ECHO consistent with chagasic cardiomyopathy as determined by a cardiologist	IND: 37* CCC: 44* *Median	Groups were comparable with regard to sex.
Chaves 2016	Patients at the Referral Outpatient Center for Chagas Disease at the Clinics Hospital of the Federal University of	Cross- sectional (nested in prospecti ve cohort study)	IND (n=15): asymptomatic, seropositive individuals with no significant alterations in ECG, CXR, and ECHO CCC (n=15): seropositive individuals with dilated cardiomyopathy	IND: 39.6 ± 10.3 CCC: 48 ± 12.52	-

	Minos Coms!-		<u></u>		
	Minas Gerais, Brazil				
	Bruzn				
Clark	A community-	Cross-	IND (n=21): seropositive individual with normal ECG	IND: 33 (26-37)*	IND: 3 males
2015	based survey in	sectional	and CXR		
	the Bolivian		CCC:	CCC:	CCC: 21
	Chaco and a hospital-based		-Stage B (n=20): seropositive individual with abnormal	-Stage B: 39 (33- 44)*	males
	study of heart		ECG but normal CXR or ECHO and no signs of CHF	11)	
	disease in Santa			-Stage C: 50 (46-	
	Cruz, Bolivia		-Stage C (n=27): seropositive individual with abnormal	57)*	
			ECG and indication of increased left ventricular size	*Madian (IOD)	
			and/or decreased left ventricular ejection fraction on CXR or ECHO	*Median (IQR)	
			CARCOL ECITO		
			Abnormal ECG was defined by the presence of RBBB,		
			LAFB, LPFB, LBBB, incomplete RBBB, AV block,		
			junctional rhythm, multifocal or paired ventricular premature beats, atrial fibrillation or flutter, or		
			bradycardia (50 beats/minute).		
Costa	Patients in	Cross-	IND (n=58): asymptomatic, seropositive individuals	IND: 44.4 ± 9.8	IND: 27 males
2009	Minas Gerais,	sectional	with no cardiac alterations by EKG, ECHO, or CXR		
	Brazil		CCC.	CCC:	CCC: 48
			CCC: -Nondilated cardiac (n=44): seropositive individuals	-Nondilated cardiac: 45.5 ± 9.6	males
			with cardiac alterations such as right and/or left branch	43.3 ± 9.0	
			blockage and different degrees of conductive functional	-Dilated cardiac:	
			alterations but no heart dilation	50.2 ± 11.3	
			-Dilated cardiac (n=53): seropositive individuals with		
			severe cardiomyopathy with heart enlargement		
Curvo	Patients at the	Cross-	IND (n=53): seropositive individuals with no evidence	IND: 52 ± 11	IND: 24
2018	outpatient	sectional	of cardiac involvement		(45.3%) males
	service of the		CCC.	CCC:	CCC.
	Evandro Chagas National		CCC: -Stage A (n=24): asymptomatic, seropositive	-Stage A: 62 ± 11	CCC: -Stage A: 8
	Institute of		individuals with isolated ECG changes	-Stage B: 60 ± 9	(33.3%) males
	Infectious		_	21181 - 1 1 1 2 2	
	Diseases in		-Stage B (n=25): asymptomatic, seropositive	-Stages C and D: 58	-Stage B: 8
	Brazil		individuals with segmental or global LV systolic dysfunction	± 13	(32.0%) males
			dystunction	CCC patients were	-Stages C and
			-Stages C and D (n=50): seropositive individuals who	older than IND	D: 26 (52%)
			are symptomatic (stage C) or have end-stage heart	patients (p<0.05).	males
			failure (heart D)		An association
					between the
					presence of
					dilated
					cardiomyopat
					hy and male sex was
					observed.
Cutrullis	Patients at the	Cross-	IND (n=14): Kuschnir G0; seropositive individuals with	IND:	IND: 4 males
2013	Cardiology units of the Hospital	sectional	normal ECG, ECHO, and CXR findings	51.9 ± 1.7	CCC: 11
	General de		CCC (n=12): Kuschnir G3; seropositive individuals with	CCC: 56.3 ± 6.8	males
	Agudos Dr.		ECG and ECHO abnormalities, conduction defects, heart	CCC. 50.5 ± 0.0	
	Cosme Argerich		enlargement, and clinical or radiological evidence of hear	CCC patients were	CCC patients
	and Hospital		failure	older than IND	were more
	General de Agudos José			patients (p<0.05).	likely to be male than IND
	María Ramos				patients
	Mejía in Buenos				(p<0.0001).
	Aires, Argentina				

D'Ávila	Patients in Brazil	Cross-	IND (n=27): seropositive individuals with no clinical	IND: 39.4 ± 13.8	IND: 10 males
2009 (Mem Inst)		sectional	manifestations of disease CCC (n=16): seropositive individuals with dilated cardiomyopathy identified via ECG, CXR, Holter, and echodopplercardiography	CCC: 45.0 ± 10.0	CCC: 7 males
D'Ávila 2009 (JCM)	Patients in the states of Minais Gerais and Goiás, Brazil	Cross- sectional	IND (n=27): seropositive individuals with no ECG abnormalities and regular heart, esophagus, and colon sizes on X ray CCC (n=17): seropositive individuals with cardiac involvement as determined by ECG, radiographs, and Doppler echocardiography	IND: 37.9 ± 11.7 CCC: 44.1 ± 10.4	IND: 10 males CCC: 7 males
D'Ávila 2018	Patients in Minais Gerais, Brazil	Cross- sectional	IND (n=23): seropositive, asymptomatic individuals CCC (n=68): determined by protocol including medical history, physical examination, ECG, laboratory and CXR examinations, and ECHO	IND: 44 ± 10.3 CCC: 54 ± 10.3	IND: 8 males CCC: 45 males
De Melo 2012	Patients at the Chagas Disease Unit of the Oswaldo Cruz University Hospital, Pernambuco, Brazil	Cross- sectional	IND (n=20): seropositive individuals without alteration in ECG, CXR, ECHO, esophagogram or barium enema CCC: -CARD 1 (n=10): seropositive individuals with chronic Chagas-related cardiopathy but no cardiac dilatation and an EF>55% on ECHO -CARD 2 (n=10): seropositive individuals with chronic Chagas-related cardiopathy, clinical and/or echocardiographic and radiological signs of heart	IND: 32-68* CCC: 43-74* *Range	IND: 9 men CCC: 10 males
De Moura Braz 2014	Patients from Ambulatório de Doença de Chagas e Insuficiência Cardíaca do Pronto Socorro Cardiológico de Pernambuco (PROCAPE), Brazil from 2010-2011	Cross- sectional	enlargement, and an EF<40% on ECHO IND (n=20): asymptomatic, seropositive individuals with clinical tests (ECG, CXR, and echodopplercardiography for all patients; oesophagogram and barium enema when disease suspected) showing no alteration CCC (n=11): seropositive individuals with clinical and/or echocardiographic and radiological signs of heart enlargement (cardiac dilatation and/or EF <40%) and absence of complaints/alterations in digestive system (dysphagia and/or odynophagia)	IND: 32-75* CCC: 43-75* *Range	IND: 7 males CCC: 7 males
Del Puerto 2010	Patients from the Centro Nacional de Enfermedad Tropicales (CENE-TROP) and inpatients and past patients at the Hospital Universitario Japonés (HUJ) in Santa Cruz, Bolivia	Cross- sectional	IND: -Group 1 (n=73): seropositive individuals aged ≥30 years with no ECG or gastrointestinal abnormalities on barium enema -Group 2 (n=41): seropositive individuals aged ≥30 years with colon enema X-ray not performed CCC: -Group 3 (n=43): seropositive individuals with ECG abnormalities and no gastrointestinal abnormalities on barium enema -Group 4 (n=21): seropositive individuals with ECG abnormalities and colon enema X-ray not performed	IND: -Group 1: 42.3 ± 8.5 -Group 2: 42.9 ± 9.6 CCC: -Group 3: 38.5 ± 9.8 -Group 4: 40.6 ± 10.4	IND: 50 males CCC: 32 males

as 2013	Patients in Brazil	Cross-	IND (n=81)	IND: 55.0 ± 17.1	IND: 48 males
as 2013	rations in Brazii	sectional		IND. 33.0 ± 17.1	
			CCC (n=90)	CCC: 64.9 ± 15.3	CCC: 47 males
			Clinical stage determined by clinical examination,		THATES
			ECG, and chest, esophagus, and colon contrast X-ray exams. IND patients had this clinical form for at least		
			20 years.		
heverrí 2020	Patients in the Heart Failure	Cross- sectional	IND (n=96): seropositive individuals with normal ECG and LVEF (>55%)	IND: 51 (44-56)*	IND: 33 males
.020	service at the	sectional	and LVEF (>35%)	CCC:	CCC: 98
	Cardiovascular Foundation of		CCC:	-Stage B: 55 (46-	males
	Colombia from		-Stage B (n=50): seropositive individuals with ECG abnormalities consistent with Chagas cardiomyopathy	64)*	
	2015-2017; excluded patients with		without signs or symptoms or heart failure regardless of global ventricular function	-Stage C: 59 (54-66)*	
	uncontrolled		-Stage C (n=55): seropositive individuals with ECG	-Stage D: 64 (56-	
	hypertension, diabetes		abnormalities consistent with Chagas cardiomyopathy, LVEF <55%, and current or previous symptoms of HF	70)*	
	mellitus, history			*Median (IQR)	
	of coronary heart disease, and		-Stage D (n=72): seropositive individuals with ECG abnormalities consistent with Chagas cardiomyopathy,	There was an	
	mitral stenosis		LVEF <55%, and refractory symptoms of HF at rest	increase in age	
			despite optimized clinical treatment	across CCC stages compared to IND	
	D.C. and	D.	DID (27) K 1 : CO	patients (p<0.001).	DID 11 1
bbro 11	Patients at the Center for	Retrospe ctive	IND (n=37): Kuschnir G0; asymptomatic, seropositive individuals with normal ECGs and chest radiographs	IND: 32.2 ± 9.8	IND: 11 males
	Research in	observati		CCC: 35.4 ± 8.1	CCC: 6 males
	National Endemic	onal	CCC (n=11): Kuschnir G1-3; seropositive individuals with any of the following ECG alterations (complete		
	Diseases with		RBBB and LAFB in persons <50 years of age, frequent		
	good clinic attendance and		ventricular extrasystole, ventricular extrasystole associated with conduction disorders, second-degree or		
	no immunologic		complete AV block, or electrical inactivation areas (no		
	or congenital rheumatic		antecedents of ischemic cardiopathy)		
	cardiac disease in Santa Fe,				
	Argentina				
é 2000	Outpatients at the Heart	Cross- sectional	IND (n=66): seropositive individuals with normal ECG and EF ≥0.65 on ECHO	IND and CCC groups were age-	IND: 28 males
	Institute at the	sectional	and Er 20.03 on ECHO	matched.	CCC: 87
	University of São Paulo		CCC (n=144): seropositive individuals with ECG alterations and/or reduced EF		males
	School of		alterations and/or reduced Er		
	Medicine, Brazil				
res	Patients at the	Cross-	IND (n=23): seropositive individuals with no	IND: 53 ± 17	-
13	Referral Outpatient	sectional (nested	significant alterations in their ECGs, CXRs, ECHOs, esophagograms, and barium enemas	CCC: 52 ± 17	
	Center for	in		CCC. 32 ± 17	
	Chagas Disease at the Clinical	prospecti ve	CCC (n=27): seropositive individuals with dilated cardiomyopathy and heart failure		
	Hospital of the	cohort)			
	Federal University of				
	Minas Gerais,				
	Minas Gerais, Brazil and at				
	Evandro Chagas				
	Clinical Research				
	Institute at				
	Fundação Oswaldo Cruz-				
	Rio de Janeiro,				
	Brazil				
	Clinical Research Institute at Fundação Oswaldo Cruz-				
	Rio de Janeiro,				

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Fernandes 2007	Patients at the Cardiomyopathy Clinical Unit of the Heart Institute, University of São Paulo Medical School, Brazil; excluded patients with myocardial infarction, valvar disease, and hypertension		IND (n=24): seropositive individuals with no cardiac involvement as defined by CXR, ECG, and ECHO and normal barium studies of the esophagus and colon CCC: -Group II (n=14): seropositive individuals with normal LV function showing right or left bundle branch block, LAFB, diffuse St-T changes, ventricular premature beats that may be multiform, and runs of non-sustained ventricular tachycardia on ECG -Group III (n=14): seropositive individuals with symptoms of CHF and LV dysfunction evaluated by ECG	IND: 48.4 ± 10.8 CCC: -Group II: 42.9 ± 8.1 -Group III: 47.8 ± 9.1	
Fernández	Patients at the	Cross-	IND (n=11): seropositive, asymptomatic individuals	IND: 61	-
-Mestre 2002	José Francisco Torrealba Research Center at San Juan de los Morros, Estado Guárico, Venezuela	sectional	CCC: -Group B (n=7): seropositive individuals with arrhythmias -Group C (n=5): seropositive individuals with overt CHF	CCC: -Group B: 58 -Group C: 62 Standard deviations not provided.	
Ferreira 2017	Patients identified by blood bank screening in 1996-2002 from the State of Minas Gerais and patients from the Heart Institute of the University of São Paulo Medical School, Brazil	Subset of a retrospec tive cohort study	IND: Seropositive individuals with no changes in ECG or ECHO findings and no clinical signs of digestive disease -Positive <i>T. cruzi</i> PCR (n=30) -Negative <i>T. cruzi</i> PCR (n=30) CCC: -Moderate (n=30): seropositive individuals with CCC with a preserved LVEF -Severe (n=30): seropositive individuals with CCC with a significantly reduced LVEF (≤40%)	IND: -Positive PCR: 47 ± 12 -Negative PCR: 40 ± 9 CCC: -Moderate: 50 ± 8 -Severe: 46 ± 10	-
Ferreira 2003	Patients at the Heart Institute of the University of São Paulo Medical School, Brazil	Cross- sectional	IND (n=27): seropositive individuals with a normal ECG and ECHO CCC: -LVEF >50% (n=52): seropositive individuals with CCC and LVEF >50% -LVEF ≤50% (n=27): seropositive individuals with CCC and LVEF ≤50%	IND: 54 ± 10.9 CCC: -LVEF >50%: 53 ± 10.4 -LVEF ≤50%: 54.2 ± 14.1	IND: 0.5 male/female ratio CCC: -LVEF >50%: 0.76 male/female ratio -LVEF ≤50%: 1.7 male/female ratio
Ferreira 2018	Patients at the Evandro Chagas National Institute of Infectious Diseases in Brazil without cardiac comorbidities, autoimmune disease, or cancer	Cross- sectional	IND (n=53): seropositive individuals with no evidence of cardiac involvement CCC: -Cardiac A+B (n=49): asymptomatic, seropositive individuals with isolated ECG changes (stage A) or segmental or global LV systolic dysfunction on ECHO (stage B) -Cardiac C+D (n=50): seropositive individuals with symptomatic heart failure (stage C) or end-stage heart failure (stage D)	IND: 52 ± 11 CCC: -Cardiac A+B: 61 ± 10 -Cardiac C+D: 58 ± 13	IND: 24 males CCC: 42 males

Flórez 2011	Patients from Santander, Colombia	Cross- sectional	IND (n=130): seropositive individuals without cardiac symptoms and with normal ECGs CCC (n=130): seropositive individuals with evidence of conduction alterations and/or structural cardiomyopathy by clinical evaluation, ECG, ECHO, and 24-hour Holter	IND: 48.6 CCC: 56.5 No standard deviations provided.	The sex distribution was similar between groups (details not provided).
Flórez 2006	Patients from Santander, Colombia	Cross- sectional	IND (n=130): seropositive individuals without cardiac symptoms and with normal ECGs CCC (n=130): seropositive individuals with evidence of conduction alterations and/or structural cardiomyopathy by clinical evaluation, ECG, ECHO, and 24-hour Holter	IND: 48.6 CCC: 56.5 No standard deviations provided.	The sex distribution was similar between groups (details not provided).
Frade 2013 (BMC)	Patients in the Sao Paulo, Minas Gerais and Bahia states in Brazil	Cross- sectional	IND (n=118): seropositive individuals with no ECG or ECHO changes CCC (n=315): seropositive individuals with typical conduction abnormalities (RBBB and/or left anterior division hemiblock)	-	IND: 45.3% male CCC: 61.3% male Males were more common in the CCC than IND group (p=1.21E-4).
Frade 2013 (PLoS ONE)	Patients in the Sao Paulo, Minas Gerais and Bahia states in Brazil (same study population as Frade 2013, BMC)	Cross- sectional	IND (n=118): seropositive individuals with no ECG or ECHO changes CCC (n=315): seropositive individuals with typical conduction abnormalities (RBBB and/or left anterior division hemiblock)	-	IND: 45.3% male CCC: 61.3% male Males were more common in the CCC than IND group (p=1.21E-4).
Garcia- Alvarez 2010	Patients originally from endemic countries living in Spain with no co-infections, diabetes mellitus, or other heart disease from 2008-2009	Prospect ive cohort study	IND (n=32): seropositive individuals without any abnormal ECCG finding, normal LV dimensions and LV global and regional systolic function on ECHO CCC: -Group 2 (n=14): seropositive individuals with typical ECG abnormalities of cardiac involvement such as complete RBBB and/or left anterior hemiblock, complete LBBB, ventricular premature beats, primary abnormalities of ventricular repolarization, electrically inactive zones, low voltage QRS, sinus bradycardia <50 beat/min, advanced AV block or cardiac pacemaker, but normal LV dimensions and global and regional systolic function on ECHO -Group 3 (n=8): seropositive individuals with Chagas cardiomyopathy with any regional wall motion abnormality and/or LV end-diastolic diameter >55 mm and/or LVEF <50% on ECHO	IND: 36.8 (14.6)* CCC: -Group 2: 42.7 (17.4)* -Group 3: 40.9 (8.6)* *Median (IQR)	IND: 13 males CCC: 10 males
Garg 2016	Patients in Salta, Argentina	Cross- sectional	IND (n=25): seropositive individuals with no to minor ECHO abnormalities, no LV dilatations, and preserved systolic function (EF: 55-70%) CCC (n=28): seropositive individuals with varying degrees of heart involvement evidenced by systolic dysfunction (EF<55%), LV dilatation (diastolic diameter ≥57 mm), and/or potential signs of CHF	IND: 49.8 ± 9.2 CCC: 53.1 ± 10.6	IND: 14 (46.6%) males CCC: 16 (53.3%) males

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Gasparim 2018 Gazzinelli 1990	Subjects at the 15th Regional Department of Public Health in Paraná, Brazil from 2015-2016 Patients in Minas Gerais, Brazil	Cross- sectional Cross- sectional	IND (n=82) CCC (n=98) CCC patients underwent physical exam and CXR; other causes of cardiomegaly were excluded. IND (n=17) CCC (n=15): cardiac disturbances of variable degrees	IND: 2 age ≤44, 3 age 45-54, 13 age 55-64, 18 age 65- 74, 6 age ≥75 CCC: 1 age ≤44, 2 age 45-54, 15 age 55-64, 28 age 65- 74, 18 age ≥75 IND: 38 ± 16 CCC: 45 ± 12	-
			Clinical stage determined by physical examination, CXR, and ECHO.		
Gazzinelli 1988	Patients in Minas Gerais, Brazil	Cross- sectional	IND (n=12) CCC (n=16): cardiac disturbances of variable degrees Clinical stage determined by physical examination, CXR, and ECHO.	IND: 33 ± 14 CCC: 38 ± 12	-
Georg 2017	Non-pregnant patients at the Instituto Nacional de Infectologia Evandro Chagas, Fiocruz, Rio de Janeiro, Brazil	Observat ional retrospec tive longitudi nal	IND (n=20): patients in the indeterminate form without progression to CCC during follow-up CCC (n=35): patients with stable or progressive CCC (abnormal EKG and ECHO)	IND: 49.20 ± 10.54 CCC: 60.89 ± 12.03 The mean age of CCC patients was higher than that of IND patients (p=0.0007).	IND: 8 (40%) males CCC: 20 (57%) males There was no significant difference in sex between groups.
Giménez 2003	Patients in Argentina without cardiovascular risk factors, alcoholism, endocrinopathy, or other disease with cardiac manifestations	Cross- sectional	IND (n=47): clinically normal without ECG or thorax radiography alterations CCC (n=35): seropositive individuals with cardiopathy (per Chagas Disease Council "Dr. Salvador Mazza")	IND: 41.4 ± 2.3 CCC: 42.5 ± 2.3	IND: 15 males CCC: 10 males
Giraldo 2013	Patients at the Fundación Abood Shaio, Hospital Universitario San Ignacio, Instituto Nacional de Salud, and Department of Cardiology, Hospital Universitario San Ignacio, Bogotá, Colombia	Cross- sectional	IND (n=21): chagasic patients with non-structural cardiac damage (normal ECHO findings and NYHA 1, with normal or abnormal ECG findings) CCC (n=21): chagasic patients with structural cardiac damage; abnormal ECG findings, increased heart size, decreased LVEF, and NYHA II-IV	IND: 49.1 (37-65)* CCC: 55.4 (40-72)* *Median age (range)	IND: 5 males CCC: 10 males

Gomes	Patients at the	Cross-	IND (n=5): asymptomatic, seropositive individuals with	IND: 42.5 ± 5.5	IND: 4 males
2012	Outpatient Referral Center for Chagas Disease of the Hospital das Clínicas at the Federal	sectional	no clinical manifestations of disease CCC (n=6): seropositive individuals with cardiac dysfunction and dilated cardiomyopathy, assessed by ECG, 24-hour Holter examination and CXR	IND: 42.5 ± 5.5 CCC: 44.0 ± 8.7	CCC: 1 male
Gomes	University of Minas Gerais, Brazil Patients in	Cross-	IND (n=8): asymptomatic, seropositive individuals with no clinical manifestations of disease	-	IND: 3 males
2018	Minas Gerais, Brazil	sectional	CCC (n=13): seropositive individuals with cardiac dysfunction and dilated cardiomyopathy, assessed by ECG, 24-hour Holter examination and CXR		CCC: 5 males
Gomes 2016	Patients from in Brazil from 2010-2013	Subset of a prospecti ve observati onal study	IND (n=83): chagasic patients with no evidence of cardiac involvement CCC (n=42): chagasic patients with isolated ECG changes and no heart failure symptoms	IND: 44 ± 9 CCC: 47 ± 8	IND: 46% males CCC: 38% males
Gómez- Olarte 2019	Patients at the Failure and Heart Transplantation Clinic in the Hospital Universitario San Ignacio, Colombia	Cross- sectional	IND (n=14): asymptomatic chagasic individuals (stage A), including those with non-structural cardiac damage (stage B) CCC: -Stage C or D (n=14): chagasic patients with cardiomyopathy -Transplant (n=9): chagasic patients who had received a heart transplant	IND: 49.7 ± 9.8 CCC: -Stage C or D: 63.6 ± 8.8 -Transplant: 60.8 ± 8.5 IND patients had a lower mean age than CCC patients did (p=0.0107).	IND: 43% males CCC: -Stage C and D: 50% males -Transplant: 56% males
González 2014	Individuals in Venezuela in 2008	Prospect ive observati onal study (1 year follow- up)	IND (n=34): individuals with a functional exam, pathologic history, clinical exam, and ECG not suggestive of cardiac pathology CCC (n=81): individuals whose ECG and/or ECHO showed signs of cardiac pathology (such as rhythm disorders, conduction disorders, ventricular repolarization disorders, hypertrophy or growth of the cavity of walls, ventricular movement disorders, cardiomegaly, moderate of severe diastolic dysfunction, systolic dysfunction, or reduced EF)	IND: 20.9% were >50 years CCC: 79% were >50 years	IND: 12 males CCC: 44 males
González 2018	Patients the Chagas Section of the Cardiology Service of Hospital Provincial del Centenario de Rosario, Argentina without comorbidities	Subset of a case- control study	IND (n=84): seropositive individuals with normal ECG and CXR CCC: -Mild to moderate (n=55): seropositive individuals with no CHF and ECG showing any of the following: incomplete or complete RBBB, first degree AV block or non-life-threatening arrhythmias or a CXR cardiothoracic ratio <0.55 -Severe (n=51): seropositive individuals with major ECG pathological tracings (complex ventricular arrhythmia or complete AV block), CHF and a CXR cardiothoracic ratio >0.55	IND: 45.3 ± 1.4 CCC: -Mild to moderate: 52.2 ± 1.7 -Severe: 52 ± 1.7	IND: 28 males CCC: 26 males

Guedes 2016	Patients from Rio Grande do Norte, Brazil from 2011-2013 excluding patients over 70 years of age or with diabetes, sustained ventricular tachycardia or ventricular fibrillation, an implanted cardiac pacemaker, or non-chagasic cardiomyopathy	Cross-sectional	IND (n=18) CCC (n=17) Stage determined by serology and ECG, CXR, contrasted x-rays of the esophagus and colon, ECHO, and 24-hour Holter exam according to the Brazilian Consensus	IND: 41.4 ± 10.7 CCC: 49.7 ± 11.8	IND: 10 (55.5%) males CCC: 11 (64.7%) males
Gusmão 1982	Patients at Goias University Hospital and two private practices in Brazil	Cross- sectional	IND (n=46): seropositive individuals with normal heart size, EKG, barium swallow, and barium enema CCC: -Mild (n=21): seropositive individuals with complete RBBB, left anterior hemiblock, unifocal premature ventricular beats, or low or flat T waves -Moderate (n=20): seropositive individuals with RBBB and premature ventricular beats, left anterior hemiblock and premature ventricular beats, complete AV block, or low or flat T waves with premature ventricular beats -Severe (n=15): seropositive individuals with cardiomegaly and ECG alterations	IND: 36 (18-73)* CCC: -Mild: 41 (31-59)* -Moderate: 44 (33-75)* -Severe: 42 (19-67)* *Mean (range)	IND: 27 males CCC: 28 males
Heringer- Walther 2006	Patients from the Heart Failure Center of the Felicio Rocho Hospital, Brazil from 2001-2004	Prospect ive cohort	IND (n=34): Chagas disease without ventricular dysfunction (LVEF >50%) CCC: -Group 2 (n=18): Chagas disease with ventricular systolic dysfunction (LVEF <50%) in NYHA classes I-II -Group 3 (n=14): Chagas disease with ventricular systolic dysfunction (LVEF <50%) in NYHA classes III-IV	IND: 51.7 ± 1.9 CCC: -Group 2: 50.9 ± 1.9 -Group 3: 50.5 ± 2.7	IND: 8 males CCC: 13 males
Higuchi 2009	Endomyocardial biopsies from patients at the Heart Institute of Sao Palo, Brazil from 1980-2001	Retrospe ctive observati onal	IND (n=7) CCC (n=17): heart failure Definitions not specified	IND: 34 ± 11 CCC: 37 ± 12	IND: 3 males CCC: 11 males
Higuchi 2018	Serum samples from Chagas disease patients collected from 2008-2016 at the Instituto de Coraçao, Hospital das Clinicas HCFMUSP, University of Sao Paulo, Brazil	Retrospe ctive observati onal	IND (n=21): asymptomatic, seropositive individuals with a normal ECG, CXR with no evidence of cardiac enlargement, EF >60%, and no esophagus or colon enlargement by contrasted exams CCC (n=25): chagasic patients with LVEF <35%	IND: 60 ± 12 CCC: 49 ± 10	IND: 9 males CCC: 20 males

Iosa 1989	Patients from	Cross	IND (n=10): asymptometic corenective individue1-	IND. 42 ± 0	
10sa 1989	Argentina	Cross- sectional	IND (n=10): asymptomatic, seropositive individuals with normal ECGs and CXRs CCC: -Group II (n=8): seropositive individuals with abnormal	IND: 42 ± 8 CCC: -Group II: 46 ± 14	-
			ECGs with arrhythmias, RBBB and/or left anterior hemiblock, normal CXR, and no signs or symptoms of CHF	-Group III: 50 ± 9	
			-Group III (n=8): seropositive individuals with abnormal ECG findings, severe cardiomegaly on CXR, and signs and symptoms of CHF (NYHA class III-IV)		
Juiz 2019	Individuals in the Argentinean Gran Chaco	Case- control study	Non-Wichi: -IND (n=166) -CCC (n=170)	Non-Wichi: -IND: 51.30 ± 15.15 -CCC: 54.14 ±	IND: 122 males
	Region and patients of health centers in		Wichi: -IND (n=99)	12.76 Wichi:	CCC: 119 males
	Buenos Aires from 2012-2017		-CCC (n=45)	-IND: 35.43 ± 14.04 -CCC: 38.40 ±	
			CCC: demonstrated cardiomyopathy; seropositive individuals with clinical symptoms and ECG alterations	14.72	
			IND: seropositive individuals with chronic infection but lacking clinical symptoms with no obvious pathological signs during the cardiovascular physical exam and		
			normal complementary studies (ECG, stress test, etc.) Individuals were divided by Wichi heritage.		
Kaplinski 2015	Women presenting for delivery at the	Cross- sectional	IND (n=274): seropositive individuals without ECG alterations consistent with Chagas cardiomyopathy	IND: 27 (22-34)* CCC: 32 (24-39)*	-
	Hospital Universitario Japonés in Santa Cruz and		CCC (n=28): seropositive individuals with ECG alterations consistent with Chagas cardiomyopathy (complete right or left bundle branch block, left anterior or posterior fascicular block, complex or multiform	*Median (IQR)	
	Hospital Municipal Camiri in Camiri, Bolivia		ventricular premature beats, AV blocks in absence of drugs slowing AV conduction, sinus bradycardia <45 beats/minute or sinus pauses >3.0, atrial fibrillation, junctional rhythm, or complex ventricular arrhythmias [multiform, couplets, or nonsustained ventricular		
Keating 2015	Seropositive blood donors	Case- control	tachycardia]) IND (n=341): seropositive blood donors without CCC, assessed by ECG and ECHO	IND: 3 age 0-29, 73 age 30-39, 110 age	IND: 169 males
	identified by blood bank screening in	study	CCC: -Diagnosed Chagas cardiomyopathy (n=101): previous	40-49, 101 age 50- 59, 54 age 60+	CCC: 127 males
	Minas Gerais, Brazil from 1996-2002 and		physician diagnosis of CCC with confirmed seropositivity and no comorbidities such as diabetes, hypertension, or renal failure	CCC: -Diagnosed Chagas cardiomyopathy: 1	
	previously diagnosed cases of CCC from the Heart Institute of the University of		-Chagasic blood donors with CCC (n=109): seropositive individuals with CCC, assessed by ECG and ECHO	age 0-29, 8 age 30- 39, 46 age 40-49, 46 age 50-59, 0 age 60+	
	Sao Paulo Medical School			-Chagasic blood donors with CCC: 0 age 0-29, 23 age 30- 39, 34 age 40-49, 29 age 50-59, 23 age 60+	
Khan 2016	Patients from the Heart Failure Centre of	Prospect ive cohort	IND (n=46): Chagas disease without systolic ventricular dysfunction (LVEF >50%)	IND: 52.0 ± 1.5	IND: 11 males CCC: 23
	Felicio-Rocho Hospital, Brazil from 2001-2005		CCC: -Group 2 (n=25): Chagas disease with ventricular systolic dysfunction (LVEF <50%) in NYHA classes I-	-Group 2: 50.6 ± 2.3	males
			П	-Group 3: 48.9 ± 1.9	

	I		Group 3 (n-22): Chagas disease with ventricular	T	
			-Group 3 (n=22): Chagas disease with ventricular systolic dysfunction (LVEF <50%) in NYHA classes III-IV		
Larocca	Patients at	Cross-	IND (n=14)	IND: 60 ± 10	IND: 5 males
2017	Chagas disease outpatient clinics in Brazil from 2011-2013	sectional	CCC: -Without ventricular dysfunction (n=16) -With ventricular dysfunction (n=26)	CCC: -Without ventricular dysfunction: 56 ± 8	CCC: 18 males
			Clinical stage assessed by medical history, physical exam, blood analysis, ECG, CXR, 24-hour Holter monitoring, ECHO, and cardiovascular MRI.	-With ventricular dysfunction: 59 ± 9	
Lassen 2018	Patients at the Chagas and	Case- control	IND (n=27): asymptomatic, seropositive individuals with no abnormal cardiac symptoms in noninvasive	IND: 61 ± 11	IND: 9 males
	Hypertension Clinics of the Córdoba		cardiac evaluations CCC (n=103): seropositive individuals whose CXR,	CCC: 62 ± 15	CCC: 35 males
	Hospital in Argentina		ECG, and/or ECHO showed some alteration in conduction and/or structural cardiomyopathy		
Lasso 2015	Patients at the Fundación	Cross- sectional	IND (n=24): seropositive individuals with normal heart size and LVEF, with normal (stage A) or abnormal	IND: 44 (22-67)*	IND: 9 males
2010	Clínica Abood Shaio, Instituto		ECG findings (stage B), in NYHA class I	CCC: 44 (34-80)*	CCC: 12 males
	Nacional de Salud and Hospital Universitario		CCC (n=19): seropositive individuals with abnormal ECG findings and increased heart size, in NYHA class II-IV (stages C-D)	*Median (range)	maies
	San Ignacio in Bogotá, Colombia				
Laucella 1996	Individuals living in an	Cross- sectional	IND (n=22): seropositive individuals without manifestations of cardiac involvement	IND: 32 ± 12	IND: 15 males
(Acta Tropica)	endemic area in Argentina		CCC: -CDP-1 (n=8): seropositive individuals with suspected or borderline cardiac disease	CCC: -CDP-1: 43 ± 13 -CDP-2: 47 ± 14	CCC: -CDP-1: 4 males
			-CDP-2 (n=8): seropositive individuals with moderate myocardial dysfunction	-CDP-3: 48 ± 13	-CDP-2: 3 males
			-CDP-3 (n=15): seropositive individuals with overt cardiac dysfunction		-CDP-3: 8 males
			Cardiac involvement was assessed by ECG and CXR in all patients, and when possible, ECHO and radionuclide angiography.		
Laucella 2001	Individuals living in an endemic area in	Cross- sectional	IND (n=16): seropositive individuals who were either asymptomatic or had some ECG abnormalities but normal cardiothoracic radiological relation (Kuschnir	IND: 35 ± 9 CCC: 49 ± 13	-
	Argentina		grade 0-1) CCC (n=11): seropositive individuals with myocardial dysfunction, as measured by clinical or radiological signs of cardiomegaly and/or heart failure (Kuschnir grade 2-3)		
Laucella 1996 (AJTMH)	Individuals living in an endemic area in	Cross- sectional	IND (n=20): seropositive individuals who were either asymptomatic or had a pathologic CXR or ECG	IND: 38.8 ± 13.4	-
(AJ IMII)	Argentina		CCC (n=19): seropositive individuals with myocardial dysfunction, as measured by a reduced EF (<0.4), LV enlargement on ECHO, and increased cardiothoracic ratio (>0.51)	CCC: 48.5 ± 12.6	

Leon Rodriguez 2016	Individuals at the Santander Department,	Cross- sectional	IND (n=175) CCC (n=401)	IND: 58.00 CCC: 63.14	-
(HLA)	Colombia		Clinical stage was assessed by ECG and ECHO information among seropositive individuals.	Standard deviations not provided.	
Leon Rodriguez	Individuals at the Santander	Cross- sectional	IND (n=336)	IND: 53.41	-
2018	Department, Colombia		CCC (n=542) Clinical stage was assessed by ECG and ECHO information among seropositive individuals.	CCC: 61.13 Standard deviations not provided.	
Leon	Individuals at	Cross-	IND (n=175)	IND: 58.00	-
Rodriguez 2016 (PLoS	the Santander Department, Colombia	sectional	CCC (n=401)	CCC: 63.14	
NTD)	Colomolu		Clinical stage was assessed by ECG and ECHO information among seropositive individuals.	Standard deviations not provided.	
Leon Rodriguez	Individuals at the Santander	Cross- sectional	IND (n=171)	IND: 56.67	-
2016 (Sci Rep)	Department, Colombia	sectional	CCC (n=376)	CCC: 62.66	
17			Clinical stage was assessed by ECG and ECHO information among seropositive individuals using guidelines from WHO, PAHO, and international Buenos Aires consensus of 2010.	Standard deviations not provided.	
Lidani	Patients at the	Cross-	IND (n=35): seropositive individuals with an absence of	IND: 55 (36-73)*	IND: 18 males
2018	Chagas' disease Ambulatory of the Clinical	Chagas' disease sectional Ambulatory of	clinical signs and symptoms of cardiac and digestive involvement and normal chest radiography and ECG	CCC: 56 (34-81)*	CCC: 19
	Hospital, Federal University of Paraná, Curitiba, Brazil		CCC (n=43): seropositive individuals with altered ECG, with or without altered ECHO findings and/or heart failure	*Median (range)	mares
Llop 1988	Individuals in the towns of Combarbala and Illapel in Chile	Cross- sectional	IND (n=73): seropositive individuals without chagasic cardiomyopathy CCC (n=51): seropositive individuals with chagasic cardiomyopathy	IND: 3 age 21-30, 5 age 31-40, 14 age 41-50, 22 age 51- 60, 13 age 61-70, 12 age 71-80, 4 age 81-90 CCC: 2 age 21-30, 6 age 31-40, 9 age 41-50, 16 age 51- 60, 6 age 61-70, 10 age 71-80, 2 age 81- 90	-
López 2006	Patients at the Chagas outpatient clinic at the Centro Cardiovascular Regional ASCARDIO and the Escuela de Medicina Pablo Acosta Ortiz (Universidad Centroccidental Lisandro Alvarado) in Barquisimeto, Estado Lara, Venezuela	Cross- sectional	IND (n=24): asymptomatic, seropositive individuals with no electrocardiographic or echocardiographic evidence of cardiac involvement CCC: -Phase II (n=20): asymptomatic, seropositive individuals with electrocardiographic or echocardiographic evidence of cardiac involvement -Phase III (n=20): seropositive individuals with heart failure	IND: 56.9 ± 3.0 CCC: -Phase II: 62.7 ± 2.7 -Phase III: 68.3 ± 2.2 A multiple regression analysis found no correlation between age and Chagas disease stage.	IND: 6 males CCC: 24 males A multiple regression analysis found no correlation between sex and Chagas disease stage.

		I		I	I
	without ischemic heart disease, liver disease, inflammatory processes, immunosuppress ion, non-Chagas pericarditis, or primary valve disease				
Lorena 2010	Patients at the Chagas Disease Unit of Oswaldo Cruz University Hospital in Brazil	Cross- sectional	IND (n=9): asymptomatic, seropositive individuals without significant alterations in ECG, CXR, ECHO, oesophagogram, and barium enema (suspicious cases) CCC: -CARD 1 (n=15): seropositive individuals with chronic chagasic cardiomyopathy in NYHA class I-II -CARD 2 (n=15): seropositive individuals with clinical and/or echocardiographic and radiological signs of heart enlargement, in NYHA class III	IND: 30-65* CCC: 35-77* *Range	IND: 4 males CCC: 11 males
Luz 2013	Patients at the Chagas Disease Ambulatory of the Clinical Hospital of the Federal University of Paraná, Brazil	Cross- sectional	IND (n=88) CCC (n=96) Definitions of clinical stages among seropositive individuals not specified	IND: 54.6 (34-76) CCC: 58.9 (34-90) *Mean (range); no standard deviations provided	IND: 61.4% males CCC: 50.0% males
Luz 2016	Patients at the Chagas Disease Ambulatory of the Clinical Hospital of the Federal University of Paraná, Brazil without recent infections or suspected non- chagasic cardiomyopathy	Cross- sectional	IND (n=72): seropositive individuals without cardiac or gastrointestinal disease CCC (n=74): seropositive individuals with altered ECG, with or without abnormal ECHO or reduced EF	IND: 55.7 ± 8.3 CCC: 59.2 ± 10.0	IND: 30.5% males CCC: 48.6% males
Marques 2006	Patients seen at the Chagas' disease outpatient clinic in 2002 in Brazil without heart failure or arrhythmias, hypertension, diabetes mellitus, COPD, endocrine dysfunctions, heart disease of other etiologies, or pregnancy	Cross- sectional	IND (n=50): seropositive individuals with normal ECG CCC: -GIIA (n=31): asymptomatic, seropositive individuals with ECG changes characteristic of Chagas' disease -GIIB (n=25): asymptomatic, seropositive individuals with ECG changes non-characteristic of Chagas' disease	IND: 41 ± 5.6 CCC: -GIIA: 43 ± 4.6 -GIIB: 42 ± 6.8	IND: 21 males CCC: -GIIA: 19 males -GIIB: 11 males
Martín 1987	Individuals from Sante Fe and Santiago del Esterio in Argentina	Cross- sectional	IND (n=25): asymptomatic individuals with normal exam findings CCC (n=23): patients with chronic infection and cardiopathy, as demonstrated by clinical, ECG, and radiological findings	IND: 5 age 10-19, 5 age 20-29, 11 age 30-39, 4 age 40-49 CCC: 1 age 10-19, 4 age 20-29, 9 age 30-39, 2 age 40-49, 5 age 50-59, 2 age 60+	-

Medeiros	Patients at the	Cross- sectional	IND (n=8): asymptomatic, seropositive individuals with	IND: 53 ± 17	-
2017	Referral Outpatient Center for Chagas Disease at the Hospital das Clínicas of Universidade	nested in prospecti ve cohort	no significant alterations in ECG, CXR, ECHO, esophagogram and barium enema CCC (n=10): seropositive individuals with dilated left ventricle and impaired ventricular systolic function (EF <55%) on ECHO	CCC: 52 ± 17	
	Federal de Minas Gerais, Brazil				
Medeiros 2019 (Front	Patients at the Alda Falcão Referral	Cross- sectional	IND (n=10): asymptomatic, seropositive individuals with no significant alterations in ECG, CXR, ECHO, esophagogram and barium enema	IND: 42 ± 16 CCC: 51 ± 7	-
Immmuno 1)	Outpatient Center for Chagas Disease at the Instituto René Rachou, Fundaçao Oswaldo Cruz, Belo Horizonte, Brazil		CCC (n=10): seropositive individuals with dilated left ventricle and impaired ventricular systolic function (EF <55%) on ECHO	CCC: 31 1 7	
Melo 2005	Patients at the outpatient clinic of the Hospital	Cross- sectional	IND (n=13): asymptomatic, seropositive individuals with no alterations on ECG, CXR, or ECHO suggestive of heart disease	IND: 42.2 ± 11.7	IND: 7 males G2: 6 males
	Universitário Oswaldo Cruz of the Universidade de Pernambuco, Brazil without comorbidities		CCC (n=12): seropositive individuals with cardiac impairment evidenced by symptoms and alterations on ECG, CXR, and/or ECHO compatible with chagasic heart disease	CCC: 62.7 ± 7.7	G2. V mates
Messias- Reason	Patients at the Cardiology	Cross- sectional	IND (n=43)	IND: 44.0 (23-64)*	-
2003	Clinics of the Hospital de		CARD (n=57)	CARD: 38.0 (23-74)*	
	Clínicas of the Federal University of Paraná, Brazil		Clinical stage assessed by ECG, CXR, esophagram, and ECHO.	*Mean (range); no standard deviations provided	
Miranda 2019	Not specified	Cross- sectional	IND (n=40)	IND: 49.68 ± 5.28	IND: 21 males
			CCC (n=40)	CCC: 50.98 ± 5.88	CCC: 20 males
			Clinical stage assessed by clinical exam, laboratory exam, ECG, and ECHO.	Age was not significantly different between groups (p=0.929).	Sex was not significantly different between groups (p=0.979).
Moreira 2008	Patients from the Heart Failure	Cross- sectional	IND (n=52): Chagas disease patients without systolic ventricular dysfunction (LVEF >50%)	IND: 51.9 ± 1.4	IND: 24 males
	Center of the Felicio Rocho Hospital, Brazil from 2001-2004		CCC: -Group 2 (n=29): Chagas disease patients with systolic ventricular dysfunction (LVEF <50%) in NYHA	CCC: Group 2: 52.6 ± 2.2 Group 3: 49.1 ± 1.9	CCC: 28 males Sex was not
	without comorbidities		classes I-II -Group 3 (n=30): Chagas disease patients with systolic ventricular dysfunction (LVEF <50%) in NYHA classes III-IV	Age was not significantly different between groups (p>0.05).	significantly different between groups (p>0.05).

Moreira	Patients from the	Cross-	IND (n=32): Chagas disease patients without systolic	IND: 51.5 ± 1.9	IND: 8 males
2009	Heart Failure	sectional	ventricular dysfunction (LVEF >50%)	1110. 31.3 ± 1.9	
	Center of the			CCC:	CCC: 13
	Felicio Rocho		CCC:	-Group 2: 50.9 ±	males
	Hospital, Brazil		-Group 2 (n=18): Chagas disease patients with systolic	1.9	1_
	from 2001-2005		ventricular dysfunction (LVEF <50%) in NYHA		Sex was not
	without		classes I-II	-Group 3: 50.5 ±	significantly
	comorbidities			2.7	different
			-Group 3 (n=14): Chagas disease patients with systolic		between
			ventricular dysfunction (LVEF <50%) in NYHA classes III-IV	Age was not	groups (p>0.05).
			Classes III-1 v	significantly different between	(p>0.05).
				groups (p>0.05).	
Mosca	Individuals in	Cross-	IND (n=23): seropositive individuals with no clinical	IND: 34.3 ± 9.0	_
1986	Venezuela	sectional	evidence of cardiac disease	IND: 34.3 ± 9.0	-
1700	VCIICZUCIA	sectional	evidence of cardiac disease	CCC: 45.1 ± 7.6	
			CCC (n=9): seropositive individuals with a diagnosis of	CCC. 43.1 ± 7.0	
			cardiomyopathy		
Mundaray	Patients from the	Cross-	IND (n=30): seropositive individuals without cardiac	IND: 33-54*	IND: 57%
Fernández	Centro de	sectional	symptoms	IND. 33-34	males
2014	Investigaciones	sectional	symptoms	CCC:	maics
201.	José Francisco		CCC:	-Group B: 54-65*	CCC:
	Torrealba in San		-Group B (n=30): seropositive individuals with		-Group B:
	Juan de los		arrhythmia-related symptoms	-Group C: 65-86*	57% males
	Morros, Guárico				
	State, Venezuela		-Group C (n=36): seropositive individuals with overt	*Range	-Group C:
	from 1995-1998		CHF		72% males
Muñoz-	Patients from	Cross-	IND (n=45): seropositive individuals without ECG	IND: 51 (20-76)*	IND: 10 males
San	endemic zones	sectional	alterations	GGG 55 (05 01)	000 15
Martín	of Chile without		000 (41)	CCC: 55 (25-81)	CCC: 15
2018	other causes of heart disease		CCC (n=41): seropositive individuals with ECG alterations; ECHO was performed to eliminate other	*Mean (range); no	males
	ileart disease		causes of cardiomyopathy (hypertension,	standard deviations	
			atherosclerosis, idiopathic cardiomyopathy and	provided	
			congenital malformations)	provided	
Munoz	Patients at the	Cross-	IND (n=48): seropositive individuals with	IND: 41 (30-62)*	IND: 21%
Saravia	Santa Bárbara	sectional	indeterminate disease as determined by clinical	11.21.11 (50 02)	males
2013	Hospital Sucre,	; sub-	investigation, electrocardiographic mapping, and	CCC:	
	Bolivia from	cohort of	radiological imaging in the cardiological and		CCC:
	2006-2007	a	gastroenterological departments	-Mild/moderate:	-
		retrospec		48.5 (18-80)*	Mild/moderate
		tive	CCC:		: 46% males
		study	-Mild/moderate (n=62): seropositive individuals with	-Severe: 55 (21-	
			mild ECG changes in ventricular repolarization or sinus	81)*	-Severe: 70%
			bradycardia (mild) or LAFB, incomplete LBBB,	*M-4: ()	males
			RBBB, second-degree AV block Mobitz type I, or atrial fibrillation in patients age >50 years (moderate)	*Median (range)	
			mormation in patients age >50 years (moderate)		1
			-Severe (n=27): seropositive individuals with		1
			cardiomegaly, dilated cardiomyopathy, complete		
			LBBB, AV block Mobitz type II, complete AV block,		
			or atrial fibrillation in patients age <50 years		
Negrão	Out-patients in	Cross-	IND (n=12): Chagas disease patients without clinical	Groups are age-	IND: 2 males
2009	Brazil	sectional	manifestations of Chagas disease and with normal	paired	/-
			esophagogram, ECG, and normal EF by ECHO, with no		CCC: 12
			myocardial fibrosis by cardiac nuclear MRI and taking		males
			no medications		1
			CCC (n=15): patients with Chagasic cardiomyopathy		
			with EF <40% in NYHA classes II-III		1
			•		

Nonaka	Patients at	Cross-	IND (n=10): patients with a diagnosis of Chagas	IND: 59 ± 8	IND: 7 males
2019	outpatient clinics from Sao Rafael Hospital, Brazil	sectional	disease confirmed by indirect hemagglutination and indirect immunofluorescence, with an absence of clinical diagnosis of heart failure, and an absence of abnormalities on echography, Holter, and MRI	CCC: 60 ± 7	CCC: 18 males
			CCC (n=28): patients with a diagnosis of Chagas disease confirmed by indirect hemagglutination and indirect immunofluorescence, with symptomatic heart failure (NYHA classes II-IV) and LVEF ≤55% measured by ECHO, with the presence of myocardial fibrosis visualized as delayed enhancement in cardiac		
			MRI		
Noya- Rabelo 2018	Patients in the Chagas disease outpatient clinic at Hospital Sao Rafael in Salvador, Bahia, Brazil from 2012-2013	Cross- sectional	IND (n=17): seropositive individuals without signs of cardiac involvement characterized by normal ECG, CXR, and ECHO CCC: -Without ventricular dysfunction (n=16): seropositive individuals with known heart involvement defined as abnormal ECG (typically, RBBB with left anterior hemiblock) and without left ventricular dysfunction	IND: 59 ± 11 CCC: -Without ventricular dysfunction: 59 ± 9 -With ventricular dysfunction: 58 ± 7	IND: 5 males CCC: 20 males
			-With ventricular dysfunction (n=28): seropositive		
Noya- Rabelo 2016	Patients in the Chagas disease outpatient clinic	Cross- sectional	individuals with low LVEF in NYHA class III-IV IND (n=17): seropositive individuals without signs of cardiac involvement characterized by normal ECG, CXR, and ECHO	IND: 59 ± 11	IND: 5 males
2010	at Hospital Sao Rafael in Salvador, Bahia, Brazil from		CCC: -Without ventricular dysfunction (n=16): seropositive individuals with known heart involvement defined as	-Without ventricular dysfunction: 59 ± 9	males
	2012-2013		abnormal ECG (typically, RBBB with left anterior hemiblock) and without left ventricular dysfunction	dysfunction: 58 ± 7	
			-With ventricular dysfunction (n=28): seropositive individuals low LVEF in NYHA class III-IV		
Nunes 2013	Individuals from rural zones in the State of Rio	Cross- sectional	IND (n=72): seropositive individuals whose ECG mapping and radiologic imaging presented no sign of heart or gastrointestinal disease	IND: 48 ± 12	IND: 32 males CCC: 31
	Grande do			CCC: 51 ± 13	males
	Norte, Brazil		CCC (n=47): seropositive individuals who presented exclusively with cardiac alterations (no gastrointestinal alterations), as assessed by clinical evaluation, ECG, CXR, and ECHO	No significant differences were determined in patients by age.	No significant differences were determined in patients by sex.
Okamoto 2014	Individuals recruited from	Cross- sectional	IND (n=66): individuals with Chagas disease and a normal ECG and ECHO	IND: 55.6 ± 12.7	IND: 29 males
2017	the internal medicine ward, cardiac clinic, and hospital	Sectional	CCC: -Stage B (n=41): individuals with Chagas disease, an abnormal ECG (RBBB, LAFB, LBBB, incomplete	CCC: -Stage B: 58.2 ± 12.7	CCC: 70 males
	waiting area at San Juan de Dios hospital in		RBBB, AV blocks, multifocal or paired ventricular premature beats, atrial fibrillation or flutter, or severe bradycardia ≤50 beats/minute), and a normal ECHO	-Stage C: 59.4 ± 12.6	
	Santa Cruz, Bolivia from 2012-2013		-Stage C (n=18): individuals with Chagas disease and an EF of 40-54% with normal LV end diastolic diameter	-Stage D: 60.8 ± 11.6	
			-Stage D (n=68): individuals with Chagas disease and an EF <40% or LV end diastolic diameter ≥57 mm		

Passos	Patients from the	Cross-	IND (n=6): seropositive individuals with a lack of	-	Indeterminate:
2019	outpatient clinic of the Universidade Federal de Minas Gerais, Brazil without other heart disease, inflammatory disease, diabetes, or bacterial infections	sectional	clinical manifestations or alterations upon all clinical, radiological, and echocardiographic examination CCC (n=6): seropositive individuals with right and/or left ventricular dilation, global LV dysfunction, and alterations in the cardiac electric impulse generation and conduction on ECG, CXR, and ECHO		2 males Cardiac: 3 males
Passos 2017	Patients from the outpatient clinic of the Universidade Federal de Minas Gerais, Brazil without other heart disease, inflammatory disease, diabetes, or bacterial infections	Cross- sectional	IND (n=6): seropositive individuals with a lack of clinical manifestations or alterations upon all clinical, radiological, and echocardiographic examination CCC (n=6): seropositive individuals with right and/or left ventricular dilation, global LV dysfunction, and alterations in the cardiac electric impulse generation and conduction on ECG, CXR, and ECHO	-	IND: 2 males CCC: 2 males
Peralta 1981	Individuals from an endemic area in Brazil	Cross- sectional	IND (n=20): seropositive individuals with normal ECG CCC: -Group III (n=20): seropositive individuals with slight ECG alterations (ventricular and atrial overloading, and/or non-specific disturbances of the repolarization process, and/or incomplete RBBB, and/or prolongation of the PR interval) -Group IV (n=40): seropositive individuals with severe ECG abnormalities, such as 2 nd or 3 rd degree AV block, complete RBBB and atrial fibrillation or flutter and	IND: 38 (27-56)* CCC: -Group III: 39 (33-59)* -Group IV: 40 (27-58)* *Mean (range); no standard deviations provided	-
Peralta 1982	Individuals from an endemic area in Brazil	Cross- sectional	multifocal extra-systoles IND (n=16): asymptomatic, seropositive individuals with a normal ECG and heart size on X-ray CCC: -Group II (n=11): seropositive individuals who were asymptomatic or had symptoms attributed to arrhythmia, without cardiac insufficiency, with a normal heart size on X-ray, with ECG showing conduction abnormalities (left anterior hemiblock, complete RBBB, AV block of any grade, or complete LBBB) and/or frequent ventricular or supraventricular extrasystoles -Group III (n=16): seropositive individuals with cardiac insufficiency and/or cardiomegaly on X-ray (cardiothoracic index >0.5), with or without ECG changes	IND: 37 CCC: -Group II: 43 -Group III: 47 No standard deviations provided	-
Pereira 2018	Individuals in an endemic area in Rio Grande do Norte, Brazil, age 18-79	Cross- sectional	IND (n=18) CCC (n=17) Cardiac involvement assessed by 12-lead ECG and ECHO according to WHO and Brazilian Consensus of Chagas Disease II	IND: 41.4 ± 10.7 CCC: 49.7 ± 11.8	IND: 10 males CCC: 6 males

Pérez	Patients at the	Subset	IND (n=17): asymptomatic, seropositive individuals	Indeterminate: 46.0	_
2011	Chagas Disease	of a	with normal ECG and CXR	± 3*	-
2011	Service from the	case-	Herman Deed und erric	± J	
	Department of	control	CCC:	CCC:	
	Cardiology,	study	-Mild to moderate (n=13): seropositive individuals with	-Mild to moderate:	
	Hospital		no CHF and any of the following ECG changes:	52.9 ± 2.4*	
	Provincial del		incomplete or complete RBBB, ventricular arrhythmia,		
	Centenario de		or CXR cardiothoracic ratio <0.55	-Severe: 54.0 ± 3.7*	
	Rosario,				
	National		-Severe (n=13): seropositive individuals with CHF,	*Mean ± standard	
	University of		pathological ECG profiles and CXR cardiothoracic ratio	error	
	Rosario, Rosario.		>0.55		
	Argentina				
Pérez-	Individuals	Cross-	IND (n=34): asymptomatic, seropositive individuals	IND: 37.7 ± 18.2	IND: 50.0%
Fuentes	recruited from	sectional	with no ECG abnormalities consistent with Chagas	110. 37.7 ± 10.2	males
2007	the blood bank,		disease and no abnormalities of the gastrointestinal tract	CCC:	
	cardiology and		visible on X-rays	-Group IV: 39.8 ±	CCC:
	gastroenterology		·	17.1	-Group IV:
	services at the		CCC:		58.8% males
	Centro Medico		-Group IV (n=17): seropositive individuals with ECG	-Group V: 40.9 ±	
	Nacional		abnormalities but no dilated cardiomyopathy	8.4	-Group V:
	Manuel Avila				62.5% males
	Camacho at the Instituto		-Group V (n=8): seropositive individuals with dilated cardiomyopathy and who presented with dyspnea,		
	Mexicano del		syncope, dysphagia and palpitations or other cardiac		
	Seguro Social in		abnormalities seen in Chagas disease		
	Puebla, Mexico		abhormanties seen in chagas disease		
Pérez-	Patients at the	Cross-	IND (n=23): seropositive individuals with normal ECG,	IND: 43 (21-60)*	IND: 8 males
Mazliah	Chagas Disease	sectional	CXR, and ECHO findings	, ,	
2018	Unit of Hospital			CCC:	CCC: 13
	Interzonal		CCC:	-G1: 40 (24-58)*	males
	General de		-G1 (n=6): seropositive individuals with normal CXR		
	Agudos Eva		and ECHO findings but abnormal ECG findings	-G2-3: 54 (46-76)*	
	Perón, Buenos		(Kuschnir grade 0)	43 f 1' /	
	Aires, Argentina		-G2-3 (n=10): seropositive individuals with ECG	*Median (range)	
			abnormalities and heart enlargement with (G2) or	p<0.05 (IND vs.	
			without (G3) clinical or radiological evidence of heart	G2-3)	
			failure (Kuschnir grade 2-3)	G2 3)	
Pérez-	Patients from the	Cross-	Indeterminate (n=23)	Indeterminate: 40.8	_
Ramirez	Services of	sectional		± 8.2	
1999	Infectious		Cardiac (n=27)		
	Diseases of the			Cardiac: 54.8 ± 14.8	
	University		Clinical staging among seropositive individuals not		
	Hospitals of Sao		specified		
	Paulo,				
	Campinas, and Uberlândia and				
	the Hospital for				
	Hemophilic				
	Patients in Rio				
	de Janeiro,				
	Brazil				
Pevereng	Not specified	Cross-	IND (n=65): seropositive individuals with normal	Individuals in group	There was no
o 2016		sectional	radiological, ECG, and ECHO findings	III were older than	difference in
			coc	those in group I	sex
			CCC:	(p<0.001; further detail not provided).	distribution
			-Group II (n=65): seropositive individuals with ECG alterations but no cardiac insufficiency	uetan not provided).	between
			anciations but no cardiac insufficiency		groups (further detail
			-Group III (n=47): seropositive individuals with cardiac		not provided).
			insufficiency and/or dilated cardiomyopathy by		not provided).
			transthoracic ECHO		
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Pissetti 2013	Individuals in Minas Gerais, Brazil over age 25 and without HIV	Subset of a case- control study	IND CCC Seropositive individuals were classified as indeterminate or cardiac using clinical examination, ECG, and chest, esophagus, and colon contrast X-ray.	IND: 24/79 <50 years old CCC: 25/113 <50 years old Clinical form was not significantly associated with age class.	IND: 34/81 males CCC: 63/122 males Clinical form was not significantly associated with sex.
Pozo- Pérez 2014	Patients at the Cardiopulmonar y Unit of the University Hospital Dr. Luis Razetti in Barcelona, Venezuela from 2010-2011	Cross-sectional	IND (n=20): asymptomatic, seropositive individuals with normal ECG, CXR, and ECHO CCC: -Chagas II (n=24): asymptomatic, seropositive individuals with localized cardiac areas of abnormal contraction, conduction abnormalities due to a lesion in the His Purkinje system, and LVEF >50% -Normal BNP (n=21) -Altered BNP (n=3) -Chagas III (n=20): seropositive individuals with cardiac dysfunction, conduction disorders, and LVEF <50%, with NYHA class III-IV -Normal BNP (n=3) -Altered BNP (n=17)	IND: 59.00 ± 12.32 CCC: -Chagas II: -Normal BNP: 64.29 ± 12.39 -Altered BNP: 80.67 ± 6.11 -Chagas III: -Normal BNP: 69.33 ± 5.03 -Altered BNP: 70.00 ± 10.98 Normal BNP: p=0.228* Altered BNP: p=0.124* *Comparison of IND, Chagas II, and Chagas III groups	-
Puyó 2002	Individuals in Argentina	Prospect ive cohort	IND (n=9): asymptomatic, seropositive individuals CCC: -Group II (n=6): seropositive individuals with Chagas disease as the only cardiac damage -Group III (n=6): seropositive individuals with chagasic CHF Clinical stage was assessed using ECG, transthoracic ECHO, RX chest test and routine laboratory analyses.	IND: 43.2 ± 4.2 CCC: -Group II: 61.3 ± 2.1 -Group III: 64.3 ± 1.3	IND: 2 males CCC: 6 males
Ramasaw my 2009	Individuals at the Heart Institute (InCor) of the University of Sao Paulo School of Medicine, Brazil	Cross- sectional	IND (n=76): seropositive individuals with normal ECG and ECHO findings, CXR with no evidence of cardiac enlargement, and normal radiograph findings of the esophagus and colon CCC (n=169): seropositive individuals with abnormal EEG findings ranging from typical conduction abnormalities to severe arrhythmia; some had varying degrees of ventricular dysfunction	IND: -Males: 53.4 ± 7.87 -Females: 56.7 ± 9.74 CCC: -Males: 51.4 ± 12.8 -Females: 54.5 ± 10.3	IND: 27 males CCC: 93 males There was a difference in sex distribution between asymptomatic and CCC groups (p=0.004).
Ramasaw my 2006 CID	Individuals at the Heart Institute (InCor) of the University of Sao Paulo School of Medicine, Brazil	Cross- sectional	IND (n=76): seropositive individuals with normal ECG and ECHO findings, CXR with no evidence of cardiac enlargement, and normal radiograph findings of the esophagus and colon CCC (n=169): seropositive individuals with abnormal EEG findings ranging from typical conduction abnormalities to severe arrhythmia; some had varying degrees of ventricular dysfunction	IND: -Males: 53.4 ± 7.87 -Females: 56.7 ± 9.74 CCC: -Males: 51.4 ± 12.8 -Females: 54.5 ± 10.3	IND: 27 males CCC: 93 males There was a difference in sex distribution between

					asymptomatic and CCC groups (p=0.004).
Ramasaw my 2006 JID	Individuals at the Heart Institute (InCor) of the University of Sao Paulo School of Medicine, Brazil	Cross- sectional	IND (n=76): seropositive individuals with normal ECG, ECHO, and CXR findings and normal radiograph findings of the esophagus and colon CCC (n=159): seropositive individuals with abnormal EEG findings	IND: -Males: 53.4 ± 7.9 -Females: 56.7 ± 9.7 CCC: -Males: 51.4 ± 12.8 -Females: 54.5 ± 10.3	IND: 27 males CCC: 87 males
Ramasaw my 2007	Individuals at the Heart Institute (InCor) of the University of Sao Paulo School of Medicine, Brazil	Cross- sectional	IND (n=76): seropositive individuals with normal ECG and ECHO findings, CXR with no evidence of cardiac enlargement, and normal radiograph findings of the esophagus and colon CCC (n=169): seropositive individuals with abnormal EEG findings ranging from typical conduction abnormalities to severe arrhythmia; some had varying degrees of ventricular dysfunction	IND: -Males: 53.4 ± 7.87 -Females: 56.7 ± 9.74 CCC: -Males: 51.4 ± 12.8 -Females: 54.5 ± 10.3	IND: 27 males CCC: 93 males There was a difference in sex distribution between asymptomatic and CCC groups (p=0.004).
Reis 2007	Patients at the Chagas Disease Laboratory in the State University of Maringa, the Clinical Hospital in Londrina, and the Base Hospital of the Medical School in Sao Jose de Rio Preto in Brazil	Cross- sectional	IND (n=48): seropositive individuals with a normal ECG CCC (n=212): seropositive individuals with ECG changes common to CCC	IND: 58.6 ± 7.8 CCC: 63.9 ± 10.2 There was a difference in age by clinical form $(p \le 0.05)$.	IND: 24 males CCC: 97 males There was no significant difference in sex distribution by clinical form.
Ripoll 2018	Individuals in Bogotá, Colombia	Cross- sectional	IND (n=9): seropositive individuals with normal ECHO findings in NYHA class I, with normal or abnormal ECG findings CCC (n=12): seropositive individuals with abnormal ECG findings, increased heart size, decreased LVEF, and NYHA class II-IV	IND: 48.78 ± 8.48 CCC: 54.08 ± 9.37	IND: 3 males CCC: 6 males
Rocha 2006	Patients at the Chagas Disease Outpatient Center of the Federal University of Minas Gerais, Brazil without comorbidities or pregnancy	Cross- sectional	IND (n=52): seropositive individuals without any of the changes below CCC (n=118): seropositive individuals with at least one of the following: NYHA class III or IV; ECG abnormalities including 2 nd or 3 rd degree AV or intraventricular blocks, abnormal Q wave, >1 ventricular ectopic beat per tracing, low voltage QRS in standard leads; cardiothoracic index >0.50; or LVEF <40% or presence of ventricular aneurysms	IND: 39.8 ± 9.0 CCC: 41.8 ± 9.2	IND: 31 males CCC: 66 males

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Rocha 2019	Patients at the Chagas Disease	Subset of a	IND (n=27): seropositive individuals with normal ECGs, CXR, and routine laboratory tests	IND: 45 (18-76)*	IND: 13 males
	Service from the Department of Cardiology, Hospital Provincial del Centenario de Rosario, Argentina without neuroendocrine, metabolic, or immunological disease or treatment with hormones or immunomodulat ors	case- control study	CCC: -Mild/moderate (n=26): seropositive individuals with mild or moderate compromise and no CHF, but pathological ECG tracings such as complete or incomplete RBBB or ventricular arrhythmia and a CXR cardiothoracic index <0.55 -Severe (n=30): seropositive individuals with CHF, pathological ECG tracings, and a CXR cardiothoracic ratio of >0.55 with normal CPK levels	CCC: -Mild/moderate: 50 (21-76)* -Severe: 53 (19-79)* *Median (range)	CCC: 23 males
Rodeles 2016	Patients at the Internal Medicine Department of the J.B. Iturraspe Hospital in Argentina without comorbidities	Cross- sectional	IND (n=59): asymptomatic, seropositive individuals with normal radiological, ECG, and ECHO studies CCC: -Group II (n=54): seropositive individuals with ECG alterations (LAFB, left or right bundle branch block, total AV block, complex ventricular arrhythmias) and/or ECHO impairment without HF -Group III (n=42): seropositive individuals with clinically manifested heart failure and/or dilated cardiomyopathy by transthoracic ECHO	IND: 45.4 ± 13.13 CCC: -Group II: 53.5 ± 11.04 -Group III: 58.8 ± 9.78	IND: 19 males CCC: 48 males
Salomone 2001	Individuals in the Province of Córdoba, Argentina	Cross- sectional	IND (n=27): seropositive individuals with no cardiac involvement, as determined by a normal ECG at rest and normal ECHO CCC (n=32): seropositive individuals with cardiac involvement, as determined by an abnormal ECG at rest (i.e. sinus bradycardia and typical conduction disturbances, such as RBBB, left anterior hemiblock, nonspecific intraventricular conduction disturbances, or a combination of these) and/or abnormal ECHO (LV diastolic diameter ≥56 mm and/or EF ≤50%)	IND: 53 ± 2 CCC: 58 ± 9 p-value: 0.03	IND: 33% males CCC: 35% males
Sánchez- Montalvá 2016	Patients attending the Tropical Medicine Unit of the Vall d'Hebron Hospital University in Barcelona, Spain from 2007-2014 and the North Metropolitan International Health Unit in Santa Colomba, Spain without diabetes mellitus, hypertension, alcoholism, ischemic heart disease or other cardiovascular disease	Cross-sectional	IND (n=233): Kuschnir grade 0 CCC: -Kuschnir grade I (n=98) -Kuschnir grade II (n=8) -Kuschnir grade III (n=9)	IND: 36 (30-44)* CCC: -Kuschnir I: 41 (36-47)* -Kuschnir II: 49.5 (45-56)* -Kuschnir III: 58 (38.5-68.5)* *Median (IQR) p<0.001	IND: 58 males CCC: 51 males p=0.01

Sandri	Patients at the	Cross-	IND (n=97): asymptomatic individuals with reactive	IND: 57 (34-76)*	IND: 34 males
2019	outpatient department for Chagas Disease of Hospital de Clínicas, Federal University of Paraná, Brazil without recent infection or suspected non-	sectional	serology and/or positive parasitological examination for <i>T. cruzi</i> but no clinical symptoms specific to Chagas disease and normal ECG results and radiological chest, esophagus, and colon exams CCC (n=95): seropositive individuals with altered ECG, with or without altered ECHO	CCC: 51 (34-90)* *Average (range)	CCC: 46 males
	chagasic cardiomyopathy				
Santos 2012	Patients in Minas Gerais, Brazil in 2006	Cross- sectional	IND (n=15): asymptomatic, seropositive individuals with normal physical examination, ECG, ECHO, thorax X-ray, and esophagus and colon contrast X-rays	IND: 13-57* CCC: 25-60*	IND: 9 males CCC: 5 males
			CCC (n=30): seropositive individuals with any type of cardiac alteration detected through either referred symptoms or signs in the physical examination, ECG, and ECHO, without any alteration in the thorax X-ray or esophagus and colon contrast X-rays	*Range	
Saravia	Patients in	Cross-	IND (n=86)	IND: 30 (18-62)*	IND: 19 males
2011	Sucre, Bolivia	sectional	CCC (n=71)	CCC: 47 (18-81)*	CCC: 36 males
			Seropositive individuals were classified by clinical investigation, ECG mapping, and radiologic imaging as having no sign of heart or GI disease (indeterminate) or suffering exclusively from cardiomyopathy or from cardiomyopathy combined with megacolon (cardiomyopathy)	*Median (range) IND individuals were significantly younger than CCC individuals (p<0.001).	mates
Schapach	Individuals in	Cross-	IND (n=26): seropositive individuals with normal ECG	IND: 32.8	IND: 15 males
nik 1980	Argentina Deticate at the	sectional	and normal cardiothoracic index on radiology CCC: -Group 1 (n=17): seropositive individuals with altered ECG and normal cardiothoracic index on radiology -Group 2 (n=23): seropositive individuals with altered ECG and cardiomegaly I (mild) -Group 3 (n=20): seropositive individuals with altered ECG and cardiomegaly II-III (severe) -Group 5 (n=10): seropositive individuals with normal ECG and cardiomegaly I (mild)	CCC: -Group 1: 33.8 -Group 2: 43.7 -Group 3: 45.9 -Group 5: 37.5 No standard deviations provided There is no significant difference between the ages of groups IND, 1, and 5 with groups 2 and 3. There is a difference between the ages of groups 1, 2, and 3 with IND and group 5 patients.	CCC: 43 males
Silva 2017	Patients at the cardiology and Chagas disease outpatient clinics of the General Hospital of the Federal University of	Cross- sectional	IND (n=90): patients with a diagnosis of Chagas disease, free of systolic dysfunction CCC (n=103): patients with symptomatic heart failure (according to Framingham criteria) secondary to Chagas disease Clinical stage was assessed using recent laboratory,	IND: 51.3 ± 11.9 CCC: 62.5 ± 11.1 p<0.001	IND: 30 males CCC: 51 males p=0.023
	Goias, Brazil from 2014-2015		ECHO, and Doppler ECHO results.		

Silva	Patients at the	Case-	IND (n=44): seropositive individuals with the	IND: 55.97 ± 4.98	IND: 18 males
2007	Chagas disease	control	undetermined form of chronic disease who were	IND. 33.77 ± 4.76	I (B. To males
	ambulatory of the University		symptom-free at rest ECG, with normal heart, esophagus, and colon on X-ray	CCC: 59.07 ± 7.15	CCC: 21 males
	Hospital,			p=0.024	0.650
	Universidade Federal de		CCC (n=46): seropositive individuals with chronic Chagas heart disease as determined by anomalous	OD: 1.005 (050) CI.	p=0.650
	Minas Gerais,		ECGs	OR: 1.085 (95% CI: 1.011-1.169)	
	Brazil from		2000	1.011-1.109)	
	1997-2005				
Simoes	Patients in Brazil	Cross-	IND (n=12): asymptomatic, seropositive individuals	IND: 43 ± 3	IND: 7 males
2000	(Most subjects in	sectional	with no cardiac involvement as evaluated by CXR, ECG, and ECHO showing normal LV segmental wall	CCC:	CCC: 19
	group I were		motion	-Group II: 48 ± 3	males
	identified			Group II. 10 2 3	
	through active		CCC:	-Group III: 59 ± 3	
	search of blood donor candidates		-Group II (n=13): seropositive individuals with RBBB on ECG, ventricular ectopic beats or ST changes, and/or		
	with positive		mild abnormalities on ECHO (segmental LV		
	Chagas disease		dysfunction, particularly at the apical, inferior and		
	serology.		posterior regions, or mild LV dilation) with normal		
	6.1.		global LV function (LVEF ≥0.5 on nuclear		
	Subjects in group II-III were		ventriculographic study)		
	recruited in the		-Group III (n=12): seropositive individuals with more		
	outpatient clinic		severe heart disease, encompassing those abnormalities		
	of the Division		in group II, with more marked LV cavity dilation and		
Soares	of Cardiology.) Patients	Cross-	global dysfunction (LVEF <0.5) IND (n=7): seropositive individuals who did not show	IND: 38-63*	IND: 4 males
2016	recruited at the	sectional	any cardiac or digestive alterations	IND: 56-05"	IND: 4 males
	Emergency		,	CCC: 24-71*	CCC: 7 males
	room Cardiology		CCC:		
	of Pernambuco		-CARD1 (n=10): seropositive individuals with ECG	*Range	
	(PROCAPE), University of		alterations and no dilation of the cardiac area on CXR, with an EF >55% on echo-Doppler cardiogram		
	Pernambuco		with all El >33 % on cello Doppler cardiogram		
	(UPE), Recife,		-CARD2 (n=14): seropositive individuals with dilation		
	Pernambuco,		of the cardiac area on CXR and EF <40%, and/or		
	Brazil from 2011-2012		augmented LV area		
	without				
	comorbidities,				
	digestive				
	complaints, changes in				
	leukocyte count,				
	or blood or				
	organ				
Sousa	transfusion Patients at the	Cross-	IND (n=95): asymptomatic, seropositive individuals	IND: 42 ± 0	IND: 40 males
2017	Referral	sectional	with no significant alterations on ECG, CXR, ECHO	IND: 43 ± 9	IND. 40 maies
	Outpatient			CCC: 49 ± 10	CCC: 85
	Center for		CCC (n=145): seropositive individuals with		males
	Chagas Disease		cardiomyopathy, characterized by ECHO findings of	CCC individuals	M-1
	at the Clinical Hospital of the		dilated LV with impaired ventricular systolic function (LVEF <55% and LVDd/BSA ≥31 mm)	were older than IND individuals	Male sex was more common
	Universidade		(ETEL NOS /v and EV DU/DOA 201 HIIII)	(p=0.0012).	among CCC
	Federal de			(F 2.2.2.2).	than IND
	Minas Gerais,				individuals
Sousa	Brazil Patients at the	Cross-	IND (n=82): asymptomatic coronacitive individuals	IND: 20.6 ± 10.2	(p=0.0026).
Sousa 2014	Referral	sectional	IND (n=82): asymptomatic, seropositive individuals with no significant alterations on ECG, CXR, ECHO	IND: 39.6 ± 10.3	_
	Outpatient	Jestionai	It significant ancidents on Eco, CAR, Ecilo	CCC: 48 ± 12.52	
	Center for		CCC (n=94): seropositive individuals with dilated		
	Chagas Disease		cardiomyopathy, characterized by ECHO findings of a		
	at the Clinical Hospital of the		dilated LV with impaired ventricular systolic function		
	Universidade				
	Federal de				
	Minas Gerais,	1			

	Brazil without comorbidities				
Storino 2002	Patients seen at a general hospital and the Foundation INCALP in La Plata, Argentina	Cross- sectional	IND: seropositive individuals with no cardiomyopathy -Group A (n=36) -Group B (n=63) CCC: -Without dilation -Group A (n=36) -Group B (n=20) -With dilation -Group A (n=53) -Group B (n=6) Group A: vector-infected individuals with a history of living in an endemic area Group B: individuals infected by non-vector routes (vertical transmission, transfusion, or intravenous drugs) or by isolated visit to an endemic area with presumed vector transmission	IND: -Group A: 37 -Group B: 42 CCC: -Without dilation -Group A: 46 -Group B: 49 -With dilation -Group A: 57 -Group B: 58 No standard deviations provided	IND: 38 males CCC: 50 males There was no significant difference in sex distribution by clinical form.
Strauss 2019	Individuals recruited from a Colombian, Argentinian, Brazilian, and Bolivian (living in Spain) patient group	Case- control	IND: -Colombian cohort (n=361) -Argentinian cohort (n=90) -Bolivian cohort (n=530) CCC: -Colombian cohort (n=576) -Argentinian cohort (n=182) -Bolivian cohort (n=100) Classification by clinical stage among seropositive individuals was determined by complementary tests and clinical findings, including ECG and ECHO to detect any conduction and structural alterations.	IND: -Colombian cohort: 51.90 ± 14.18 -Argentinian cohort: 49.30 ± 13.65 -Bolivian cohort: 46.93 ± 9.49 CCC: -Colombian cohort: 61.44 ± 12.82 -Argentinian cohort: 60.14 ± 10.16 -Bolivian cohort: 50.71 ± 9.41	-
Szarfman 1981	Individuals from the State of Goiás, Brazil	Cross- sectional	IND (n=29): seropositive, clinically healthy individuals CCC: -Slight (n=19): seropositive individuals with EKG alterations such as RBBB and/or left anterior hemiblock, unifocal premature ventricular beats, and primary T-wave changes -Severe (n=9): seropositive individuals with cardiac enlargement and EKG alterations such as AV block, frequent and multifocal premature beats, and atrial fibrillation Clinical stage was assessed using CXR, barium swallow, colon X-ray with barium enema, and EKG. Individuals with megaesophagus and/or megacolon were excluded from the above groups.	IND: 33 (21-47)* CCC: -Slight: 38 (24-49)* -Severe: 43 (37-47)* *Mean (range)	-
Talvani 2006	Patients at the Referral Center for Training in Infectious and Parasitic Diseases at the Hospital das Clinicas, Universidade Federal de	Cross- sectional	IND (n=8): seropositive individuals with normal ECG and radiological studies CCC: -Group I (n=8): seropositive individuals with only minor alterations in their ECHO (e.g. regional contraction defects) -Group II/III (n=7): seropositive individuals with minor or moderate ECG alterations, including block of the	IND: 47 ± 3.4 CCC: -Group I: 48 ± 8.2 -Group II/III: 47 ± 4.5 -Group IV: 44 ± 2.0	IND: 38% males CCC: -Group I: 50% males -Group II/III: 29% males

	Minas Carris	1	antarogunarior division of the left house. DDDD	Canal VI: 42 + 2.2	Group IV.
	Minas Gerais, Brazil without comorbidities		anterosuperior division of the left branch, RBBB, or uniform ventricular premature contractions	-Group V: 43 ± 2.3	-Group IV: 47% males
	comorbidities		-Group IV (n=15): seropositive individuals with severe conduction defects (e.g. LBBB, left anterior divisional block with RBBB or total AV block) or complex ventricular arrhythmias (complex ventricular premature beats, non-sustained or sustained ventricular tachycardia)		-Group V: 79% males
			-Group V (n=14): seropositive individuals with ventricular enlargement on ECHO, regardless of the presence of arrhythmias or conduction defects		
Thomas 2012	Serum samples from chagasic	Cross- sectional	IND (n=28): seropositive individuals with no evidence of cardiac disorder following clinical criteria and	IND: 31.5 (12-47)	IND: 8 males
	patients, healthy donors, and		radiological, ECG, and thoracic ECHO analyses	CCC: 40.0 (28-74)	CCC: 16 males
	donors at the Virgen de la Arrixaca Hospital in Murcia, Spain		CCC (n=38): seropositive individuals with chronic Chagas' cardiomyopathy according to clinical criteria and radiological, ECG, and thoracic ECHO analyses; Kuschnir grade 1-3	No standard deviations provided	
			Individuals with megaesophagus and/or megacolon detected by esophagogram and barium enema analyses were excluded from the above groups.		
Torreao 2015	Individuals in Brazil with no	Cross- sectional	IND (n=16): seropositive individuals without evidence of cardiac involvement by ECG, CXR, and ECHO	IND: 57.8 ± 11.9	IND: 3 males
	cardiac comorbidities		CCC:	CCC: -No LV	CCC: 23 males
			-No LV dysfunction (n=27): seropositive individuals with cardiac disease without LV systolic dysfunction,	dysfunction: 54.3 ± 10.3	p=0.02
			determined by an EF≥55% by routine ECHO and ECG abnormalities (RBBB with left anterior hemiblock)	-LV dysfunction: 54.7 ± 11.3	
			-LV dysfunction (n=21): seropositive individuals with cardiac disease with LV systolic dysfunction, determined by EF <55% on ECHO	p=0.61	
Torres 2010	Individuals in Santander,	Cross- sectional	IND (n=116): seropositive individuals without cardiac symptoms and with a normal ECG	IND: 48.7	IND: 31% males
(IGE)	Colombia		CCC (n=120): seropositive individuals with conduction	CCC: 55.2	CCC: 41%
			alterations and/or structural cardiomyopathy on clinical evaluation, ECG, Holter monitoring, and ECHO	No standard deviations provided	males
Uellendah 1 2016	Patients at the Chagas disease	Cross- sectional	IND (n=11): asymptomatic, seropositive individuals with normal ventricular function	IND: 48.3 ± 12.2	IND: 2 males
12010	Clinic in Osvaldo Cruz	sectional	CCC (n=28): seropositive individuals with systolic	CCC: 57.4 ± 12.5	CCC: 18 males
	Hospital in Brazil from		dysfunction	p=0.045	p=0.014
	2004-2006		Clinical stage was assessed using CXR, ECHO, 24-hour Holter, and a clinical interview to determine NYHA functional class.		
Valerio 2011	Consecutive adult patients newly diagnosed with Chagas infection at the Unitat de Salut Internacional Metropolitana Nord in Barcelona, Spain from 2005-2009 who are not pregnant and without cardiac	Cross- sectional	Seropositive individuals were assessed for the presence of cardiac symptoms (at least one of the following: antecedents of chest pain, palpitations, syncope, pulmonary thromboembolism, stroke, or symptoms of HF such as lower leg edema or dyspnea on exertion), ECG alterations (sinus bradycardia, RBBB, LAFB, LBBB, posterior fascicular block, atrial fibrillation, any degree of AV block, ventricular extrasystoles, or Q wave or diffuse ST-T changes), and ECHO alterations (LV wall dysfunction, ventricular aneurysm [apical or other], low EF [<50%], or valve disease attributable to Chagas endocardial fibrosis).	No statistically significant relations were found between cardiac symptoms, ECG, or EHO alterations and age.	No statistically significant relations were found between cardiac symptoms, ECG, or EHO alterations and sex.

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Vasconcel os 2009	Patients at the Brasilia University	Cross- sectional	IND (n=17): seropositive individuals with the absence of any clinical, general, and organ-specific manifestations and by a normal CXR and ECG	IND: 39 (35-45)* CCC: 44 (35-49)*	IND: 29% males
	Hospital Cardiology Ambulatory in	urdiology hbulatory in CCC (n=13): seropositive individuals with typical ECG alterations (1st grade AV block, complete LBBB,		*Median (IQR)	CCC: 54% males
	Brazil		complete RBBB plus left anterior hemiblock, complete RBBB, left anterior hemiblock, or diffuse alteration of ventricular repolarization), with no past or present HF		
			or any other cardiovascular or clinical disturbances		
Vasconcel os 2015	Patients at the Chagas Disease	Cross- sectional	IND (n=19): asymptomatic, seropositive individuals	IND: 50.84 ± 13.99	-
	and Heart Failure Outpatient Clinic-		CCC: -CARD1 (n=35): seropositive individuals with cardiac alterations but no heart dilation and LVEF > 50%	CCC: -CARD1: 63.11 ± 13.63	
	PROCAPE from the University of Pernambuco,		-CARD2 (n=26): seropositive individuals with clinical signs of severe cardiomyopathy, with heart enlargement and LVEF <50%	-CARD2: 59.15 ± 8.70	
	Brazil		Clinical stage was assessed using ECG, CXR, and ECHO.	IND individuals were younger than CARD 1 individuals (p=0.0018) and CARD 2 individuals	
Venegas	Individuals from	Prospect	IND (n=20)	(p=0.0150). IND: 48.05 ± 10.53	IND: 10 males
2009	endemic areas in Chile recruited in 1992, treated	ive observati	CCC (n=17)	CCC: 48.18 ± 11.05	CCC: 5 males
	with allopurinol	Onai	Seropositive individuals were seen biannually over 13 years of follow-up. Clinical staging was assessed using EKG, CXR, and in some cases, ECHO. Individuals were classified as cardiopathic if an altered EKG profile was maintained over a period of 10 years.		No significant difference in sex distribution between groups was
					found.
Vercosa	Patients at the	Cross-	IND (n=20)	IND: 22-69	IND: 10 males
2007	Chagas' Disease Outpatients Clinic of the	sectional	CCC (n=33)	CCC: 33-73	CCC: 14 males
	Clinical Hospital of the Federal University of		Clinical stage was determined using criteria by the World Health Organization.	*Range	mares
	Pernambuco and the Oswaldo Cruz University				
	Hospital of the State University of Pernambuco in Recife, Brazil				
Vicco 2014	Patients at the Clinical Service of the Iturraspe	Cross- sectional	IND (n=30): seropositive individuals with normal radiological, ECG, and ECHO studies	IND stage I: 47.8 ± 12	IND: 12 males CCC: 39
	Hospital in Sante Fe, Argentina without cardiac		CCC: -Stage II (n=40): seropositive individuals with ECG alterations but without HF	CCC: -Stage II: 54.2 ± 11.6	males No
	comorbidities or risk factors		-Stage III (n=40): seropositive individuals with clinical HF and/or dilated cardiomyopathy by transthoracic ECHO (LVEF <45% and/or fractional shortening <25%, associated with LV enlargement defined as LV	-Stage III: 61.5 ± 8.5 p<0.001	statistically significant difference between groups
			end-diastolic diameter ≥117% of predicted value corrected for age and body surface)		

Vicco 2013	Patients at the Clinical Service of the Iturraspe Hospital in Sante Fe, Argentina without comorbidities or cardiac risk factors	Cross- sectional	IND (n=30): seropositive individuals with normal radiological, ECG, and ECHO studies CCC: -Stage II (n=25): seropositive individuals with ECG alterations such as left anterior divisional block, RBBB, total AV block, LBBB, complex ventricular arrhythmias, and block of the anterosuperior division of the left branch -Stage III (n=25): seropositive individuals with clinical HF and/or dilated cardiomyopathy on ECHO	IND: 49.7 ± 12 CCC: -Stage II: 53.5 ± 11 -Stage III: 58.4 ± 8 p=0.012	IND: 30% males CCC: 48% males No statistically significant difference between groups
Villacorta 2006	Individuals in Brazil from 1999-2000 without comorbidities	Cross- sectional	IND (n=16): seropositive individuals with an indeterminate form of Chagas disease, characterized by positive serum Machado Guerreiro reaction and no clinical manifestations CCC: -Group 2 (n=18): seropositive individuals with Chagas disease, ECG abnormalities, and normal LV systolic function -Group 3 (n=19): seropositive individuals with Chagas disease, systolic dysfunction (LV fractional shortening ≤25%), and CHF Clinical stage was assessed using medical history, physical examination, X-ray of the thorax, ECG, and ECHO.	IND: 49.7 ± 5.9 CCC: -Group 2: 47.4 ± 9.3 -Group 3: 49 ± 10 p=0.33	IND: 6 males CCC: 14 males p=0.30
Villar 2004	Individuals recruited among incident blood donors at the Hospital Universitario Ramón Gonzalez Valencio in Bucaramanga, Colombia without comorbidities	Cross- sectional	IND (n=21): seropositive individuals without ECG alterations CCC (n=15): seropositive individuals with ECG alterations (any conduction/rhythm abnormality; bradycardia <55 bpm, AV block, RBBB, LAFB, or premature ectopic atrial/ventricular beats)	IND: 40.6 ± 6.9 CCC: 45.0 ± 10.2 p<0.05	IND: 9 males CCC: 9 males
Viotti 2009	Patients at a referral center in Argentina from 1990-2005 without comorbidities	Prospect ive observati onal	IND (n=505): seropositive individuals with a normal ECG and cardiothoracic index on CXR (<0.50); Kuschnir grade 0 CCC: -Group I (n=227): seropositive individuals with abnormal ECG and normal cardiothoracic index on CXR (<0.50); Kuschnir grade 1 -Group II+III (n=69): seropositive individuals with abnormal ECG, cardiothoracic index >0.50 on CXR, with (III) or without (II) signs or symptoms of HF; Kuschni grade 2-3	IND: 39.3 ± 13.2 CCC: -Group I: 46.8 ± 10.9 -Group II+III: 47.9 ± 10.2 p<0.001 (comparing IND, Group I, and Group II+III)	IND: 213 42.3% males CCC: -Group I: 90 (39.8%) males -Group II+III: 40 (58.0%) males p=0.025 (comparing IND, Group I, and Group II+III)
Vitelli- Avelar 2008	Individuals in Brazil	Cross- sectional	IND: seropositive individuals with no clinical manifestations -Cohort 1 (n-6) -Cohort 2 (n=5) CCC: seropositive individuals with dilated cardiomyopathy -Cohort 1 (n=8) -Cohort 2 (n=13)	IND: -Cohort 1: 43-67* -Cohort 2: 35-46* CCC: -Cohort 1: 50-70* -Cohort 2: 29-58* *Range	IND: -Cohort 1: 3 males -Cohort 2: 1 male CCC: -Cohort 1: 2 males -Cohort 2: 7 males

Vizzoni	Patients at the	Cross	IND (n=180)	Indeterminate: 55.5	Indotomoinotor
2018	outpatient	Cross- sectional	IND (n=180)	± 12.7	Indeterminate: 76 males
2016	service of the	sectional	CCC (n=343)	± 12.7	70 maies
	Evandro Chagas		CCC (n=3+3)	Cardiac: 61.5 ± 11.3	Cardiac: 156
	National		Clinical stage was assessed among seropositive	Cardiac. 01.5 ± 11.5	males
	Institute of		individuals using data in electronic medical records,		THAT CO
	Infectious		including comorbidities and symptoms related to		There was no
	Disease in Rio		Chagas disease, Chagas disease classification, and		significant
	de Janeiro,		LVEF, according to the Brazilian consensus. Patients in		difference in
	Brazil from		the digestive or cardiodigestive form were excluded		sex by clinical
	2013-2016		from the above groups.		form.
Volpato	Patients at the	Cross-	IND (n=23)	IND: 44 ± 10.3	IND: 8 males
2017	Referral	sectional			
	Outpatient		CCC (n=68)	CCC: 54 ± 10.3	CCC: 45
	Center for			000.0.210.0	males
	Chagas Disease		Clinical stage was assessed among seropositive		
	at the Clinical		individuals using medical history, physical		
	Hospital of the		examination, ECG, laboratory and CXR examinations,		
	Universidade		and ECHO.		
	Federal de				
	Minas Gerais,				
	Brazil				
Wallukat	Patients at the	Retrospe	IND (n=96)	IND: 30 (18-82)*	IND: 26 males
2010	Santa Bárbara	ctive			
	Hospital in	observati	CCC (n=57)	CCC: 47 (18-82)*	CCC: 47
	Sucre, Bolivia	onal			males
	from 2006-2007		Clinical stage was assessed among seropositive	*Median (range)	
			individuals using clinical investigation, ECG mapping,		
			and radiological imaging.	IND patients were	
				younger than CCC	
				patients (no	
				statistics provided).	
Wang	Patients at the	Prospect	IND (n=46): seropositive individuals without systolic	IND: 52.0 ± 1.5	IND: 11 males
2013	Heart Failure	ive	ventricular dysfunction (LVEF >50%)	999	GGG 22
	Centre of Felicio	cohort	aga	CCC:	CCC: 23
	Rocho Hospital		CCC:	-Group 2: 50.6 ±	males
	in Brazil from		-Group 2 (n=25): seropositive individuals with	2.3	
	2001-2005		ventricular dysfunction (LVEF <50%) in NYHA classes I-II		
			Classes I-II	-Group 3: 48.9 ±	
			-Group 3 (n=23): seropositive individuals with	1.9	
			ventricular dysfunction (LVEF <50%) in NYHA		
			classes III-IV		
Wang	Patients at the	Prospect	IND (n=52): seropositive individuals without systolic	IND: 51.9 ± 1.4	IND: 14 males
2010	Heart Failure	ive	ventricular dysfunction (LVEF >50%)	1.10. 31.7 ± 1.7	I. I.D. I T III III CS
(JCF)	Centre of Felicio	cohort		CCC:	CCC: 28
(001)	Rocho Hospital		CCC:	-NYHA I-II: 52.6 ±	males
	in Brazil from		-NYHA I-II (n=29): seropositive individuals with	2.2	
	2001-2005		ventricular dysfunction (LVEF <50%) in NYHA		
	without		classes I-II	-NYHA III-IV: 49.1	
	comorbidities			± 1.9	
			-NYHA III-IV (n=30): seropositive individuals with		
			ventricular dysfunction (LVEF <50%) in NYHA		
			classes III-IV		
Wang	Patients at the	Prospect	IND (n=43): seropositive individuals without systolic	IND: 51.9 ± 1.4	IND: 9 males
2011	Heart Failure	ive	ventricular dysfunction (LVEF >50%)		
	Centre of Felicio	cohort		CCC:	CCC: 26
	Rocho Hospital		CCC:	-NYHA I-II: 52.6 ±	males
	in Brazil from		-NYHA I-II (n=24): seropositive individuals with	2.2	
	2001-2005		ventricular dysfunction (LVEF <50%) in NYHA		
	without		classes I-II	-NYHA III-IV: 49.1	
	comorbidities			± 1.9	
			-NYHA III-IV (n=27): seropositive individuals with		
			ventricular dysfunction (LVEF <50%) in NYHA		
	1	1	classes III-IV	1	

					•
Wang 2010	Patients at the Heart Failure	Prospect ive	IND (n=46): seropositive individuals without systolic ventricular dysfunction (LVEF >50%)	IND: 51.9 ± 1.4	IND: 9 males
(JCP)	Centre of Felicio Rocho Hospital in Brazil from	cohort	CCC: -NYHA I-II (n=29): seropositive individuals with	CCC: -NYHA I-II: 52.6 ± 2.2	CCC: 28 males
	2001-2005		ventricular dysfunction (LVEF <50%) in NYHA classes I-II	-NYHA III-IV: 49.1 ± 1.9	
			-NYHA III-IV (n=27): seropositive individuals with ventricular dysfunction (LVEF <50%) in NYHA classes III-IV	1.7	
Wang 2012	Patients at the Heart Failure	Prospect ive	IND (n=46): seropositive individuals without systolic ventricular dysfunction (LVEF >50%)	IND: 52.0 ± 1.5	IND: 11 males
	Centre of Felicio Rocho Hospital in Brazil from 2001-2005	cohort	CCC: -NYHA I-II (n=22): seropositive individuals with ventricular dysfunction (LVEF <50%) in NYHA	CCC: -NYHA I-II: 50.6 ± 2.3	CCC: 22 males
	without comorbidities		classes I-II -NYHA III-IV (n=23): seropositive individuals with ventricular dysfunction (LVEF <50%) in NYHA	-NYHA III-IV: 48.9 ± 1.9	
Ward	Patients at an	Cross-	classes III-IV IND (n=17): asymptomatic, seropositive individuals	IND: 48 ± 15	IND: 8 males
1999	outpatient clinic of the Hospital das Clínicas in	sectional	with no cardiac or visceral manifestations (indeterminate form)	CCC: -Group II: 54 ± 10	CCC: 22 males
	Brazil without suspected immune or		CCC: -Group II (n=4): individuals with ECG abnormalities but normal cardiac function (early cardiac form)	-Group III: 55 ± 8.5	There was no significant
	inflammatory disease		-Group III (n=62): individuals with Chagas cardiac disease	There was no significant difference in age by clinical form.	difference in sex by clinical form.
			Patients with the digestive or mixed form were excluded from the above groups.	chinear form.	
Zafra 2008	Patients from the Department of Santander,	Cross- sectional	IND (n=132): seropositive individuals without cardiac symptoms and with normal ECG	IND: 48.7 CCC: 55.2	IND: 31.1% males
	Colombia		CCC (n=143): seropositive individuals with conduction alterations and/or structural cardiomyopathy, assessed by clinical evaluation, ECG, Holter, and ECHO	No standard deviations provided	CCC: 38.5% males
Zafra 2007	Patients from the	Cross-	IND (n=130): seropositive individuals without cardiac	IND: 49.2	IND: 32%
2007	Department of Santander, Colombia	sectional	symptoms and with normal ECG CCC (n=130): seropositive individuals with conduction	CCC: 52.6	males CCC: 38.5%
			alterations and/or structural cardiomyopathy, assessed by clinical evaluation, ECG, Holter, and ECHO	No standard deviations provided	males
Zago 2019	Individuals at public hospitals	Cross- sectional	IND (n=25): seropositive individuals with minor to no ECG abnormalities, no changes in ventricular walls,	IND: 49.8 ± 9	IND: 46% males
201)	in Salta, Argentina	Sectional	and normal EF (55-70%)	CCC: 53 ± 10.6	CCC: 53%
			CCC (n=28): seropositive individuals with a degree of ECG abnormalities, cardiomegaly, systolic dysfunction (EF <55%), LV dilation (diastolic diameter ≥57 mm), and/or potential signs of HF		males
Zerlotti 1994	Individuals in Brazil	Cross- sectional	IND (n=12): clinically asymptomatic individuals with a normal ECG	IND: 49 ± 8.2	IND: 8 males
			CCC (n=14): individuals with abnormal ECG and clinical findings	CCC: 48.2 ± 11.9	CCC: 10 males

Zicker	Unskilled	Cross-	IND (n=347): seropositive individuals without any of	IND: 41.1 ± 8.7	IND: 72.0%
1990	workers in	sectional	the below ECG alterations		males
(IJE)	Goiania, Brazil			CCC: 44.4 ± 9.3	
			CCC (n=277): seropositive individuals with any of the		CCC: 82.7%
			following ECG alterations: large Q or QS waves,	p<0.001	males
			pattern of ventricular hypertrophy (tall precordial R		0 01
			waves) with ST segment and T wave alterations, AV block, ventricular conduction defects, complex		p<0.01
			arrhythmias, ventricular premature beats when present		
			in 10% or more of recorded cycles or when multifocal		
			or bigeminy, and sinus bradycardia (<50 bpm)		
			associated with extrasystoles or primary and diffuse		
			changes in ventricular repolarization		
Zicker	Unskilled	Cross-	IND (n=345)	IND: 10 age ≤25,	IND: 251
1990	workers in	sectional		84 age 26-35, 132	
(AJTMH)	Goiania, Brazil		CCC (n=247)	age 36-45, 102 age	CCC: 201
				46-55, 17 age ≥56	
			Chagas heart disease was classified according to WHO		p<0.05
			criteria.	CCC: 5 age ≤25, 41	
				age 26-35, 88 age	
				36-45, 81 age 46-	
				55, 32 age ≥56	
				Age ≥56 years was	
				more common	
				among CCC than	
				IND individuals	
				(p<0.05).	

CCC: chronic Chagas cardiomyopathy IND: indeterminate EKG: electrocardiogram CXR: chest X-ray ECHO: echocardiogram

Table S3. Risk of bias assessment using Joanna Briggs Institute (2017) Critical Appraisal Checklist for Analytical Cross Sectional Studies. Each category can be listed as yes (Y), no (N), unclear (U), or not applicable (NA).

Study	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
Abel 2001	Y	N	Y	Y	N	N	U	NA
Albareda 2006	Y	N	Y	Y	N	N	Y	NA
Albareda 2015	Y	N	Y	Y	N	N	Y	NA
Almeida 2018	Y	N	Y	Y	N	N	Y	NA
Alves 2009	Y	Y	Y	Y	Y	N	Y	NA
Aparecida 2010	Y	Y	Y	Y	N	N	Y	NA
Apt 2015	Y	Y	Y	Y	Y	N	Y	Y
Apt 2016	Y	Y	Y	Y	Y	N	Y	Y
Apt 2019	Y	N	Y	Y	Y	N	Y	Y
Araujo- Jorg 2002	Y	Y	Y	Y	N	N	Y	NA
Arguello 2012	Y	Y	Y	Y	N	N	Y	Y
Ayo 2015	Y	Y	Y	Y	N	N	Y	NA
Batista 2018	Y	Y	Y	Y	N	N	Y	NA
Bautista- López 2013	Y	Y	Y	Y	N	N	Y	Y

		1						1
Bravo- Tobar 2015	Y	Y	Y	Y	Y	N	Y	Y
Cetron 1993	Y	Y	Y	Y	N	N	U	N
Chaves 2016	Y	Y	Y	Y	N	N	Y	NA
Clark 2015	Y	Y	Y	Y	N	N	Y	NA
Costa 2009	Y	N	Y	U	N	N	Y	NA
Curvo 2018	Y	Y	Y	Y	N	N	Y	Y
Cutrullis 2013	Y	Y	Y	Y	N	N	Y	Y
D'Ávila 2009 (Mem Inst)	N	N	Y	Y	N	N	Y	NA
D'Ávila 2009 (JCM)	Y	N	Y	Y	N	N	Y	NA
D'Ávila 2018	Y	Y	Y	Y	Y	N	Y	Y
De Melo 2012	Y	N	Y	Y	N	N	Y	NA
De Moura Braz 2014	Y	N	Y	Y	N	N	Y	NA
Del Puerto 2010	Y	Y	Y	Y	N	N	U	NA
Dias 2013	Y	N	Y	U	N	N	U	NA
Echeverría 2020	Y	Y	Y	U	N	N	Y	Y
Fabbro 2011	Y	Y	Y	N	N	N	Y	NA
		1		L		L	L	

T (2000								
Faé 2000	Y	Y	Y	U	N	N	U	NA
Fares 2013	Y	Y	Y	Y	N	N	Y	NA
Fernandes 2007	Y	Y	Y	Y	N	N	Y	NA
Fernández- Mestre 2002	Y	N	Y	U	N	N	Y	NA
Ferreira 2017	Y	Y	Y	Y	N	N	Y	NA
Ferreira 2003	Y	Y	Y	Y	N	N	Y	NA
Ferreira 2018	Y	Y	Y	Y	N	N	Y	NA
Flórez 2011	Y	Y	Y	Y	N	N	Y	NA
Flórez 2006	Y	Y	Y	Y	N	N	Y	NA
Frade 2013 (BMC)	Y	Y	Y	Y	N	N	Y	Y
Frade 2013 (PLoS ONE)	Y	Y	Y	Y	N	N	Y	Y
Garcia- Alvarez 2010	Y	Y	Y	Y	N	N	Y	NA
Garg 2016	Y	Y	Y	Y	N	N	Y	NA
Gasparim 2018	Y	Y	Y	U	Y	N	U	NA
Gazzinelli 1990	N	N	Y	N	N	N	U	NA
Gazzinelli 1988	N	N	Y	U	N	N	U	NA

Georg 2017	Y	Y	Y	Y	N	N	U	NA
Georg 2017	Y	Y	Y	Y	N	N	U	NA
Giménez 2003	Y	Y	Y	Y	N	N	Y	NA
Giraldo 2013	N	Y	Y	Y	N	N	N	NA
Gomes 2012	N	Y	Y	Y	N	N	U	NA
Gomes 2018	N	Y	Y	Y	N	N	U	NA
Gomes 2016	Y	Y	Y	Y	N	N	Y	NA NA
Gómez- Olarte 2019	Y	Y	Y	Y	N	N	N	NA
González 2014	Y	N	Y	Y	N	N	Y	NA
González 2018	Y	Y	Y	Y	N	N	Y	NA
Guedes 2016	Y	Y	Y	Y	N	N	Y	NA
Gusmão 1982	Y	Y	Y	Y	N	N	Y	NA
Heringer- Walther 2006	Y	Y	Y	Y	N	N	N	NA
Higuchi 2009	N	N	Y	U	N	N	U	NA
Higuchi 2018	Y	N	Y	Y	N	N	N	NA
Iosa 1989	Y	N	Y	Y	N	N	Y	NA
Juiz 2019	Y	Y	Y	U	N	N	Y	NA

Kaplinski 2015	Y	Y	Y	Y	N	N	Y	NA
Keating 2015	Y	N	Y	U	N	N	U	NA
Khan 2016	Y	Y	Y	Y	N	N	N	NA
Larocca 2017	Y	Y	Y	Y	N	N	U	NA
Lassen 2018	Y	Y	Y	Y	N	N	U	NA
Lasso 2015	Y	Y	Y	Y	N	N	N	NA
Laucella 1996 (Acta Tropica)	Y	Y	Y	Y	N	N	Y	NA
Laucella 2001	Y	Y	Y	Y	N	N	N	NA
Laucella 1996 (AJTMH)	Y	Y	Y	Y	N	N	N	NA
Leon Rodriguez 2016 (HLA)	Y	N	Y	Y	Y	N	U	NA
Leon Rodriguez 2018	Y	N	Y	Y	N	N	U	NA
Leon Rodriguez 2016 (PLoS NTD)	Y	N	Y	Y	Y	N	U	NA
Leon Rodriguez 2016 (Sci Rep)	Y	Y	Y	Y	N	N	Y	NA
Lidani 2018	Y	Y	Y	Y	N	N	Y	NA
Llop 1988	Y	N	Y	U	N	N	U	NA
López 2006	Y	Y	Y	Y	Y	N	Y	Y

Lorena 2010	Y	N	Y	U	N	N	U	NA
Luz 2013	Y	Y	Y	U	N	N	U	NA
Luz 2016	Y	Y	Y	U	N	N	Y	NA
Marques 2006	Y	Y	Y	Y	N	N	Y	NA
Martín 1987	Y	N	Y	Y	N	N	U	NA
Medeiros 2017	Y	Y	Y	Y	N	N	Y	NA
Medeiros 2019 (Front Immmunol)	Y	Y	Y	Y	N	N	Y	NA
Melo 2005	Y	N	Y	Y	N	N	U	NA
Messias- Reason 2003	Y	Y	Y	Y	N	N	U	NA
Miranda 2019	N	Y	Y	U	N	N	Ü	Y
Moreira 2008	Y	Y	Y	Y	N	N	N	Y
Moreira 2009	Y	Y	Y	Y	N	N	N	Y
Mosca 1986	N	N	Y	U	N	N	U	NA
Mundaray Fernández 2014	Y	N	Y	Y	N	N	N	NA
Muñoz-San Martín 2018	Y	Y	Y	Y	N	N	Y	NA
Munoz Saravia 2013	Y	N	Y	Y	N	N	U	NA

Negrão 2009	Y	Y	Y	U	N	N	Y	NA
Nonaka 2019	Y	N	Y	Y	N	N	Y	NA
Noya- Rabelo	Y	Y	Y	Y	N	N	Y	NA
Noya- Rabelo 2016	Y	Y	Y	Y	N	N	Y	NA
Nunes 2013	Y	N	Y	Y	N	N	U	Y
Okamoto 2014	Y	Y	Y	Y	Y	N	Y	NA
Passos 2019	Y	Y	Y	U	N	N	Y	NA
Passos 2017	Y	Y	Y	U	N	N	Y	NA
Peralta 1981	Y	N	Y	Y	N	N	Y	NA
Peralta 1982	Y	N	Y	Y	N	N	Y	NA
Pereira 2018	Y	Y	Y	Y	N	N	Y	NA
Pérez 2011	Y	Y	Y	Y	N	N	Y	NA
Pérez- Fuentes 2007	Y	Y	Y	Y	N	N	U	NA
Pérez- Mazliah 2018	Y	Y	Y	Y	N	N	U	Y
Pérez- Ramirez 1999	Y	Y	Y	Y	N	N	U	NA
Peverengo 2016	Y	Y	Y	Y	N	N	Y	Y

Pissetti 2013	Y	N	Y	Y	N	N	Y	Y
Pozo-Pérez 2014	Y	N	Y	Y	N	N	Y	Y
Puyó 2002	N	Y	Y	Y	N	N	Y	NA
Ramasawm y 2009	Y	Y	Y	Y	N	N	Y	NA
Ramasawm y 2006 CID	Y	Y	Y	Y	N	N	Y	Y
Ramasawm y 2006 JID	Y	N	Y	U	N	N	U	NA
Ramasawm y 2007	Y	Y	Y	Y	N	N	Y	Y
Reis 2007	Y	N	Y	N	N	N	Y	Y
Ripoll 2018	Y	Y	Y	Y	N	N	N	NA
Rocha 2006	Y	Y	Y	Y	N	N	Y	NA
Rocha 2019	Y	N	Y	Y	N	N	U	NA
Rodeles 2016	Y	Y	Y	U	N	N	Y	NA
Salomone 2001	Y	Y	Y	Y	N	N	Y	Y
Sánchez- Montalvá 2016	Y	Y	Y	Y	N	N	Y	Y
Sandri 2019	Y	Y	Y	Y	N	N	Y	NA
Santos 2012	Y	Y	Y	Y	N	N	U	NA

Saravia	Y	Y	Y	U	N	N	Y	Y
2011								
Schapachni k 1980	Y	N	Y	U	Y	N	U	Y
Silva 2017	Y	Y	N	U	N	N	N	Y
Silva 2007	Y	Y	Y	Y	Y	N	Y	Y
Simoes 2000	Y	Y	Y	U	N	N	Y	NA
Soares 2016	Y	N	Y	Y	N	N	Y	NA
Sousa 2017	Y	Y	Y	Y	N	N	Y	Y
Sousa 2014	Y	Y	Y	Y	N	N	N	NA
Storino 2002	Y	N	Y	Y	N	N	U	Y
Strauss 2019	Y	Y	Y	Y	N	N	U	NA
Szarfman 1981	Y	N	Y	Y	N	N	Y	NA
Talvani 2006	Y	N	Y	U	N	N	Y	NA
Thomas 2012	Y	Y	Y	Y	N	N	Y	NA
Torreao 2015	Y	N	Y	U	N	N	Y	Y
Torres 2010 (IGE)	Y	Y	Y	Y	N	N	Y	NA
Uellendahl 2016	Y	N	Y	U	N	N	N	Y
		<u>l</u>		l	l .		l	L

Valerio	Y	Y	Y	Y	N	N	Y	Y
2011								
Vasconcelo s 2009	Y	Y	Y	Y	N	N	Y	NA
Vasconcelo s 2015	Y	N	Y	Y	N	N	U	Y
Venegas 2009	Y	N	Y	Y	N	N	U	Y
Vercosa 2007	Y	N	Y	U	N	N	Y	NA
Vicco 2014	Y	Y	Y	U	N	N	Y	Y
Vicco 2013	Y	Y	Y	Y	N	N	Y	Y
Villacorta 2006	Y	Y	Y	Y	N	N	U	Y
Villar 2004	Y	Y	Y	Y	N	N	Y	Y
Viotti 2009	Y	Y	Y	Y	N	N	Y	Y
Vitelli- Avelar 2008	Y	N	Y	Y	N	N	N	NA
Vizzoni 2018	Y	Y	Y	Y	Y	N	Y	Y
Volpato 2017	Y	N	Y	Y	N	N	Y	NA
Wallukat 2010	Y	N	Y	Y	N	N	Y	U
Wang 2013	Y	Y	Y	Y	N	N	N	U
Wang 2010 (JCF)	Y	Y	Y	Y	N	N	N	U
					<u> </u>		<u> </u>	

Wang 2011	Y	Y	Y	Y	N	N	N	U
Wang 2010 (JCP)	Y	Y	Y	Y	N	N	N	U
Wang 2012	Y	Y	Y	Y	N	N	N	U
Ward 1999	Y	Y	Y	Ü	N	N	U	Y
Zafra 2008	Y	N	Y	Y	N	N	Y	NA
Zafra 2007	Y	N	Y	Y	N	N	Y	NA
Zago 2019	Y	N	Y	Y	N	N	Y	NA
Zerlotti 1994	Y	N	Y	U	N	N	U	NA
Zicker 1990 (IJE)	Y	Y	Y	Y	Y	N	Y	Y
Zicker 1990 (AJTMH)	Y	Y	Y	Y	N	N	Y	Y