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| **Table S1.** Percent prevalence of abnormal waist circumference and mean waist circumference in cm with 95% confidence intervals by metabolic health and body size phenotype. | | | | | |
|  | Data | Normal Weight (NW) | Overweight (OV) | Obese (OB) | Statistically Significant Differences |
| Metabolically Healthy (MH) | Prevalence (P) | 5.8 (4.5 - 7.1) | 44.5 (41.4 - 47.6) | 93.7 (91.8 - 95.7) | OB > OV > NW (p<0.01) |
|  | Mean (M) | 81.4 (81 - 81.7) | 94.3 (93.9 - 94.7) | 108.2 (107.3 - 109) | OB > OV > NW (p<0.01) |
| Metabolically Unhealthy (MNH) | Prevalence (P) | 15.7 (13.2 - 18.2) | 57.2 (54.6 - 59.8) | 97.6 (97 - 98.2) | OB > OV > NW (p<0.01) |
|  | Mean (M) | 86.5 (86 - 87.1) | 98.4 (98 - 98.8) | 115.5 (114.9 - 116.1) | OB > OV > NW (p<0.01) |
| Statistically Significant Differences | Prevalence (P) | MNH > MH (p<0.01) | MNH > MH (p<0.01) | MNH > MH (p<0.01) |  |
|  | Mean (M) | MNH > MH (p<0.01) | MNH > MH (p<0.01) | MNH > MH (p<0.01) |  |

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| **Table S2.** Clustering of cardiometabolic abnormalities (ABN) by body size phenotypes among metabolically healthy participants. | | | | | | | | | |
|  | Presence of abnormal parameters indicated by "X" | | | | | | Percent prevalence of cardiometabolic abnormalities by body size phenotype | | |
| No of ABN | HPT^ | DIAB^^ | HDL^^ | CRP\* | HOMA\*\* | TRG\*\*\* | Normal Weight | Overweight | Obese |
| 0 |  |  |  |  |  |  | 57.24 | 41.02 | 35.12 |
| 1 |  |  |  |  |  | X | 5.41 | 9.79 | 9.58 |
| 1 |  |  |  |  | X |  | 0.2 | 0.5 | 3.43 |
| 1 |  |  |  | X |  |  | 1.39 | 2.19 | 5.45 |
| 1 |  |  | X |  |  |  | 11.33 | 15.12 | 15.05 |
| 1 |  | X |  |  |  |  | 12.76 | 18.61 | 16.07 |
| 1 | X |  |  |  |  |  | 11.67 | 12.77 | 15.29 |
| ^Hypertensive: systolic blood pressure > = 130 mm Hg and/or diastolic blood pressure >= 85 mm Hg and/or self-reported use of prescription for lowering blood pressure | | | | | | | | | |
| ^^Diabetic: Fasting glucose >= 100 mg/dL or self-reported use of prescription medication to lower blood glucose. | | | | | | | | | |
| ^^^Low HDL: < 40 mg/dL in males and < 50 mg/dL in females. | | | | | | | | | |
| \*High C-reactive protein: > 0.1 mg/L | | | | | | | | | |
| \*\*High HOMA-IR: > 5.13 | | | | | | | | | |
| \*\*\*High Triglyceride: >= 150 mg/dL | | | | | | | | | |

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| **Table S3.** Clustering of cardiometabolic abnormalities (ABN) by body size phenotypes among metabolically unhealthy participants. | | | | | | | | | |
|  | Presence of abnormal parameters indicated by "X" | | | | | | Percent prevalence of cardiometabolic abnormalities by body size phenotype | | |
| No of ABN | HPT^ | DIAB^^ | HDL^^ | CRP\* | HOMA\*\* | TRG\*\*\* | Normal Weight | Overweight | Obese |
| 2 |  |  |  |  | X | X | 0 | 0.19 | 0.32 |
| 2 |  |  |  | X |  | X | 1.07 | 0.75 | 0.69 |
| 2 |  |  |  | X | X |  | 0 | 0.1 | 0.3 |
| 2 |  |  | X |  |  | X | 9.15 | 8.9 | 4.98 |
| 2 |  |  | X |  | X |  | 0.27 | 0.28 | 1.07 |
| 2 |  |  | X | X |  |  | 1.55 | 0.81 | 0.98 |
| 2 |  | X |  |  |  | X | 4.35 | 4.64 | 2.26 |
| 2 |  | X |  |  | X |  | 1.96 | 0.96 | 1.44 |
| 2 |  | X |  | X |  |  | 1.34 | 1.29 | 0.83 |
| 2 |  | X | X |  |  |  | 9.18 | 6.92 | 3.56 |
| 2 | X |  |  |  |  | X | 5.15 | 3.83 | 1.93 |
| 2 | X |  |  |  | X |  | 0 | 0.28 | 0.79 |
| 2 | X |  |  | X |  |  | 2.27 | 1.11 | 1.28 |
| 2 | X |  | X |  |  |  | 7.59 | 4.07 | 3.44 |
| 2 | X | X |  |  |  |  | 16.56 | 12.56 | 7.58 |
|  | Total of 2 abnormalities | | | | | | 60.44 | 46.69 | 31.45 |
|  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  | X | X | X | 0 | 0.04 | 0.14 |
| 3 |  |  | X |  | X | X | 0.13 | 0.77 | 1.12 |
| 3 |  |  | X | X |  | X | 0.59 | 0.84 | 0.69 |
| 3 |  |  | X | X | X |  | 0 | 0.03 | 0.25 |
| 3 |  | X |  |  | X | X | 0.23 | 1.06 | 0.92 |
| 3 |  | X |  | X |  | X | 0.18 | 0.38 | 0.32 |
| 3 |  | X |  | X | X |  | 0.08 | 0.01 | 0.49 |
| 3 |  | X | X |  |  | X | 3.72 | 6.49 | 3.98 |
| 3 |  | X | X |  | X |  | 0.31 | 1.09 | 1.5 |
| 3 |  | X | X | X |  |  | 0.99 | 0.36 | 0.77 |
| 3 | X |  |  |  | X | X | 0 | 0.2 | 0.42 |
| 3 | X |  |  | X |  | X | 0.51 | 0.2 | 0.4 |
| 3 | X |  |  | X | X |  | 0 | 0 | 0.24 |
| 3 | X |  | X |  |  | X | 5.06 | 4.45 | 3.69 |
| 3 | X |  | X |  | X |  | 0 | 0.18 | 0.86 |
| 3 | X |  | X | X |  |  | 0.69 | 0.4 | 1.03 |
| 3 | X | X |  |  |  | X | 5.17 | 4.98 | 2.29 |
| 3 | X | X |  |  | X |  | 0.6 | 1.52 | 3.01 |
| 3 | X | X |  | X |  |  | 1.75 | 0.7 | 1.47 |
| 3 | X | X | X |  |  |  | 8.02 | 7.68 | 5.42 |
|  | Total of 3 abnormalities | | | | | | 28.03 | 31.38 | 29.01 |
|  |  |  |  |  |  |  |  |  |  |
| 4 |  |  | X | X | X | X | 0 | 0 | 0.45 |
| 4 |  | X |  | X | X | X | 0 | 0.03 | 0.25 |
| 4 |  | X | X |  | X | X | 1.03 | 2.23 | 4.44 |
| 4 |  | X | X | X |  | X | 0.58 | 0.74 | 0.31 |
| 4 |  | X | X | X | X |  | 0.21 | 0.2 | 0.95 |
| 4 | X |  |  | X | X | X | 0 | 0 | 0.03 |
| 4 | X |  | X |  | X | X | 0.26 | 0.25 | 1.14 |
| 4 | X |  | X | X |  | X | 0.33 | 0.32 | 0.73 |
| 4 | X |  | X | X | X |  | 0 | 0.03 | 0.32 |
| 4 | X | X |  |  | X | X | 0.46 | 1.34 | 1.82 |
| 4 | X | X |  | X |  | X | 0.38 | 0.23 | 0.4 |
| 4 | X | X |  | X | X |  | 0.09 | 0.15 | 1.06 |
| 4 | X | X | X |  |  | X | 5.26 | 8.48 | 5.54 |
| 4 | X | X | X |  | X |  | 0.3 | 1.62 | 5.48 |
| 4 | X | X | X | X |  |  | 0.76 | 0.5 | 0.75 |
|  | Total of 4 abnormalities | | | | | | 9.66 | 16.12 | 23.67 |
|  |  |  |  |  |  |  |  |  |  |
| 5 |  | X | X | X | X | X | 0 | 0.24 | 1.3 |
| 5 | X |  | X | X | X | X | 0 | 0.05 | 0.32 |
| 5 | X | X |  | X | X | X | 0.01 | 0.03 | 0.81 |
| 5 | X | X | X |  | X | X | 1.28 | 4.21 | 8.69 |
| 5 | X | X | X | X |  | X | 0.33 | 0.77 | 0.77 |
| 5 | X | X | X | X | X |  | 0.06 | 0.05 | 1.84 |
|  | Total of 5 abnormalities | | | | | | 1.68 | 5.35 | 13.73 |
|  |  |  |  |  |  |  |  |  |  |
| 6 | X | X | X | X | X | X | 0.16 | 0.43 | 2.14 |
| ^Hypertensive: systolic blood pressure > = 130 mm Hg and/or diastolic blood pressure >= 85 mm Hg and/or self-reported use of prescription for lowering blood pressure | | | | | | | | | |
| ^^Diabetic: Fasting glucose >= 100 mg/dL or self-reported use of prescription medication to lower blood glucose. | | | | | | | | | |
| ^^^Low HDL: < 40 mg/dL in males and < 50 mg/dL in females. | | | | | | | | | |
| \*High C-reactive protein: > 0.1 mg/L | | | | | | | | | |
| \*\*High HOMA-IR: > 5.13 | | | | | | | | | |
| \*\*\*High Triglyceride: >= 150 mg/dL | | | | | | | | | |