### Social Epidemiology of Hypertension in Middle-Income Countries

#### Determinants of Prevalence, Diagnosis, Treatment, and Control in the WHO SAGE Study

Sanjay Basu, Christopher Millett

**Abstract**—Large-scale hypertension screening campaigns have been recommended for middle-income countries. We sought to identify sociodemographic predictors of hypertension prevalence, diagnosis, treatment, and control among middle-income countries. We analyzed data from 47,443 adults in all 6 middle-income countries (China, Ghana, India, Mexico, Russia, and South Africa) sampled in nationally representative household assessments from 2007 to 2010 as part of the World Health Organization Study on Global Aging and Adult Health. We estimated regression models accounting for age, sex, urban/rural location, nutrition, and obesity, as well as hypothesized covariates of healthcare access, such as income and insurance. Hypertension prevalence varied from 23% (India) to 52% (Russia), with between 30% (Russia) and 83% (Ghana) of hypertensives undiagnosed before the survey and between 35% (Russia) and 87% (Ghana) untreated. Although the risk of hypertension significantly increased with age (odds ratio, 4.6; 95% confidence interval, 3.0–7.1; among aged, 60–79 versus <40 years), the risk of being undiagnosed or untreated fell significantly with age. Obesity was a significant correlate to hypertension (odds ratio, 3.7; 95% confidence interval, 2.1–6.8 for obese versus normal weight), and was prevalent even among the lowest income quintile (13% obesity). Insurance status and income also emerged as significant correlates to diagnosis and treatment probability, respectively. More than 90% of hypertension cases were uncontrolled, with men having 3 times the odds as women of being uncontrolled. Overall, the social epidemiology of hypertension in middle-income countries seems to be correlated to increasing obesity prevalence, and hypertension control rates are particularly low for adult men across distinct cultures. *(Hypertension. 2013;62:18-26.)*

**Online Data Supplement**

**Key Words:** developing countries ■ epidemiology ■ health disparities ■ hypertension

---

**Hypertension** is available at [http://hyper.ahajournals.org](http://hyper.ahajournals.org)

Received March 11, 2013; first decision March 25, 2013; accepted April 14, 2013.

From the Prevention Research Center, Centers for Health Policy, Primary Care, and Outcomes Research, Center on Poverty and Inequality, Stanford University, Stanford, CA (S.B.); Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom (S.B.); School of Public Health, Imperial College London, London, United Kingdom (C.M.); and South Asia Network for Chronic Disease, Public Health Foundation of India, New Delhi, India (C.M.).

The online-only Data Supplement is available with this article at [http://hyper.ahajournals.org/lookup/suppl/doi:10.1161/HYPERTENSIONAHA.113.01374/-/DC1](http://hyper.ahajournals.org/lookup/suppl/doi:10.1161/HYPERTENSIONAHA.113.01374/-/DC1).

Correspondence to Sanjay Basu, Stanford University School of Medicine, Medical School Office Bldg, X322, 1265 Welch Rd, Mail Code 5411, Stanford, CA 94305-5411. E-mail: basus@stanford.edu

© 2013 American Heart Association, Inc.

DOI: 10.1161/HYPERTENSIONAHA.113.01374
(SAGE), which assembled nationally representative cohorts from 6 countries undergoing rapid economic development (China, Ghana, India, Mexico, Russia, and South Africa). A major advantage of the study was that, as opposed to single-country surveys, the SAGE questionnaires and methods were validated and applied simultaneously to multiple countries, investigating what factors may be common and generalizable between nations rather than specific to certain cultures (e.g., because of local nutrition), unobserved genetic differences, or healthcare system differences.

Methods

We conducted an analysis of the SAGE data set, including participants aged ≥18 years who were surveyed between 2007 and 2010 (Wave 1, used to study health status and social/epidemiological risk factors to poor health) from households within China, Ghana, India, Mexico, Russia, and South Africa. The SAGE clustered household sampling strategy was designed to generate nationally representative cohorts. We excluded pregnant respondents and those that did not have complete blood pressure data or hypertension diagnostic and treatment history on interview. Table 1 describes the demographic make-up and sample sizes in the study.

Blood Pressure Measurements

Blood pressure was measured at home using a Medistar Wrist Blood Pressure Model S, which avoids the need for different cuff sizes as with upper arm sphygmomanometers. This model has been validated to the European Society of Hypertension standard and ISO 9002 standard. The average of 3 sequential measurements of the left wrist was obtained at home with the arm level to the heart and the respondent seated and relaxed, with legs uncrossed. Measurements were taken sequentially, ≤1 minute apart. All respondents were interviewed and asked, “Have you ever been diagnosed with high blood pressure (hypertension)?” Those responding affirmatively were asked whether they had taken any medications of treatment for high blood pressure during the past 2 weeks and during the past 12 months. Hypertension was defined as a mean systolic blood pressure ≥140 mm Hg or diastolic blood pressure ≥90 mm Hg, or reported diagnosis. This definition implicitly includes those treated because treatment information was asked only from those respondents who had been diagnosed. Undiagnosed hypertension was defined as those having hypertension by examination but denying prior diagnosis of hypertension. Untreated hypertension was defined as those with hypertension but denying medications or treatment for high blood pressure over the past 12 months. Uncontrolled hypertension was defined as those with hypertension whose examination did not have a mean systolic blood pressure <140 mm Hg and diastolic blood pressure <90 mm Hg. We also looked at the proportion of those diagnosed who were treated, and the proportion of those treated who were controlled.

Participant Characteristics

In addition to age and sex, participants were classified as having a primary residence that was either urban or rural on the basis of the World Bank standard definitions, were classified into income quintiles on the basis of their country-specific distribution of income, and asked about their highest degree of education received (primary or less, secondary, or tertiary or more), insurance status (no insurance, insured on a voluntary plan, insured on a mandatory plan, insured through both a voluntary and mandatory plan), number of healthcare visits in the past year (once or less, between once in the past year and once per month, or more than once per month), marital status (single/divorced/ widowed or married/cohabitating), tobacco smoking (daily, less than daily, or none), current alcohol use (yes or no), servings of fruits consumed per day (0–1, 2–4, or ≥5), servings of vegetables consumed per day (0–1, 2–4, or ≥5), and exercise (whether the respondent engaged in moderate-intensity sports, fitness, or recreational [leisure] activities that cause an increase in breathing or heart rate for ≤10 minutes.

Table 1. Study on Global Aging and Adult Health Sample Characteristics

<table>
<thead>
<tr>
<th>Country</th>
<th>Sample Size</th>
<th>%</th>
<th>Median Age (IQR)</th>
<th>% Men</th>
<th>% Urban</th>
<th>BP Data Obtained</th>
<th>HTN</th>
<th>% of HTNives</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>% of HTNives</th>
<th>No.</th>
<th>% of HTNives</th>
<th>No.</th>
<th>% of HTNives</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>15050</td>
<td>32</td>
<td>45 (39–52)</td>
<td>52</td>
<td>49</td>
<td>15004</td>
<td>5816</td>
<td>39</td>
<td>4153</td>
<td>71</td>
<td>4461</td>
<td>77</td>
<td>5467</td>
<td>94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>5573</td>
<td>12</td>
<td>43 (36–51)</td>
<td>50</td>
<td>46</td>
<td>5563</td>
<td>2273</td>
<td>41</td>
<td>1887</td>
<td>83</td>
<td>1982</td>
<td>87</td>
<td>2205</td>
<td>97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>12198</td>
<td>26</td>
<td>40 (30–50)</td>
<td>50</td>
<td>26</td>
<td>12198</td>
<td>2856</td>
<td>23</td>
<td>1798</td>
<td>63</td>
<td>2131</td>
<td>75</td>
<td>2171</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>5448</td>
<td>11</td>
<td>39 (31–47)</td>
<td>48</td>
<td>78</td>
<td>2733</td>
<td>848</td>
<td>31</td>
<td>497</td>
<td>59</td>
<td>615</td>
<td>73</td>
<td>746</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>4947</td>
<td>10</td>
<td>54 (42–66)</td>
<td>43</td>
<td>76</td>
<td>4355</td>
<td>2270</td>
<td>52</td>
<td>683</td>
<td>30</td>
<td>804</td>
<td>35</td>
<td>1884</td>
<td>83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>4227</td>
<td>9</td>
<td>42 (34–51)</td>
<td>47</td>
<td>69</td>
<td>4223</td>
<td>2107</td>
<td>50</td>
<td>1705</td>
<td>81</td>
<td>1755</td>
<td>83</td>
<td>2023</td>
<td>96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47443</td>
<td>100</td>
<td>44 (35–54)</td>
<td>49</td>
<td>45</td>
<td>44076</td>
<td>16170</td>
<td>37</td>
<td>10722</td>
<td>66</td>
<td>11747</td>
<td>73</td>
<td>14495</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculations used survey sampling weights to compute nationally representative statistics; hypertension prevalence rates were age-standardized against a United Nations Development Programme population pyramid. BP indicates blood pressure; HTN, hypertension; and IQR, interquartile range.

Figure. Hypertension prevalence and overweight/obesity prevalence by income quintile among the World Health Organization Study on Global Aging and Adult Health cohort, where quintile 1 is the poorest fifth of the income distribution in each country and quintile 5 is the wealthiest. Overweight/obese is defined as body mass index ≥25 kg/m².
During the physical examination, participants also had their height, weight, hip circumference, and waist circumference measured by trained attendants using a validated set of instruments and approach that has been detailed elsewhere. Height in meters and weight in kilograms were used to calculate body mass index (BMI), which was categorized as underweight (<18.5 kg/m²), normal weight (18.5 to <25 kg/m²), overweight (25 to <30 kg/m²), or obese (30 kg/m² or above).

**Statistical Analyses**

We used logistic regression models to assess differences in rates of hypertension prevalence, diagnosis, treatment, and control among various countries and socioeconomic groups within countries. We first used a fixed-effects model of the overall SAGE study population, including dummy variables for country to control for unobserved time-invariant differences among countries (such as differences in cultural factors leading to systematic differences in nutrition). We then separately analyzed sociodemographic correlates to hypertension prevalence and control within each country population sample. Characteristics with an effect of \( P < 0.20 \) in the unadjusted regression were then entered, simultaneously, into a multivariate logistic regression model to calculate odds ratios (ORs) to assess the 2-sided significance of each participant characteristic with a significance threshold of \( P < 0.05 \). Preplanned pairwise comparisons of subgroups (eg, men/women or urban/rural) were performed in the multivariate model with Farrar–Glaubert test for multicollinearity. There were 3367 respondents (7.1%) excluded from the analysis because of missing data. In all assessments, survey sample design weights were used to generate population-representative estimates of prevalence and ORs, correcting for differential probabilities of selection and nonresponse.

### Table 2. Characteristics Among Hypertensive Subjects (N=16170)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>% of Sample</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>3088</td>
<td>19.1</td>
</tr>
<tr>
<td>40–59</td>
<td>8263</td>
<td>51.1</td>
</tr>
<tr>
<td>60–79</td>
<td>4253</td>
<td>26.3</td>
</tr>
<tr>
<td>&gt;80</td>
<td>566</td>
<td>3.5</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>8101</td>
<td>50.1</td>
</tr>
<tr>
<td>Women</td>
<td>8069</td>
<td>49.9</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>7842</td>
<td>48.5</td>
</tr>
<tr>
<td>Rural</td>
<td>8328</td>
<td>51.5</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>2248</td>
<td>13.9</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>2894</td>
<td>17.9</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>3169</td>
<td>19.6</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>3719</td>
<td>23</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>4123</td>
<td>25.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>4754</td>
<td>29.4</td>
</tr>
<tr>
<td>Secondary</td>
<td>9540</td>
<td>59</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>1876</td>
<td>11.6</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>9120</td>
<td>56.4</td>
</tr>
<tr>
<td>Voluntary</td>
<td>679</td>
<td>4.2</td>
</tr>
<tr>
<td>Both</td>
<td>582</td>
<td>3.6</td>
</tr>
<tr>
<td>None</td>
<td>5773</td>
<td>35.7</td>
</tr>
<tr>
<td>Healthcare visits/y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/y or less</td>
<td>3493</td>
<td>21.6</td>
</tr>
<tr>
<td>&gt;Once/y to ≤once/mo</td>
<td>5740</td>
<td>35.5</td>
</tr>
<tr>
<td>&gt;Once/mo</td>
<td>6953</td>
<td>43</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>3525</td>
<td>21.8</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>12645</td>
<td>78.2</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>12144</td>
<td>75.1</td>
</tr>
<tr>
<td>Less than daily</td>
<td>1342</td>
<td>8.3</td>
</tr>
<tr>
<td>None</td>
<td>2684</td>
<td>16.6</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9993</td>
<td>61.8</td>
</tr>
<tr>
<td>No</td>
<td>6177</td>
<td>38.2</td>
</tr>
<tr>
<td>Fruit servings/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–1</td>
<td>8410</td>
<td>53.6</td>
</tr>
<tr>
<td>2–4</td>
<td>4806</td>
<td>30.7</td>
</tr>
<tr>
<td>≥5</td>
<td>2461</td>
<td>15.7</td>
</tr>
</tbody>
</table>

(Continued)

### Table 2. (Continued)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>% of Sample</td>
</tr>
<tr>
<td>Vegetable servings/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–1</td>
<td>9883</td>
<td>63</td>
</tr>
<tr>
<td>2–4</td>
<td>2732</td>
<td>17.4</td>
</tr>
<tr>
<td>≥5</td>
<td>3061</td>
<td>19.5</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>6554</td>
<td>41.8</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>4572</td>
<td>29.2</td>
</tr>
<tr>
<td>≥30</td>
<td>2934</td>
<td>18.7</td>
</tr>
<tr>
<td>Waist circumference, cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>4382</td>
<td>27.1</td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>4705</td>
<td>29.1</td>
</tr>
<tr>
<td>≥90</td>
<td>7082</td>
<td>43.8</td>
</tr>
<tr>
<td>Hip circumference, cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>4010</td>
<td>24.8</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>5514</td>
<td>34.1</td>
</tr>
<tr>
<td>≥100</td>
<td>6646</td>
<td>41.1</td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>13971</td>
<td>86.4</td>
</tr>
<tr>
<td>Yes</td>
<td>2199</td>
<td>13.6</td>
</tr>
</tbody>
</table>

Probability values are listed from the multiple degrees-of-freedom block test on all categories of the characteristic to assess whether hypertension rates varied across the categories was calculated from a logistic regression model with a fixed effect for the characteristic. Adjusted odds ratios are listed from a multivariate logistic regression model with fixed effects for all characteristics with bivariate significance at \( P < 0.20 \). BMI indicates body mass index; CI, confidence interval; and NA, not applicable.

over the preceding 7 days). During the physical examination, participants also had their height, weight, hip circumference, and waist circumference measured by trained attendants using a validated set of instruments and approach that has been detailed elsewhere. Height in meters and weight in kilograms were used to calculate body mass index (BMI), which was categorized as underweight (<18.5 kg/m²), normal weight (18.5 to <25 kg/m²), overweight (25 to <30 kg/m²), or obese (30 kg/m² or above).

### Statistical Analyses

We used logistic regression models to assess differences in rates of hypertension prevalence, diagnosis, treatment, and control among various countries and socioeconomic groups within countries. We first used a fixed-effects model of the overall SAGE study population, including dummy variables for country to control for unobserved time-invariant differences among countries (such as differences in cultural factors leading to systematic differences in nutrition). We then separately analyzed sociodemographic correlates to hypertension prevalence and control within each country population sample. Characteristics with an effect of \( P < 0.20 \) in the unadjusted regression were then entered, simultaneously, into a multivariate logistic regression model to calculate odds ratios (ORs) to assess the 2-sided significance of each participant characteristic with a significance threshold of \( P < 0.05 \). Preplanned pairwise comparisons of subgroups (eg, men/women or urban/rural) were performed in the multivariate model with Farrar–Glaubert test for multicollinearity. There were 3367 respondents (7.1%) excluded from the analysis because of missing data. In all assessments, survey sample design weights were used to generate population-representative estimates of prevalence and ORs, correcting for differential probabilities of selection and nonresponse.
Prevalence estimates were age-standardized using the direct approach using United Nation population pyramids for the year 2010, with age clusters chosen to ensure sufficient sample size to detect a 10% difference in hypertension prevalence with >80% power when applying a survey design effect of 2 (POWER software v.3, National Cancer Institute). Data were analyzed using Stata version 12 (StataCorp).

**Ethics Approval**

The SAGE study received human subjects testing and ethics council approval from research review boards local to each participating site, and from the WHO Ethical Review Committee, as detailed elsewhere. Informed consent was obtained from each respondent before interview and examination.

**Results**

We examined 44,076 individuals for hypertension (Table 1). Median age at the time of the survey was 44 years (interquartile range, 35–54); 49% were men and 45% lived in urban areas. The age-standardized hypertension prevalence rate was lowest for India (23%) and highest for Russia (52%). Among the 37% of the overall sampled population who were hypertensive, 66% were undiagnosed before the survey, 73% untreated (including 16% of the diagnosed), and 90% uncontrolled (including 70% of the treated). The highest probability of being undiagnosed, untreated, or uncontrolled was observed in Ghana (83% of hypertensives undiagnosed, 87% untreated, and 97% uncontrolled); the lowest probability of being undiagnosed and untreated was in Russia (30% undiagnosed and 35% untreated) and the lowest probability of being uncontrolled was in India (76% uncontrolled).

**Prevalence Rates by Participant Characteristic**

In bivariate analyses (Table 2), hypertension prevalence varied significantly ($P<0.05$) by age (46% higher among populations aged >80 versus those <40 years), location (5% higher among urban than rural populations), education status (7% higher...
Table 4. Characteristics Among Untreated Hypertensive Subjects (N=11 747)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sample</td>
<td>P Value</td>
</tr>
<tr>
<td><strong>Age, y</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>2972</td>
<td>25.3</td>
</tr>
<tr>
<td>40–59</td>
<td>6379</td>
<td>54.3</td>
</tr>
<tr>
<td>60–79</td>
<td>2114</td>
<td>18</td>
</tr>
<tr>
<td>≥80</td>
<td>282</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>6426</td>
<td>54.7</td>
</tr>
<tr>
<td>Women</td>
<td>5321</td>
<td>45.3</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>4863</td>
<td>41.4</td>
</tr>
<tr>
<td>Rural</td>
<td>6884</td>
<td>58.6</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>1809</td>
<td>15.4</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>2197</td>
<td>18.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>2338</td>
<td>19.9</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>2714</td>
<td>23.1</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>2690</td>
<td>22.9</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>4041</td>
<td>34.4</td>
</tr>
<tr>
<td>Secondary</td>
<td>6473</td>
<td>55.1</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>1245</td>
<td>10.6</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>5768</td>
<td>49.1</td>
</tr>
<tr>
<td>Voluntary</td>
<td>552</td>
<td>4.7</td>
</tr>
<tr>
<td>Both</td>
<td>517</td>
<td>4.4</td>
</tr>
<tr>
<td>None</td>
<td>4910</td>
<td>41.8</td>
</tr>
<tr>
<td><strong>Healthcare visits/y</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/y or less</td>
<td>2549</td>
<td>21.7</td>
</tr>
<tr>
<td>&gt;Once/y to &lt;once/mo</td>
<td>3489</td>
<td>29.7</td>
</tr>
<tr>
<td>&gt;Once/mo</td>
<td>5721</td>
<td>48.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>2150</td>
<td>18.3</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>9597</td>
<td>81.7</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>9398</td>
<td>80</td>
</tr>
<tr>
<td>Less than daily</td>
<td>975</td>
<td>8.3</td>
</tr>
<tr>
<td>None</td>
<td>1374</td>
<td>11.7</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8493</td>
<td>72.3</td>
</tr>
<tr>
<td>No</td>
<td>3254</td>
<td>27.7</td>
</tr>
<tr>
<td><strong>BMI, kg/m²</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>7054</td>
<td>48.1</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>4170</td>
<td>28.4</td>
</tr>
<tr>
<td>≥30</td>
<td>1808</td>
<td>12.3</td>
</tr>
</tbody>
</table>

(continued)
Characteristics of Undiagnosed, Untreated, and Uncontrolled Populations

In bivariate analyses, rates of diagnosis varied by all variables studied except physical exercise (Table 3). Age, sex, insurance status, and alcohol use remained significant in the multivariate analysis. The risk of being undiagnosed fell significantly with age (OR, 0.1; 95% CI, 0.03–0.4 among aged >80 versus those <40 years). Women were also at significantly lower risk than men of being undiagnosed (OR, 0.4; 95% CI, 0.2–0.9 for women versus men). Having voluntary insurance conferred a significant risk of being undiagnosed than having mandatory insurance (OR, 4.3; 95% CI, 1.2–15.8). In analyses disaggregated by country-specific cohort (Table S2), it was found that this effect was largely driven by the Chinese cohort, among whom having voluntary (7% of the population) rather than mandatory insurance (71% of the population) was associated with a 10 times greater odds of being undiagnosed for hypertension (95% CI, 2.1–47.4). Being completely uninsured did not have an independently significant effect on the probability of diagnosis. The group of voluntarily-insured persons was distributed evenly among the income quintiles, rather than being disproportionately poor (in the online-only Data Supplement). Alcohol abstainers were at a significantly lower risk than drinkers of being undiagnosed (OR, 0.6; 95% CI, 0.4–0.99 for nondrinkers versus drinkers). Those who were obese were also at a significant lower risk of being undiagnosed, independent of income, though this correlation may reflect unobserved socioeconomic effects (OR, 0.3; 95% CI, 0.2–0.6 for obese versus normal weight).

When analyzing the determinants of treatment (Table 4), insurance, age, and alcohol use remained major socioeconomic variables associated with treatment probability in multivariate analysis of the overall multinational study sample, but income emerged as a major correlate of being untreated as well. The risk of being untreated fell significantly with age (OR, 0.2; 95% CI, 0.03–0.7 among aged >80 versus those <40 years), and with alcohol abstention (OR, 0.4; 95% CI, 0.2–0.6 among abstainers versus drinkers). The highest income quintile had less than one third the odds of being untreated than the lowest income quintile (OR, 0.3; 95% CI, 0.1–0.6 of highest income quintile being untreated versus lowest income quintile). Voluntary insurance among the Chinese cohort was observed as increasing the odds of being untreated by a factor of 4.6 (95% CI, 1.1–20.5) over those with mandatory insurance.

When examining the determinants of having uncontrolled hypertension (Table 5), only sex emerged as a consistent sociodemographic indicator of control in multivariate analyses, with women having less than one third the risk of being uncontrolled versus men (OR, 0.3; 95% CI, 0.1–0.7).

Discussion

In this first examination of the socioeconomic and demographics of hypertension from the WHO SAGE study, we observed that hypertension prevalence among adults varied widely but was consistently highly prevalent among middle-income nations. Although India is often considered a country experiencing the highest burden from cardiovascular disease, this may be because of its population size as opposed to the actual prevalence of hypertension, which was lower in India (at 23%) than in African countries for which hypertension has not been extensively discussed previously (Ghana at 41% prevalence and South Africa at 50%). Obesity emerged as a strikingly common correlate to hypertension, along with the more traditionally recognized risk factor of increasing age. Obesity was prevalent even in the lowest income quintiles, at >10% prevalence, but did increase with rising income, though income in itself was not an independent predictor of hypertension. Urban versus rural location and sex were also not reliable predictors of hypertension, as all locales and both sexes experienced very high hypertension rates. This has important implications for future planning of health services in rural areas, which are typically underdeveloped in the countries studied.

Although the common epidemiological rule of halves suggests that in most locations, we would expect about half of the hypertensive population to be undiagnosed, half of those diagnosed to be untreated, and half of those treated to be uncontrolled, a substantially worse profile emerged from the nationally representative SAGE cohorts. Overall, 66% were undiagnosed before the survey, 73% untreated (including 16% of the diagnosed), and 90% uncontrolled (including 70% of the treated). This indicates that the major bottlenecks for effective hypertension control in middle-income countries are diagnosis and effective titration of treatment, not necessarily treatment initiation among those already diagnosed. Hence, further research on screening and adherence strategies, as well as quality improvement at healthcare sites to ensure titration of medications, may be critical for improving outcomes.

We found that the risk of poor diagnosis significantly reduced with age, and was significantly lower among women than men and among alcohol abstainers than drinkers. Among predominantly the Chinese cohort, voluntary rather than mandatory insurance increased the risk of being undiagnosed and being untreated. This presents new data above prior Chinese assessments that did not track insurance status. Other key correlates to being untreated were age (with higher age groups again being of lower risk), alcohol abstention (having lower risk than among drinkers), and income (reduced risk with higher income). Only sex emerged as a consistent sociodemographic correlate of control, with women having less than one third the odds of being uncontrolled versus men.

Before discussing how these research results may be used for future hypertension interventions, we note that the study has important limitations. First, because the study is observational, it cannot infer causality. The association between obesity and hypertension, for example, may reflect broader metabolic syndrome effects in the populations being observed. Also, BMI values may have different clinical implications in different countries, particularly Asian countries where conventional BMI cut-offs may not be fully predictive of future cardiometabolic outcomes. Furthermore, the study used a wrist monitor for blood pressure estimation, which is more prone to inaccuracy than brachial monitors. Subjects were also not screened for atrial fibrillation, which can cause oscillometric measurement inaccuracies. The reporting of an average of 3 blood pressure measures may be problematic because some people experience cuff-triggered alerting responses or white coat reactions. Also, dietary sodium reduction has been recommended for middle-income nations.
just as with high-income countries. Dietary assessment was not, however, obtained in SAGE. Another major limitation is that metabolic syndrome and type 2 diabetes mellitus are commonly correlated to hypertension, the diabetes mellitus data in SAGE are self-reported, which can bias the data because of differential accessibility to healthcare. Hence, we did not further stratify the data by diabetes mellitus status. SAGE data also did not include countries where large populations abstain from alcohol use (eg, because of religious reasons), and adopted the World Bank definitions of urban and rural, which are limited in how they characterize local areas. Further studies are also needed to understand educational influence on hypertension awareness, treatment, and control, which was not comprehensively assessed.

The results of the study nevertheless contribute significant new information to the literature. Specifically, whereas previous studies have observed the relationship between obesity and hypertension primarily among high-income nations or the wealthier individuals with healthcare access in low-income settings, these data suggest that the obesity–hypertension relationship has extended to all income quintiles. Furthermore, the SAGE data identify new mechanisms by which the problem of low diagnostic and treatment outcomes may be addressed. Our finding that voluntary versus mandatory insurance in China was a significant correlate to diagnosis and treatment, even above uninsurance status, has not been previously reported to our knowledge and suggests that further efforts should investigate whether a systematic difference in populations (selection effect) or in policies (introducing bias in diagnostic and treatment probability) could explain this correlation, which would help to direct future intervention efforts. Although the INTERHEART and related studies established that hypertension was a prevalent risk factor in many developing country populations, such studies were

### Table 5. Characteristics Among Uncontrolled Hypertensive Subjects (N=14,495)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
<th>n</th>
<th>% of sample</th>
<th>P value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, y</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>2812</td>
<td>19.4</td>
<td>0.361</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40–59</td>
<td>7392</td>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60–79</td>
<td>3783</td>
<td>26.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥80</td>
<td>507</td>
<td>3.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>7537</td>
<td>52</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>6958</td>
<td>48</td>
<td>0.316</td>
<td>(0.139–0.722)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>6871</td>
<td>47.4</td>
<td>0.004</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>7624</td>
<td>52.6</td>
<td>0.945</td>
<td>(0.462–1.930)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>2102</td>
<td>14.5</td>
<td>0.005</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 2</td>
<td>2638</td>
<td>18.2</td>
<td>0.753</td>
<td>(0.291–1.948)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 3</td>
<td>2812</td>
<td>19.4</td>
<td>0.911</td>
<td>(0.364–2.279)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 4</td>
<td>3348</td>
<td>23.1</td>
<td>0.8</td>
<td>(0.285–2.248)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 5</td>
<td>3580</td>
<td>24.7</td>
<td>0.626</td>
<td>(0.231–1.698)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>4421</td>
<td>30.5</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>8523</td>
<td>58.8</td>
<td>1.007</td>
<td>(0.444–2.288)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>1536</td>
<td>10.6</td>
<td>0.536</td>
<td>(0.185–1.554)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>8378</td>
<td>57.8</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voluntary</td>
<td>652</td>
<td>4.5</td>
<td>4.512</td>
<td>(0.978–20.82)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>565</td>
<td>3.9</td>
<td>2.247</td>
<td>(0.676–7.469)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>4899</td>
<td>33.8</td>
<td>0.605</td>
<td>(0.0825–4.432)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Healthcare visits/y</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/y or less</td>
<td>3029</td>
<td>20.9</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Once/y to once/week</td>
<td>4827</td>
<td>33.3</td>
<td>0.575</td>
<td>(0.262–1.260)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Once/week</td>
<td>6624</td>
<td>45.7</td>
<td>1.656</td>
<td>(0.686–3.996)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/ widowed</td>
<td>3102</td>
<td>21.4</td>
<td>0.341</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>11393</td>
<td>78.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>10842</td>
<td>74.8</td>
<td>0.805</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than daily</td>
<td>1247</td>
<td>8.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>2392</td>
<td>16.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9190</td>
<td>63.4</td>
<td>0.017</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5305</td>
<td>36.6</td>
<td>0.66</td>
<td>(0.341–1.278)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BMI, kg/m²</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>6131</td>
<td>42.3</td>
<td>0.002</td>
<td>1 [Reference]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>4320</td>
<td>29.8</td>
<td>1.068</td>
<td>(0.524–2.176)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥30</td>
<td>2653</td>
<td>18.3</td>
<td>0.876</td>
<td>(0.378–2.034)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Probability values are listed from the multiple degrees-of-freedom block test on all categories of the characteristic to assess whether uncontrolled hypertension varied across the categories was calculated from a logistic regression model with a fixed effect for the characteristic. Adjusted odds ratios are listed from a multivariate logistic regression model with fixed effects for all characteristics with bivariate significance at P<0.20. BMI indicates body mass index; and CI, confidence interval.
not nationally representative, and smaller studies in individual locales led to the hypothesis that major divides along urban/rural, sex, or income strata may pose the largest differences in hypertension rates. We found that although notable differences do still exist along these axes, the prevalence of hypertension is essentially universally high across all these domains, as is the rate of underdiagnosis.

**Perspectives**
Overall, the social epidemiology of hypertension in the studied middle-income countries seems closer to high-income countries in several ways than previously hypothesized. Obesity was a significant correlate to hypertension and was prevalent even among the lowest income quintile (13% obesity), though it was increasingly prevalent with rising income. Insurance status and income also emerged as significant correlates to diagnosis and treatment probability, respectively, with insurance being a major concern among the Chinese cohort. Sex was the most robust significant correlate to the probability of control, indicating that social factors related to lower control among men require further investigation to mitigate the impact of hypertension-related disease among men in these rapidly developing nations. We found that the major bottlenecks for effective hypertension control in middle-income countries are diagnosis and effective titration of treatment, not necessarily treatment initiation among those already diagnosed.

**Acknowledgments**
This article uses data from WHO SAGE version 1.1.0.

**Sources of Funding**
Sanjay Basu was supported by Stanford University and the International Development Research Center of Canada. Christopher Millett was funded by the Higher Education Funding Council for England and the National Institute for Health Research. SAGE is supported by the United States National Institute on Aging’s Division of Behavioral and Social Research through interagency agreements and research grants (1 R01 AG034479-01A1), and the World Health Organization’s Department of Health Statistics and Information Systems.

**Disclosures**
None.

**References**
Novelty and Significance

What Is New?

- Many studies of hypertension have occurred in rapidly developing countries, but single-country surveys cannot explain what trends in the social epidemiology of hypertension may be generalizable across regions, versus specific to individual locales; we studied hypertension prevalence estimates from the multicountry World Health Organization Study on Global Aging and Adult Health study to find commonalities in the social epidemiology of hypertension among rapidly developing middle-income countries.
- Sex emerged as a consistent sociodemographic correlate of control, with women having less than one third the odds of having uncontrolled hypertension versus men in middle-income nations.
- Insurance status and income also emerged as significant correlates to diagnosis and treatment probability, respectively.
- Major bottlenecks for effective hypertension control in middle-income countries are diagnosis and effective titration of antihypertensive treatment, not necessarily treatment initiation among those already diagnosed.

What Is Relevant?

- Obesity emerged as a strikingly common correlate to hypertension, along with the more traditionally recognized risk factor of increasing age in middle-income countries.
- Mass screening for hypertension has been suggested as a hypertension control strategy for rapidly developing countries. However, several classical social indicators of uncontrolled hypertension were not found to be robust predictors here. Urban versus rural location and sex were not reliable predictors of hypertension, as all locales and both sexes experienced very high hypertension rates.

Summary

More than 90% of hypertension cases in this sample of middle-income countries are uncontrolled, with men having 3 times the odds as women of being uncontrolled. Overall, the social epidemiology of hypertension in middle-income countries seems to be correlated to increasing obesity prevalence, and hypertension control rates are particularly low for adult men across distinct cultures.
Social Epidemiology of Hypertension in Middle-Income Countries: Determinants of Prevalence, Diagnosis, Treatment, and Control in the WHO SAGE Study
Sanjay Basu and Christopher Millett

Hypertension. 2013;62:18-26; originally published online May 13, 2013; doi: 10.1161/HYPERTENSIONAHA.113.01374

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://hyper.ahajournals.org/content/62/1/18

Data Supplement (unedited) at:
http://hyper.ahajournals.org/content/suppl/2013/05/13/HYPERTENSIONAHA.113.01374.DC1

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Hypertension can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Hypertension is online at:
http://hyper.ahajournals.org//subscriptions/
APPENDIX TO:

THE SOCIAL EPIDEMIOLOGY OF HYPERTENSION IN MIDDLE-INCOME COUNTRIES: DETERMINANTS OF PREVALENCE, DIAGNOSIS, TREATMENT AND CONTROL IN THE WHO SAGE STUDY

Sanjay Basu$^{1,2,3,4*}$ and Christopher Millett$^{5,6}$

$^1$ Prevention Research Center, Stanford University
$^2$ Centers for Health Policy, Primary Care and Outcomes Research, Stanford University
$^3$ Center on Poverty and Inequality, Stanford University
$^4$ Department of Public Health and Policy, London School of Hygiene and Tropical Medicine
$^5$ School of Public Health, Imperial College London
$^6$ South Asia Network for Chronic Disease, Public Health Foundation of India

*to whom correspondence should be addressed:

Stanford University School of Medicine
Medical School Office Building, X322
1265 Welch Road, Mail Code 5411
Stanford, CA 94305-5411
Phone: +001 (415) 881-7030
Fax: +001 (650) 725-6247
Email: basus@stanford.edu
China tables

Table S1: Hypertension prevalence ................................................................. 4
Table S2: Undiagnosed hypertension ............................................................. 8
Table S3: Untreated hypertension ................................................................. 11
Table S4: Uncontrolled hypertension ......................................................... 14

Ghana tables

Table S5: Hypertension prevalence ............................................................. 17
Table S6: Undiagnosed hypertension .......................................................... 20
Table S7: Untreated hypertension ............................................................... 23
Table S8: Uncontrolled hypertension ......................................................... 26

India tables

Table S9: Hypertension prevalence ............................................................ 29
Table S10: Undiagnosed hypertension ....................................................... 32
Table S11: Untreated hypertension ............................................................ 35
Table S12: Uncontrolled hypertension ...................................................... 38

Mexico tables

Table S13: Hypertension prevalence .......................................................... 41
Table S14: Undiagnosed hypertension ....................................................... 44
Table S15: Untreated hypertension ............................................................ 47
Table S16: Uncontrolled hypertension ...................................................... 50

Russia tables

Table S17: Hypertension prevalence .......................................................... 53
Table S18: Undiagnosed hypertension ....................................................... 56
Table S19: Untreated hypertension ............................................................ 59
Table S20: Uncontrolled hypertension ...................................................... 62

South Africa tables

Table S21: Hypertension prevalence .......................................................... 65
Table S22: Undiagnosed hypertension ....................................................... 68
Table S23: Untreated hypertension ............................................................ 71
Table S24: Uncontrolled hypertension ...................................................... 74
Notes: In all tables, $P$ values are listed from the multiple degrees-of-freedom block test on all categories of the characteristic to assess whether hypertension rates varied across the categories was calculated from a logistic regression model with a fixed effect for the characteristic. Adjusted odds ratios are listed from a multivariate logical regression model with fixed effects for all characteristics that have bivariatesignificance at $P < 0.20.$
Table S1: Hypertension prevalence by participant characteristics in China (N=15,004).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>913</td>
<td>15.7</td>
</tr>
<tr>
<td>40 to 59</td>
<td>350</td>
<td>7</td>
</tr>
<tr>
<td>60 to 79</td>
<td>127</td>
<td>4</td>
</tr>
<tr>
<td>&gt;80</td>
<td>122</td>
<td>2.1</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>329</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>251</td>
<td>8</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>242</td>
<td>5</td>
</tr>
<tr>
<td>Rural</td>
<td>339</td>
<td>1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>657</td>
<td>11.3</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>108</td>
<td>8</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>156</td>
<td>5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>222</td>
<td>8</td>
</tr>
<tr>
<td>Secondary</td>
<td>316</td>
<td>54.4</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>425</td>
<td>7.3</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>421</td>
<td>72.5</td>
</tr>
<tr>
<td>Voluntary</td>
<td>395</td>
<td>6.8</td>
</tr>
<tr>
<td>Both</td>
<td>465</td>
<td>8</td>
</tr>
<tr>
<td>None</td>
<td>739</td>
<td>12.7</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>104</td>
<td>17.9</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;once/mo</td>
<td>162</td>
<td>28</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>314</td>
<td>54</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>622</td>
<td>10.7</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>519</td>
<td>89.3</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>460</td>
<td>79.1</td>
</tr>
<tr>
<td>Less than daily</td>
<td>500</td>
<td>8.6</td>
</tr>
<tr>
<td>None</td>
<td>721</td>
<td>12.4</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>439</td>
<td>75.6</td>
</tr>
<tr>
<td>No</td>
<td>141</td>
<td>24.4</td>
</tr>
<tr>
<td><strong>Fruit servings/d</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1/day</td>
<td>181</td>
<td>31.3</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>5</td>
</tr>
</tbody>
</table>
|--------------------------------------|-------|-------|--------|-------------------|}
|                                      |       |       |        |                   |
Table S2: Undiagnosed hypertension by participant characteristics in China (N=4,153).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>810</td>
<td>19.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>2637</td>
<td>63.5</td>
</tr>
<tr>
<td>60 to 79</td>
<td>648</td>
<td>15.6</td>
</tr>
<tr>
<td>&gt;80</td>
<td>62</td>
<td>1.5</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2479</td>
<td>59.7</td>
</tr>
<tr>
<td>Female</td>
<td>1674</td>
<td>40.3</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1470</td>
<td>35.4</td>
</tr>
<tr>
<td>Rural</td>
<td>2683</td>
<td>64.6</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>457</td>
<td>11</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>768</td>
<td>18.5</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>839</td>
<td>20.2</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>1051</td>
<td>25.3</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>1038</td>
<td>25</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>1561</td>
<td>37.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>2296</td>
<td>55.3</td>
</tr>
<tr>
<td>Category</td>
<td>N</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>295</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>2957</td>
<td>71.2</td>
</tr>
<tr>
<td>Voluntary</td>
<td>295</td>
<td>7.1</td>
</tr>
<tr>
<td>Both</td>
<td>349</td>
<td>8.4</td>
</tr>
<tr>
<td>None</td>
<td>552</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>756</td>
<td>18.2</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>1022</td>
<td>24.6</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>2375</td>
<td>57.2</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>419</td>
<td>10.1</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>3733</td>
<td>89.9</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>3384</td>
<td>81.5</td>
</tr>
<tr>
<td>Less than daily</td>
<td>399</td>
<td>9.6</td>
</tr>
<tr>
<td>None</td>
<td>370</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3310</td>
<td>79.7</td>
</tr>
<tr>
<td>No</td>
<td>843</td>
<td>20.3</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>3,275.60 56</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>2,013.90 34.4</td>
<td>0.488</td>
</tr>
<tr>
<td>&gt;30</td>
<td>380.2 6.5</td>
<td>0.112</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>&lt;80</td>
<td>1258</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>≥80 to &lt;90</td>
<td>1553</td>
</tr>
<tr>
<td></td>
<td>≥90</td>
<td>1341</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>&lt;90</td>
<td>893</td>
</tr>
<tr>
<td></td>
<td>≥90 to &lt;100</td>
<td>2039</td>
</tr>
<tr>
<td></td>
<td>≥100</td>
<td>1217</td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>3617</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>536</td>
</tr>
</tbody>
</table>
Table S3: Untreated hypertension by participant characteristics in China (N=4,461).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>852</td>
<td>19.1</td>
</tr>
<tr>
<td>40 to 59</td>
<td>2810</td>
<td>63</td>
</tr>
<tr>
<td>60 to 79</td>
<td>732</td>
<td>16.4</td>
</tr>
<tr>
<td>&gt;80</td>
<td>67</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2619</td>
<td>58.7</td>
</tr>
<tr>
<td>Female</td>
<td>1842</td>
<td>41.3</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1597</td>
<td>35.8</td>
</tr>
<tr>
<td>Rural</td>
<td>2864</td>
<td>64.2</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>500</td>
<td>11.2</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>798</td>
<td>17.9</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>865</td>
<td>19.4</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>1155</td>
<td>25.9</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>1142</td>
<td>25.6</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>1695</td>
<td>38</td>
</tr>
<tr>
<td>Secondary</td>
<td>2440</td>
<td>54.7</td>
</tr>
<tr>
<td>Health Status</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>326</td>
<td>7.3</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>3198</td>
<td>71.7</td>
</tr>
<tr>
<td>Voluntary</td>
<td>303</td>
<td>6.8</td>
</tr>
<tr>
<td>Both</td>
<td>388</td>
<td>8.7</td>
</tr>
<tr>
<td>None</td>
<td>575</td>
<td>12.9</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/yr or less</td>
<td>839</td>
<td>18.8</td>
</tr>
<tr>
<td>&gt;once/yr to ≤ once/mo</td>
<td>1106</td>
<td>24.8</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>2516</td>
<td>56.4</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>446</td>
<td>10</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>4015</td>
<td>90</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>3627</td>
<td>81.3</td>
</tr>
<tr>
<td>Less than daily</td>
<td>406</td>
<td>9.1</td>
</tr>
<tr>
<td>None</td>
<td>428</td>
<td>9.6</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3542</td>
<td>79.4</td>
</tr>
<tr>
<td>No</td>
<td>919</td>
<td>20.6</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>3,440</td>
<td>54.3</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>2,239</td>
<td>35.4</td>
</tr>
<tr>
<td>≥30</td>
<td>466.7</td>
<td>7.4</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>&lt;80</td>
<td>1289</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>≥80 to &lt;90</td>
<td>1682</td>
</tr>
<tr>
<td></td>
<td>≥90</td>
<td>1490</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th>&lt;90</th>
<th>919</th>
<th>20.6</th>
<th>&lt;0.00</th>
<th>1 [Reference]</th>
<th>1.089 (0.458-2.590)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥90 to &lt;100</td>
<td>2181</td>
<td>48.9</td>
<td>0.852 (0.242-2.995)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥100</td>
<td>1361</td>
<td>30.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>No</th>
<th>3908</th>
<th>87.6</th>
<th>0.032</th>
<th>1 [Reference]</th>
<th>0.763 (0.313-1.859)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>553</td>
<td>12.4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S4: Uncontrolled hypertension by participant characteristics in China (N=5,467).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>355</td>
<td>6.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>330</td>
<td>2</td>
</tr>
<tr>
<td>60 to 79</td>
<td>115</td>
<td>4</td>
</tr>
<tr>
<td>&gt;=80</td>
<td>109</td>
<td>2</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>311</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>235</td>
<td>1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>215</td>
<td>4</td>
</tr>
<tr>
<td>Rural</td>
<td>331</td>
<td>3</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>623</td>
<td>11.4</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>957</td>
<td>17.5</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>101</td>
<td>7</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>141</td>
<td>6</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>145</td>
<td>4</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>209</td>
<td>38.3</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td>301</td>
<td>55.1</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>361</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>395</td>
<td>72.3</td>
</tr>
<tr>
<td>Voluntary</td>
<td>377</td>
<td>6.9</td>
</tr>
<tr>
<td>Both</td>
<td>443</td>
<td>8.1</td>
</tr>
<tr>
<td>None</td>
<td>689</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/yr or less</td>
<td>968</td>
<td>17.7</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>149</td>
<td>27.3</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>300</td>
<td>55</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>574</td>
<td>10.5</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>489</td>
<td>89.5</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>435</td>
<td>79.6</td>
</tr>
<tr>
<td>Less than daily</td>
<td>470</td>
<td>8.6</td>
</tr>
<tr>
<td>None</td>
<td>645</td>
<td>11.8</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>418</td>
<td>76.5</td>
</tr>
<tr>
<td>No</td>
<td>128</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waist Circumference (cm)</td>
<td>18.5 to &lt;25</td>
<td>25 to &lt;30</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>&lt;80</td>
<td>144</td>
<td>3</td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>204</td>
<td>5</td>
</tr>
<tr>
<td>≥90</td>
<td>197</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip Circumference (cm)</th>
<th>&lt;90</th>
<th>≥90 to &lt;100</th>
<th>≥100</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>103</td>
<td>258</td>
<td>184</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>≥100</td>
<td>3</td>
<td>47.3</td>
<td>33.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>474</td>
<td>5</td>
<td>86.8</td>
</tr>
<tr>
<td>722</td>
<td>13.2</td>
<td></td>
</tr>
</tbody>
</table>

Waist circumference (cm)
- <80: 144, 3, 26.4
- ≥80 to <90: 204, 5, 37.4
- ≥90: 197, 9, 36.2

Hip circumference (cm)
- <90: 103, 3, 18.9
- ≥90 to <100: 258, 6, 47.3
- ≥100: 184, 2, 33.7

Exercise
- No: 474, 5, 86.8
- Yes: 722, 13.2

Note: The values in parentheses are the confidence intervals.
Table S5: Hypertension prevalence by participant characteristics in Ghana (N=5,563).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>734</td>
<td>32.3</td>
</tr>
<tr>
<td>40 to 59</td>
<td>108</td>
<td>0</td>
</tr>
<tr>
<td>60 to 79</td>
<td>391</td>
<td>17.2</td>
</tr>
<tr>
<td>&gt;80</td>
<td>68</td>
<td>3</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>116</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>110</td>
<td>7</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>115</td>
<td>2</td>
</tr>
<tr>
<td>Rural</td>
<td>112</td>
<td>1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>286</td>
<td>12.6</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>332</td>
<td>14.6</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>489</td>
<td>21.5</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>557</td>
<td>24.5</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>607</td>
<td>26.7</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>107</td>
<td>5</td>
</tr>
<tr>
<td>Secondary</td>
<td>105</td>
<td>9</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>139</td>
<td>6.1</td>
</tr>
</tbody>
</table>
### Insurance

<table>
<thead>
<tr>
<th></th>
<th>Mandatory</th>
<th>Voluntary</th>
<th>Both</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>2</td>
<td>600</td>
<td>39</td>
<td>158</td>
</tr>
</tbody>
</table>

Reference: 0.106 (0.00494-2.273) 0.0124 (0.000307-0.498) 0.249 (0.0120-5.145)

### Healthcare visits/yr

<table>
<thead>
<tr>
<th></th>
<th>once/yr or less</th>
<th>&gt;once/yr to &lt;once/mo</th>
<th>&gt;once/mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>589</td>
<td>25.9</td>
<td>791</td>
<td>34.8</td>
</tr>
<tr>
<td>893</td>
<td>39.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reference: <0.00 1 1.529 (0.555-4.211) 0.597 (0.226-1.574)

### Marital status

<table>
<thead>
<tr>
<th></th>
<th>Single/divorced/widowed</th>
<th>Married/cohabitating</th>
</tr>
</thead>
<tbody>
<tr>
<td>705</td>
<td>31</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

Reference: 0.036 1 [Reference] 0.594 (0.241-1.465)

### Tobacco smoking

<table>
<thead>
<tr>
<th></th>
<th>Daily</th>
<th>Less than daily</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>755</td>
<td>33.2</td>
<td>284</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Reference: 0.232 1 [Reference] 0.448 (0.140-1.434) 0.703 (0.276-1.788)

### Current alcohol use

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>119</td>
<td>3</td>
<td>52.5</td>
</tr>
<tr>
<td>108</td>
<td>0</td>
<td>47.5</td>
</tr>
</tbody>
</table>

Reference: 0.314 1 [Reference] 0.813 (0.361-1.831)

### Fruit servings/d

<table>
<thead>
<tr>
<th></th>
<th>0-1/day</th>
<th>2-4/day</th>
<th>5 or greater/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>762</td>
<td>33.5</td>
<td>109</td>
<td>413</td>
</tr>
<tr>
<td>9</td>
<td>48.3</td>
<td>9</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Reference: 0.013 1 [Reference] 1.067 (0.486-2.344) 1.225 (0.465-3.228)

### Vegetable servings/d

<table>
<thead>
<tr>
<th></th>
<th>0-1/day</th>
<th>2-4/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>225</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>99.1</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Reference: <0.00 1 [Reference] 1.130 (0.190-6.719)
<table>
<thead>
<tr>
<th>5 or greater/day</th>
<th>1</th>
<th>0.1</th>
<th>small N</th>
</tr>
</thead>
</table>

**BMI (kg/m^2)**

<table>
<thead>
<tr>
<th>Range</th>
<th>N</th>
<th>Mean</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.5 to &lt;25</td>
<td>112</td>
<td>49.3</td>
<td></td>
</tr>
<tr>
<td>25 to &lt;30</td>
<td>537</td>
<td>23.6</td>
<td>2.795 (0.853-9.156)</td>
</tr>
<tr>
<td>30</td>
<td>433</td>
<td>19</td>
<td>6.229 (0.813-47.70)</td>
</tr>
</tbody>
</table>

**Waist circumference (cm)**

<table>
<thead>
<tr>
<th>Range</th>
<th>N</th>
<th>Mean</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80</td>
<td>811</td>
<td>35.7</td>
<td></td>
</tr>
<tr>
<td>80 to &lt;90</td>
<td>627</td>
<td>27.6</td>
<td>2.790 (1.040-7.489)</td>
</tr>
<tr>
<td>90</td>
<td>834</td>
<td>36.7</td>
<td>2.120 (0.305-14.74)</td>
</tr>
</tbody>
</table>

**Hip circumference (cm)**

<table>
<thead>
<tr>
<th>Range</th>
<th>N</th>
<th>Mean</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>836</td>
<td>36.8</td>
<td></td>
</tr>
<tr>
<td>90 to &lt;100</td>
<td>705</td>
<td>31</td>
<td>0.477 (0.167-1.365)</td>
</tr>
<tr>
<td>&gt;=100</td>
<td>732</td>
<td>32.2</td>
<td>0.549 (0.0815-3.704)</td>
</tr>
</tbody>
</table>

**Exercise**

<table>
<thead>
<tr>
<th>No</th>
<th>190</th>
<th>83.7</th>
<th>0.574 (1 [Reference])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>370</td>
<td>16.3</td>
<td>1.573 (0.630-3.928)</td>
</tr>
</tbody>
</table>
Table S6: Undiagnosed hypertension by participant characteristics in Ghana (N=1,887).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th></th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
<td>P value</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>675</td>
<td>35.8</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>40 to 59</td>
<td>872</td>
<td>46.2</td>
<td>0.217 (0.0450-1.046)</td>
</tr>
<tr>
<td>60 to 79</td>
<td>283</td>
<td>15</td>
<td>0.109 (0.0243-0.486)</td>
</tr>
<tr>
<td>&gt;80</td>
<td>57</td>
<td>3</td>
<td>0.510 (0.0205-12.67)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1000</td>
<td>53</td>
<td>1.816 (0.489-6.739)</td>
</tr>
<tr>
<td>Female</td>
<td>887</td>
<td>47</td>
<td>0.079</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>887</td>
<td>47</td>
<td>11.56 (4.019-33.26)</td>
</tr>
<tr>
<td>Rural</td>
<td>1000</td>
<td>53</td>
<td>&lt;0.00 1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>262</td>
<td>13.9</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>308</td>
<td>16.3</td>
<td>1.010 (0.125-8.175)</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>426</td>
<td>22.6</td>
<td>3.499 (0.445-27.50)</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>440</td>
<td>23.3</td>
<td>0.645 (0.0972-4.285)</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>449</td>
<td>23.8</td>
<td>0.282 (0.0454-1.755)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>932</td>
<td>49.4</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Secondary</td>
<td>877</td>
<td>46.5</td>
<td>2.632 (1.019-6.803)</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>77</td>
<td>4.1</td>
<td>0.113 (0.00875-1.469)</td>
</tr>
<tr>
<td>------------------</td>
<td>----</td>
<td>-----</td>
<td>----------------------</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>40</td>
<td>2.1</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Voluntary</td>
<td>466</td>
<td>24.7</td>
<td>0.034 1.755 (0.604-5.103)</td>
</tr>
<tr>
<td>Both</td>
<td>23</td>
<td>1.2</td>
<td>-</td>
</tr>
<tr>
<td>None</td>
<td>1358</td>
<td>72</td>
<td>-</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>507</td>
<td>26.9</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;once/mo</td>
<td>589</td>
<td>31.2</td>
<td>0.214 1.077 (0.371-3.127)</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>792</td>
<td>42</td>
<td>3.005 (0.942-9.592)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>551</td>
<td>29.2</td>
<td>0.038 1 [Reference]</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>1336</td>
<td>70.8</td>
<td>0.443 (0.127-1.549)</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>717</td>
<td>38</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Less than daily</td>
<td>183</td>
<td>9.7</td>
<td>0.022 0.109 (0.0193-0.610)</td>
</tr>
<tr>
<td>None</td>
<td>987</td>
<td>52.3</td>
<td>0.772 (0.145-4.118)</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1081</td>
<td>57.3</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>No</td>
<td>806</td>
<td>42.7</td>
<td>0.001 0.187 (0.0727-0.483)</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>800.7</td>
<td>34.7</td>
<td>&lt;0.001 1.260 (0.295-5.372)</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>1,087</td>
<td>50</td>
<td>47.1</td>
</tr>
<tr>
<td>≥30</td>
<td>421.9</td>
<td>18.3</td>
<td>0.548 (0.0681-4.400)</td>
</tr>
<tr>
<td><strong>Waist circumference (cm)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>Count</td>
<td>Mean</td>
<td>p Value</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>&lt;90</td>
<td>540</td>
<td>28.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>621</td>
<td>32.9</td>
<td></td>
</tr>
<tr>
<td>≥100</td>
<td>587</td>
<td>31.1</td>
<td>0.001</td>
</tr>
<tr>
<td>≥100</td>
<td>553</td>
<td>29.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Count</th>
<th>Mean</th>
<th>p Value</th>
<th>OR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1592</td>
<td>84.4</td>
<td>0.302</td>
<td>0.838 (0.311-2.257)</td>
</tr>
<tr>
<td>Yes</td>
<td>294</td>
<td>15.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S7: Untreated hypertension by participant characteristics in Ghana (N=1,982).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>719</td>
<td>36.3</td>
</tr>
<tr>
<td>40 to 59</td>
<td>906</td>
<td>45.7</td>
</tr>
<tr>
<td>60 to 79</td>
<td>297</td>
<td>15</td>
</tr>
<tr>
<td>&gt;80</td>
<td>59</td>
<td>3</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1029</td>
<td>51.9</td>
</tr>
<tr>
<td>Female</td>
<td>953</td>
<td>48.1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>932</td>
<td>47</td>
</tr>
<tr>
<td>Rural</td>
<td>1050</td>
<td>53</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>277</td>
<td>14</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>311</td>
<td>15.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>442</td>
<td>22.3</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>458</td>
<td>23.1</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>496</td>
<td>25</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>987</td>
<td>49.8</td>
</tr>
<tr>
<td>Secondary</td>
<td>890</td>
<td>44.9</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>105</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>Voluntary</td>
<td>494</td>
<td>24.9</td>
</tr>
<tr>
<td>Both</td>
<td>28</td>
<td>1.4</td>
</tr>
<tr>
<td>None</td>
<td>1423</td>
<td>71.8</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>533</td>
<td>26.9</td>
</tr>
<tr>
<td>&gt;once/yr to ≤ once/mo</td>
<td>614</td>
<td>31</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>836</td>
<td>42.2</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>583</td>
<td>29.4</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>1399</td>
<td>70.6</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>739</td>
<td>37.3</td>
</tr>
<tr>
<td>Less than daily</td>
<td>208</td>
<td>10.5</td>
</tr>
<tr>
<td>None</td>
<td>1035</td>
<td>52.2</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1128</td>
<td>56.9</td>
</tr>
<tr>
<td>No</td>
<td>854</td>
<td>43.1</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>1,264</td>
<td>52.1</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>555.9</td>
<td>22.9</td>
</tr>
<tr>
<td>≥30</td>
<td>408.8</td>
<td>16.8</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>&lt;80</td>
<td>747</td>
<td>37.7</td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>551</td>
<td>27.8</td>
</tr>
<tr>
<td>≥90</td>
<td>684</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>769</td>
<td>38.8</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>608</td>
<td>30.7</td>
</tr>
<tr>
<td>≥100</td>
<td>605</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1659</td>
<td>83.7</td>
</tr>
<tr>
<td>Yes</td>
<td>323</td>
<td>16.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S8: Uncontrolled hypertension by participant characteristics in Ghana (N=2,205).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>719</td>
<td>32.6</td>
</tr>
<tr>
<td>40 to 59</td>
<td>104</td>
<td>9</td>
</tr>
<tr>
<td>60 to 79</td>
<td>370</td>
<td>16.8</td>
</tr>
<tr>
<td>&gt;80</td>
<td>66</td>
<td>3</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>113</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>106</td>
<td>9</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>111</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>109</td>
<td>4</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>276</td>
<td>12.5</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>331</td>
<td>15</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>487</td>
<td>22.1</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>542</td>
<td>24.6</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>569</td>
<td>25.8</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>104</td>
<td>9</td>
</tr>
<tr>
<td>Secondary</td>
<td>102</td>
<td>5</td>
</tr>
<tr>
<td>Category</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>130</td>
<td>5.9</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>44</td>
<td>2</td>
</tr>
<tr>
<td>Voluntary</td>
<td>582</td>
<td>26.4</td>
</tr>
<tr>
<td>Both</td>
<td>35</td>
<td>1.6</td>
</tr>
<tr>
<td>None</td>
<td>154</td>
<td>70</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>562</td>
<td>25.5</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;= once/mo</td>
<td>750</td>
<td>34</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>893</td>
<td>40.5</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>690</td>
<td>31.3</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>151</td>
<td>5</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>736</td>
<td>33.4</td>
</tr>
<tr>
<td>Less than daily</td>
<td>278</td>
<td>12.6</td>
</tr>
<tr>
<td>None</td>
<td>119</td>
<td>1</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>118</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>102</td>
<td>1</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>750</td>
<td>34</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>104</td>
<td>9</td>
</tr>
<tr>
<td>&gt;=30</td>
<td>406</td>
<td>18.4</td>
</tr>
<tr>
<td><strong>Waist circumference (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>783</td>
<td>35.5</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>&lt;90</td>
<td>809</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>≥90 to &lt;100</td>
<td>679</td>
</tr>
<tr>
<td></td>
<td>≥100</td>
<td>714</td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>364</td>
</tr>
</tbody>
</table>
Table S9: Hypertension prevalence by participant characteristics in India (N=12,198).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>971</td>
<td>34</td>
</tr>
<tr>
<td>40 to 59</td>
<td>131</td>
<td>4</td>
</tr>
<tr>
<td>60 to 79</td>
<td>517</td>
<td>18.1</td>
</tr>
<tr>
<td>&gt;80</td>
<td>54</td>
<td>1.9</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>138</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>147</td>
<td>1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>860</td>
<td>30.1</td>
</tr>
<tr>
<td>Rural</td>
<td>199</td>
<td>6</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>511</td>
<td>17.9</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>534</td>
<td>18.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>571</td>
<td>20</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>551</td>
<td>19.3</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>688</td>
<td>24.1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>120</td>
<td>42</td>
</tr>
</tbody>
</table>
### Secondary Education

<table>
<thead>
<tr>
<th>Level</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary</td>
<td>122</td>
<td>42.8</td>
<td>0.620 (0.326-1.180)</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>434</td>
<td>15.2</td>
<td>1.121 (0.322-3.897)</td>
</tr>
</tbody>
</table>

### Insurance

<table>
<thead>
<tr>
<th>Type</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory</td>
<td>63</td>
<td>2.2</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Voluntary</td>
<td>66</td>
<td>2.3</td>
<td>0.0920 (0.0110-0.767)</td>
</tr>
<tr>
<td>Both</td>
<td>6</td>
<td>0.2</td>
<td>0.133 (0.00424-4.195)</td>
</tr>
<tr>
<td>None</td>
<td>272</td>
<td>95.3</td>
<td>0.311 (0.0765-1.268)</td>
</tr>
</tbody>
</table>

### Healthcare visits/yr

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>once/yr or less</td>
<td>725</td>
<td>25.4</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;once/mo</td>
<td>139</td>
<td>49</td>
<td>1.637 (0.845-3.170)</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>731</td>
<td>25.6</td>
<td>1.023 (0.486-2.155)</td>
</tr>
</tbody>
</table>

### Marital status

<table>
<thead>
<tr>
<th>Status</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/divorced/widowed</td>
<td>488</td>
<td>17.1</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>236</td>
<td>82.9</td>
<td>1.094 (0.370-3.230)</td>
</tr>
</tbody>
</table>

### Tobacco smoking

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>251</td>
<td>88.2</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Less than daily</td>
<td>160</td>
<td>5.6</td>
<td>1.073 (0.342-3.364)</td>
</tr>
<tr>
<td>None</td>
<td>174</td>
<td>6.1</td>
<td>0.829 (0.239-2.871)</td>
</tr>
</tbody>
</table>

### Current alcohol use

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>159</td>
<td>55.7</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>No</td>
<td>126</td>
<td>44.3</td>
<td>0.680 (0.383-1.207)</td>
</tr>
</tbody>
</table>

### Fruit servings/d

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Observations</th>
<th>Percent</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1/day</td>
<td>216</td>
<td>75.9</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&lt;0.00</td>
<td>6</td>
<td>2.1</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Variable</td>
<td>Category</td>
<td>Count</td>
<td>Percent</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------------------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Vegetable servings/d</td>
<td>0-1/day</td>
<td>280</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2-4/day</td>
<td>50</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>5 or greater/day</td>
<td>4</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 [Reference]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.920 (0.184-4.598)</td>
</tr>
<tr>
<td>BMI (kg/m^2)</td>
<td>&gt;18.5 to &lt;25</td>
<td>148</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>25 to &lt;30</td>
<td>415</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>&gt;30</td>
<td>165</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 [Reference]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.091 (0.379-3.138)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.950 (0.231-16.48)</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>&lt;80</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>80 to &lt;90</td>
<td>863</td>
<td>30.2</td>
</tr>
<tr>
<td></td>
<td>&gt;90</td>
<td>788</td>
<td>27.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 [Reference]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.441 (0.677-3.070)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.577 (0.756-8.786)</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>&lt;90</td>
<td>144</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>90 to &lt;100</td>
<td>937</td>
<td>32.8</td>
</tr>
<tr>
<td></td>
<td>&gt;=90</td>
<td>474</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 [Reference]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.460 (1.081-5.596)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.886 (0.413-8.620)</td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>234</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>508</td>
<td>17.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.689</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 [Reference]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.171 (0.644-2.130)</td>
</tr>
</tbody>
</table>
Table S10: Undiagnosed hypertension by participant characteristics in India ($N=1,798$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>728</td>
<td>40.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>759</td>
<td>42.2</td>
</tr>
<tr>
<td>60 to 79</td>
<td>277</td>
<td>15.4</td>
</tr>
<tr>
<td>&gt;80</td>
<td>34</td>
<td>1.9</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>962</td>
<td>53.5</td>
</tr>
<tr>
<td>Female</td>
<td>836</td>
<td>46.5</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>491</td>
<td>27.3</td>
</tr>
<tr>
<td>Rural</td>
<td>1307</td>
<td>72.7</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>394</td>
<td>21.9</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>367</td>
<td>20.4</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>347</td>
<td>19.3</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>338</td>
<td>18.8</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>351</td>
<td>19.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>838</td>
<td>46.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>691</td>
<td>38.4</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>270</td>
<td>15</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>34</td>
<td>1.9</td>
</tr>
<tr>
<td>Voluntary</td>
<td>32</td>
<td>1.8</td>
</tr>
<tr>
<td>Both</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>None</td>
<td>1728</td>
<td>96.1</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>478</td>
<td>26.6</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>775</td>
<td>43.1</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>543</td>
<td>30.2</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>302</td>
<td>16.8</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>1496</td>
<td>83.2</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>1626</td>
<td>90.4</td>
</tr>
<tr>
<td>Less than daily</td>
<td>76</td>
<td>4.2</td>
</tr>
<tr>
<td>None</td>
<td>97</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1131</td>
<td>62.9</td>
</tr>
<tr>
<td>No</td>
<td>667</td>
<td>37.1</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>1,251</td>
<td>55.1</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>257.8</td>
<td>11.4</td>
</tr>
<tr>
<td>≥30</td>
<td>90.3</td>
<td>4</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>&lt;80</td>
<td>811</td>
<td>45.1</td>
</tr>
<tr>
<td>80 to &lt;90</td>
<td>568</td>
<td>31.6</td>
</tr>
<tr>
<td>&gt;90</td>
<td>417</td>
<td>23.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>987</td>
<td>54.9</td>
<td>&lt;0.00</td>
<td>1 [Reference]</td>
<td>0.412 (0.111-1.528)</td>
</tr>
<tr>
<td>90 to &lt;100</td>
<td>588</td>
<td>32.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>223</td>
<td>12.4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercis e</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1475</td>
<td>82</td>
<td></td>
<td>0.824</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Yes</td>
<td>324</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S11: Untreated hypertension by participant characteristics in India (N=2,131).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>842</td>
<td>39.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>929</td>
<td>43.6</td>
</tr>
<tr>
<td>60 to 79</td>
<td>324</td>
<td>15.2</td>
</tr>
<tr>
<td>&gt;80</td>
<td>36</td>
<td>1.7</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1099</td>
<td>51.6</td>
</tr>
<tr>
<td>Female</td>
<td>1031</td>
<td>48.4</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>590</td>
<td>27.7</td>
</tr>
<tr>
<td>Rural</td>
<td>1540</td>
<td>72.3</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>441</td>
<td>20.7</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>435</td>
<td>20.4</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>420</td>
<td>19.7</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>407</td>
<td>19.1</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>426</td>
<td>20</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>944</td>
<td>44.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>863</td>
<td>40.5</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>324</td>
<td>15.2</td>
</tr>
</tbody>
</table>
### Insurance

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory</td>
<td>38</td>
<td>1.8</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Voluntary</td>
<td>36</td>
<td>1.7</td>
<td>0.014 (0.00844-4.563)</td>
</tr>
<tr>
<td>Both</td>
<td>4</td>
<td>0.2</td>
<td>2.313 (0.0413-129.4)</td>
</tr>
<tr>
<td>None</td>
<td>2052</td>
<td>96.3</td>
<td>1.373 (0.114-16.49)</td>
</tr>
</tbody>
</table>

### Healthcare visits/yr

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once/yr or less</td>
<td>556</td>
<td>26.1</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt; Once/yr to &lt; Once/mo</td>
<td>957</td>
<td>44.9</td>
<td>0.756 (0.246-2.321)</td>
</tr>
<tr>
<td>&gt; Once/mo</td>
<td>618</td>
<td>29</td>
<td>3.281 (0.738-14.58)</td>
</tr>
</tbody>
</table>

### Marital status

<table>
<thead>
<tr>
<th>Status</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/divorced/widowed</td>
<td>356</td>
<td>16.7</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>1775</td>
<td>83.3</td>
<td>0.0764 (0.0133-0.439)</td>
</tr>
</tbody>
</table>

### Tobacco smoking

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>1915</td>
<td>89.9</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Less than daily</td>
<td>100</td>
<td>4.7</td>
<td>1.831 (0.253-13.24)</td>
</tr>
<tr>
<td>None</td>
<td>115</td>
<td>5.4</td>
<td>3.861 (0.750-19.87)</td>
</tr>
</tbody>
</table>

### Current alcohol use

<table>
<thead>
<tr>
<th>Use</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1312</td>
<td>61.6</td>
<td>&lt;0.00</td>
</tr>
<tr>
<td>No</td>
<td>818</td>
<td>38.4</td>
<td>1 [Reference]</td>
</tr>
</tbody>
</table>

### BMI (kg/m^2)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥18.5 to &lt;25</td>
<td>1,451</td>
<td>54</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>312.8</td>
<td>11.6</td>
<td>0.555 (0.143-2.147)</td>
</tr>
<tr>
<td>&gt; 30</td>
<td>121.4</td>
<td>4.5</td>
<td>2.021 (0.0220-185.4)</td>
</tr>
</tbody>
</table>

### Waist circumference (cm)

<table>
<thead>
<tr>
<th>Circumference</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80</td>
<td>976</td>
<td>45.8</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>≥ 80 to &lt;90</td>
<td>660</td>
<td>31</td>
<td>0.145 (0.00539-3.887)</td>
</tr>
<tr>
<td>≥ 90</td>
<td>494</td>
<td>23.2</td>
<td>small N</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>&lt;90</td>
<td>1155</td>
<td>54.2</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>≥90</td>
<td>688</td>
<td>32.3</td>
</tr>
<tr>
<td></td>
<td>≥100</td>
<td>288</td>
<td>13.5</td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>1749</td>
<td>82.1</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>381</td>
<td>17.9</td>
</tr>
</tbody>
</table>
Table S12: Uncontrolled hypertension by participant characteristics in India ($N=2,171$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>773</td>
<td>35.6</td>
</tr>
<tr>
<td>40 to 59</td>
<td>966</td>
<td>44.5</td>
</tr>
<tr>
<td>60 to 79</td>
<td>389</td>
<td>17.9</td>
</tr>
<tr>
<td>≥80</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>112</td>
<td>7</td>
</tr>
<tr>
<td>Female</td>
<td>104</td>
<td>4</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>651</td>
<td>30</td>
</tr>
<tr>
<td>Rural</td>
<td>152</td>
<td>70</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>419</td>
<td>19.3</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>428</td>
<td>19.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>423</td>
<td>19.5</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>404</td>
<td>18.6</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>497</td>
<td>22.9</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>977</td>
<td>45</td>
</tr>
<tr>
<td>Secondary</td>
<td>873</td>
<td>40.2</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Count</td>
<td>Proportion</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>321</td>
<td>14.8</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>48</td>
<td>2.2</td>
</tr>
<tr>
<td>Voluntary</td>
<td>41</td>
<td>1.9</td>
</tr>
<tr>
<td>Both</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>None</td>
<td>207</td>
<td>8.957</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>567</td>
<td>26.1</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>994</td>
<td>45.8</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>610</td>
<td>28.1</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>382</td>
<td>17.6</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>178</td>
<td>9.824</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>192</td>
<td>88.6</td>
</tr>
<tr>
<td>Less than daily</td>
<td>111</td>
<td>5.1</td>
</tr>
<tr>
<td>None</td>
<td>139</td>
<td>6.4</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>128</td>
<td>59</td>
</tr>
<tr>
<td>No</td>
<td>890</td>
<td>41</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>115</td>
<td>53.4</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>308</td>
<td>14.2</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>&lt;80</td>
<td>916</td>
<td>42.2</td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>671</td>
<td>30.9</td>
</tr>
<tr>
<td>≥90</td>
<td>586</td>
<td>27</td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>111</td>
<td>51.5</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>710</td>
<td>32.7</td>
</tr>
<tr>
<td>≥100</td>
<td>343</td>
<td>15.8</td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>177</td>
<td>81.7</td>
</tr>
<tr>
<td>Yes</td>
<td>397</td>
<td>18.3</td>
</tr>
</tbody>
</table>
Table S13: Hypertension prevalence by participant characteristics in Mexico ($N=2,733$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>216</td>
<td>25.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>365</td>
<td>43</td>
</tr>
<tr>
<td>60 to 79</td>
<td>225</td>
<td>26.5</td>
</tr>
<tr>
<td>&gt;80</td>
<td>43</td>
<td>5.1</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>388</td>
<td>45.7</td>
</tr>
<tr>
<td>Female</td>
<td>460</td>
<td>54.3</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>660</td>
<td>77.8</td>
</tr>
<tr>
<td>Rural</td>
<td>188</td>
<td>22.2</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>131</td>
<td>15.5</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>176</td>
<td>20.8</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>149</td>
<td>17.6</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>161</td>
<td>19</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>230</td>
<td>27.1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>508</td>
<td>59.9</td>
</tr>
<tr>
<td>Secondary</td>
<td>257</td>
<td>30.3</td>
</tr>
</tbody>
</table>

HTN in Middle Income Countries

Appendix Page 41 of 76
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>83</td>
<td>9.8</td>
<td>1.467 (0.220-9.791)</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>Not surveyed</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>Voluntary</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>Both</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td>NA</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once/yr or less</td>
<td>63</td>
<td>7.4</td>
<td>0.797 (1.296-4.912)</td>
</tr>
<tr>
<td>&gt;Once/yr to &lt;once/mo</td>
<td>209</td>
<td>24.7</td>
<td>6.816 (1.506-30.85)</td>
</tr>
<tr>
<td>&gt;Once/mo</td>
<td>576</td>
<td>67.9</td>
<td>5.294 (1.389-20.18)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>270</td>
<td>31.8</td>
<td>0.741 (0.449-1.216)</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>578</td>
<td>68.2</td>
<td>0.649 (0.214-1.966)</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>192</td>
<td>22.7</td>
<td>0.667 (0.367-1.202)</td>
</tr>
<tr>
<td>Less than daily</td>
<td>342</td>
<td>40.3</td>
<td>6.120 (1.553-24.12)</td>
</tr>
<tr>
<td>None</td>
<td>314</td>
<td>37.0</td>
<td>1.340 (0.449-3.996)</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>354</td>
<td>41.7</td>
<td>0.067 (0.021-0.226)</td>
</tr>
<tr>
<td>No</td>
<td>494</td>
<td>58.3</td>
<td>0.802 (0.266-2.413)</td>
</tr>
<tr>
<td><strong>Fruit servings/d</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1/day</td>
<td>454</td>
<td>53.5</td>
<td>1.000 (1.000-1.000)</td>
</tr>
<tr>
<td>2-4/day</td>
<td>307</td>
<td>36.2</td>
<td>0.522 (0.149-1.826)</td>
</tr>
<tr>
<td>5 or greater/day</td>
<td>87</td>
<td>10.3</td>
<td>0.731 (0.181-2.957)</td>
</tr>
<tr>
<td><strong>Vegetable servings/d</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>N</td>
<td>%</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Caffeine Consumption</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1/day</td>
<td>801</td>
<td>94.5</td>
<td>1</td>
</tr>
<tr>
<td>2-4/day</td>
<td>38</td>
<td>4.4</td>
<td>0.606</td>
</tr>
<tr>
<td>5 or greater/day</td>
<td>10</td>
<td>1.1</td>
<td>small N</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>131</td>
<td>15.5</td>
<td>1</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>369</td>
<td>43.5</td>
<td>0.172</td>
</tr>
<tr>
<td>&gt;30</td>
<td>337</td>
<td>39.7</td>
<td></td>
</tr>
<tr>
<td><strong>Waist Circumference (cm)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>46</td>
<td>5.4</td>
<td>1</td>
</tr>
<tr>
<td>&gt;80 to &lt;90</td>
<td>132</td>
<td>15.6</td>
<td>0.023</td>
</tr>
<tr>
<td>&gt;90</td>
<td>670</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td><strong>Hip Circumference (cm)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>41</td>
<td>4.8</td>
<td>1</td>
</tr>
<tr>
<td>&gt;=90 to &lt;100</td>
<td>220</td>
<td>26</td>
<td>0.703</td>
</tr>
<tr>
<td>&gt;=100</td>
<td>587</td>
<td>69.2</td>
<td></td>
</tr>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>801</td>
<td>94.5</td>
<td>1</td>
</tr>
<tr>
<td>Yes</td>
<td>47</td>
<td>5.5</td>
<td>0.959</td>
</tr>
</tbody>
</table>
Table S14: Undiagnosed hypertension by participant characteristics in Mexico (N=497).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>144</td>
<td>29</td>
</tr>
<tr>
<td>40 to 59</td>
<td>239</td>
<td>48</td>
</tr>
<tr>
<td>60 to 79</td>
<td>101</td>
<td>20.3</td>
</tr>
<tr>
<td>&gt;80</td>
<td>14</td>
<td>2.8</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>266</td>
<td>53.6</td>
</tr>
<tr>
<td>Female</td>
<td>231</td>
<td>46.4</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>387</td>
<td>77.9</td>
</tr>
<tr>
<td>Rural</td>
<td>110</td>
<td>22.1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>81</td>
<td>16.4</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>134</td>
<td>26.9</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>93</td>
<td>18.8</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>55</td>
<td>11</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>134</td>
<td>26.9</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>287</td>
<td>57.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>170</td>
<td>34.3</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>Insurance</td>
<td>Mandatory</td>
<td>Not surveyed</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Healthcare visits/yr</td>
<td>once/yr or less</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>&gt;once/mo</td>
<td>355</td>
</tr>
</tbody>
</table>

| Marital status      | Single/divorced/widowed | 152 | 30.5 | Married/cohabiting | 345 | 69.5 | 0.667 | 1 [Reference] |
|                     |                         |    |      |                   |     |      | 0.514 (0.164-1.612) |

| Tobacco smoking     | Daily | 126 | 25.3 | Less than daily   | 234 | 47   | 0.020 | 2.005 (0.465-8.643) |
|                     | None  | 138 | 27.7 |                     |     |      | 0.745 (0.277-2.007) |

| Current alcohol use | Yes   | 216 | 43.4 |                     |     |      | 0.696 | 1 [Reference] |
|                     | No    | 281 | 56.6 |                     |     |      | 1.367 (0.568-3.293) |

| BMI (kg/m^2)        | >18.5 to <25 | 532.9 | 57 | >25 to <30 | 306.7 | 32.8 | 0.074 | 0.431 (0.158-1.176) |
|                     | >30    | 95.7  | 10.2 |                     |     |      | 23.40 (3.799-144.1) |

<p>| Waist circumference (cm) | &lt;80 | 24 | 4.8 | 0.991 | 1 [Reference] |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Mean Hip Circumference (cm)</th>
<th>95% CI</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥80 to &lt;90</td>
<td>82</td>
<td>16.6</td>
<td>0.0147 (0.0013-0.162)</td>
<td></td>
</tr>
<tr>
<td>≥90</td>
<td>391</td>
<td>78.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip Circumference (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>27</td>
<td>5.5</td>
<td>1 [Reference]</td>
<td>0.058</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>156</td>
<td>31.3</td>
<td>1.974 (0.421-9.255)</td>
<td></td>
</tr>
<tr>
<td>≥100</td>
<td>314</td>
<td>63.2</td>
<td>0.462 (0.0609-3.506)</td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>470</td>
<td>94.6</td>
<td>0.875</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>5.4</td>
<td>1.779 (0.237-13.35)</td>
<td></td>
</tr>
</tbody>
</table>
Table S15: Untreated hypertension by participant characteristics in Mexico ($N=615$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>186</td>
<td>30.3</td>
</tr>
<tr>
<td>40 to 59</td>
<td>279</td>
<td>45.4</td>
</tr>
<tr>
<td>60 to 79</td>
<td>127</td>
<td>20.6</td>
</tr>
<tr>
<td>&gt;80</td>
<td>23</td>
<td>3.7</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>306</td>
<td>49.8</td>
</tr>
<tr>
<td>Female</td>
<td>309</td>
<td>50.2</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>488</td>
<td>79.3</td>
</tr>
<tr>
<td>Rural</td>
<td>127</td>
<td>20.7</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>96</td>
<td>15.6</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>140</td>
<td>22.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>113</td>
<td>18.3</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>107</td>
<td>17.4</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>159</td>
<td>25.9</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>342</td>
<td>55.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>225</td>
<td>36.6</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>47</td>
<td>7.7</td>
</tr>
<tr>
<td>Insur ance</td>
<td>Mandatory</td>
<td>Not surveyed</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Healthcare visits/yr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>45</td>
<td>7.3</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>138</td>
<td>22.4</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>432</td>
<td>70.3</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>182</td>
<td>29.6</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>433</td>
<td>70.4</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>144</td>
<td>23.4</td>
</tr>
<tr>
<td>Less than daily</td>
<td>307</td>
<td>50</td>
</tr>
<tr>
<td>None</td>
<td>164</td>
<td>26.6</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>265</td>
<td>43.1</td>
</tr>
<tr>
<td>No</td>
<td>350</td>
<td>56.9</td>
</tr>
<tr>
<td>BMI (kg/m^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>184.2</td>
<td>15.5</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>552.5</td>
<td>46.6</td>
</tr>
<tr>
<td>&gt;30</td>
<td>434.1</td>
<td>36.6</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>33</td>
<td>5.4</td>
</tr>
<tr>
<td>&gt;80 to &lt;90</td>
<td>93</td>
<td>15.2</td>
</tr>
<tr>
<td>-------------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>&gt;90</td>
<td>488</td>
<td>79.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th>&lt;90</th>
<th>36</th>
<th>5.9</th>
<th>1 [Reference]</th>
<th>9.463 (0.530-169.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;90 to &lt;100</td>
<td>176</td>
<td>28.6</td>
<td>0.012</td>
<td>19.09 (1.893-192.6)</td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>403</td>
<td>65.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>No</th>
<th>579</th>
<th>94.1</th>
<th>0.566</th>
<th>1 [Reference]</th>
<th>0.643 (0.0850-4.859)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36</td>
<td></td>
<td>5.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S16: Uncontrolled hypertension by participant characteristics in Mexico ($N=746$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>188</td>
<td>25.2</td>
</tr>
<tr>
<td>40 to 59</td>
<td>330</td>
<td>44.2</td>
</tr>
<tr>
<td>60 to 79</td>
<td>193</td>
<td>25.9</td>
</tr>
<tr>
<td>&gt;80</td>
<td>35</td>
<td>4.7</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>365</td>
<td>48.9</td>
</tr>
<tr>
<td>Female</td>
<td>381</td>
<td>51.1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>571</td>
<td>76.5</td>
</tr>
<tr>
<td>Rural</td>
<td>175</td>
<td>23.5</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>117</td>
<td>15.7</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>169</td>
<td>22.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>139</td>
<td>18.6</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>121</td>
<td>16.2</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>200</td>
<td>26.8</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>430</td>
<td>57.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>240</td>
<td>32.1</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>76</td>
<td>10.2</td>
</tr>
</tbody>
</table>

HTN in Middle Income Countries  Appendix Page 50 of 76
### Insurance

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory</td>
<td>746</td>
<td>100</td>
</tr>
<tr>
<td>Voluntary</td>
<td>746</td>
<td>100</td>
</tr>
<tr>
<td>Both</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Healthcare visits/yr

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once/yr or less</td>
<td>59</td>
<td>7.9</td>
</tr>
<tr>
<td>&gt; Once/yr to &lt; 1</td>
<td>155</td>
<td>20.8</td>
</tr>
<tr>
<td>&gt; Once/mo</td>
<td>532</td>
<td>71.3</td>
</tr>
</tbody>
</table>

| Reference       | 1     | 0.788 (0.138-4.488) |
|                 | 0.032 | 3.979 (0.654-24.21) |

### Marital status

<table>
<thead>
<tr>
<th>Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/divorced/widowed</td>
<td>234</td>
<td>31.4</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>512</td>
<td>68.6</td>
</tr>
</tbody>
</table>

| Reference       | 1     | 0.554 (0.0706-4.355) |
|                 | 0.761 | 0.554 (0.0706-4.355) |

### Tobacco smoking

<table>
<thead>
<tr>
<th>Smoking Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>178</td>
<td>23.8</td>
</tr>
<tr>
<td>Less than daily</td>
<td>280</td>
<td>37.5</td>
</tr>
<tr>
<td>None</td>
<td>289</td>
<td>38.7</td>
</tr>
</tbody>
</table>

| Reference       | 1     | 0.221 (0.0488-1.000) |
|                 | 0.576 | 0.468 (0.112-1.947) |

### Current alcohol use

<table>
<thead>
<tr>
<th>Alcohol Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>332</td>
<td>44.5</td>
</tr>
<tr>
<td>No</td>
<td>414</td>
<td>55.5</td>
</tr>
</tbody>
</table>

| Reference       | 1     | 0.342 (0.108-1.087) |
|                 | 0.025 | 0.342 (0.108-1.087) |

### BMI (kg/m^2)

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 18.5 to &lt; 25</td>
<td>107</td>
<td>14.4</td>
</tr>
<tr>
<td>&gt; 25 to &lt; 30</td>
<td>331</td>
<td>44.4</td>
</tr>
<tr>
<td>&gt; 30</td>
<td>297</td>
<td>39.8</td>
</tr>
</tbody>
</table>

| Reference       | 1     | 0.766 (0.172-3.410) |
|                 | 0.583 | 1.674 (0.262-10.68) |

### Waist circumference (cm)

<table>
<thead>
<tr>
<th>Waist Circumference</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80</td>
<td>59</td>
<td>4.1</td>
</tr>
<tr>
<td>&gt; 80 to &lt; 90</td>
<td>232</td>
<td>16.1</td>
</tr>
</tbody>
</table>

<p>| Reference       | 1     | 1.689 (0.192- |
|                 | 0.230 | 1.689 (0.192- |</p>
<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>60</td>
<td>4.3</td>
<td>1.832 (0.0657-51.03)</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>382</td>
<td>27.2</td>
<td>0.908</td>
</tr>
<tr>
<td>≥100</td>
<td>959</td>
<td>68.5</td>
<td>0.250 (0.00754-8.293)</td>
</tr>
<tr>
<td>Exercised</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>137</td>
<td>0</td>
<td>95.2</td>
</tr>
<tr>
<td>Yes</td>
<td>70</td>
<td>4.8</td>
<td>0.0896 (0.0110-0.728)</td>
</tr>
</tbody>
</table>
Table S17: Hypertension prevalence by participant characteristics in Russia (N=4,355).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>166</td>
<td>7.3</td>
</tr>
<tr>
<td>40 to 59</td>
<td>938</td>
<td>41.3</td>
</tr>
<tr>
<td>60 to 79</td>
<td>999</td>
<td>44</td>
</tr>
<tr>
<td>&gt;80</td>
<td>170</td>
<td>7.5</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>933</td>
<td>41.1</td>
</tr>
<tr>
<td>Female</td>
<td>133</td>
<td>7.5</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>167</td>
<td>7.3</td>
</tr>
<tr>
<td>Rural</td>
<td>592</td>
<td>26.1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>306</td>
<td>13.5</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>411</td>
<td>18.1</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>445</td>
<td>19.6</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>520</td>
<td>22.9</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>588</td>
<td>25.9</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>152</td>
<td>6.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>174</td>
<td>3.7</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>375</td>
<td>16.5</td>
</tr>
<tr>
<td>Insurance</td>
<td>Mandatory 224</td>
<td>Voluntary 9</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Healthcare visits/yr</td>
<td>once/yr or less 558</td>
<td>&gt;once/yr to &lt;once/mo 815</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single/divorced/widowed 883</td>
<td>Married/cohabitating 138</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td>Daily 125</td>
<td>&lt;less than daily 166</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td>Yes 120</td>
<td>No 106</td>
</tr>
<tr>
<td>Fruit servings/d</td>
<td>0-1/day 156</td>
<td>2-4/day 611</td>
</tr>
<tr>
<td>Vegetable servings/d</td>
<td>2-4/day</td>
<td>5 or greater/day</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>0-1/day</td>
<td>214</td>
<td>8</td>
</tr>
<tr>
<td>2-4/day</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>5 or greater/day</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI (kg/m^2)</th>
<th></th>
<th></th>
<th></th>
<th>( p ) Value</th>
<th>[Reference]</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>437</td>
<td></td>
<td>19.2</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>789</td>
<td></td>
<td>34.7</td>
<td>1.583 (1.090-2.300)</td>
<td></td>
</tr>
<tr>
<td>&gt;30</td>
<td>888</td>
<td></td>
<td>39.1</td>
<td>3.746 (2.069-6.783)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waist circumference (cm)</th>
<th></th>
<th></th>
<th></th>
<th>( p ) Value</th>
<th>[Reference]</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80</td>
<td>325</td>
<td></td>
<td>14.3</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt;80 to &lt;90</td>
<td>397</td>
<td></td>
<td>17.5</td>
<td>1.228 (0.812-1.856)</td>
<td></td>
</tr>
<tr>
<td>&gt;90</td>
<td>154</td>
<td>8</td>
<td>68.2</td>
<td>2.080 (1.228-3.524)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th></th>
<th></th>
<th></th>
<th>( p ) Value</th>
<th>[Reference]</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>216</td>
<td></td>
<td>9.5</td>
<td>&lt;0.001</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>&gt;90 to &lt;100</td>
<td>402</td>
<td></td>
<td>17.7</td>
<td>1.026 (0.657-1.601)</td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>165</td>
<td>3</td>
<td>72.8</td>
<td>0.710 (0.386-1.306)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th></th>
<th></th>
<th></th>
<th>( p ) Value</th>
<th>[Reference]</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>205</td>
<td>4</td>
<td>90.5</td>
<td>0.001</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Yes</td>
<td>216</td>
<td></td>
<td>9.5</td>
<td>0.796 (0.545-1.162)</td>
<td></td>
</tr>
</tbody>
</table>
Table S18: Undiagnosed hypertension by participant characteristics in Russia ($N=683$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>261</td>
<td>11.5</td>
</tr>
<tr>
<td>40 to 59</td>
<td>106</td>
<td>2</td>
</tr>
<tr>
<td>60 to 79</td>
<td>770</td>
<td>33.9</td>
</tr>
<tr>
<td>≥80</td>
<td>175</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>116</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>111</td>
<td>0</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>173</td>
<td>7</td>
</tr>
<tr>
<td>Rural</td>
<td>533</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>413</td>
<td>18.2</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>370</td>
<td>16.3</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>452</td>
<td>19.9</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>579</td>
<td>25.5</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>459</td>
<td>20.2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>175</td>
<td>7.7</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>170</td>
<td>75.1</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>390</td>
<td>17.2</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>224</td>
<td>98.7</td>
</tr>
<tr>
<td>Voluntary</td>
<td>14</td>
<td>0.6</td>
</tr>
<tr>
<td>Both</td>
<td>5</td>
<td>0.2</td>
</tr>
<tr>
<td>None</td>
<td>14</td>
<td>0.6</td>
</tr>
<tr>
<td>Healthcare visits/yr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>565</td>
<td>24.9</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>418</td>
<td>18.4</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>128</td>
<td>56.8</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>772</td>
<td>34</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>149</td>
<td>66</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>130</td>
<td>57.4</td>
</tr>
<tr>
<td>Less than daily</td>
<td>120</td>
<td>5.3</td>
</tr>
<tr>
<td>None</td>
<td>849</td>
<td>37.4</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>152</td>
<td>67.2</td>
</tr>
<tr>
<td>No</td>
<td>745</td>
<td>32.8</td>
</tr>
<tr>
<td>BMI (kg/m^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>235.</td>
<td>27.2</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>375.</td>
<td>43.4</td>
</tr>
</tbody>
</table>

HTN in Middle Income Countries  Appendix Page 57 of 76
| Waist circumference (cm) | <80 | 468 | 20.6 | 1 [Reference] | <0.00 | 1 | 0.306 (0.0990-0.946) | 0.113 (0.0267-0.475) |
| | ≥80 to <90 | 558 | 24.6 | | | | 2.937 (0.889-9.707) | 4.250 (0.902-20.02) |
| | ≥90 | 124 | 54.8 | | | | 4.250 (0.902-20.02) | |
| Hip circumference (cm) | <90 | 415 | 18.3 | 1 [Reference] | <0.00 | 1 | 0.306 (0.0990-0.946) | 0.113 (0.0267-0.475) |
| | ≥90 to <100 | 588 | 25.9 | | | | 2.937 (0.889-9.707) | 4.250 (0.902-20.02) |
| | ≥100 | 126 | 55.8 | | | | 4.250 (0.902-20.02) | |
| Exercise | No | 201 | 88.7 | | | | 4.250 (0.902-20.02) | |
| | Yes | 257 | 11.3 | | | | 4.250 (0.902-20.02) | |
Table S19: Untreated hypertension by participant characteristics in Russia (N=804).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>97</td>
<td>12.1</td>
</tr>
<tr>
<td>40 to 59</td>
<td>387</td>
<td>48.1</td>
</tr>
<tr>
<td>60 to 79</td>
<td>263</td>
<td>32.7</td>
</tr>
<tr>
<td>≥80</td>
<td>57</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>389</td>
<td>48.4</td>
</tr>
<tr>
<td>Female</td>
<td>415</td>
<td>51.6</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>617</td>
<td>76.8</td>
</tr>
<tr>
<td>Rural</td>
<td>186</td>
<td>23.2</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>145</td>
<td>18</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>143</td>
<td>17.8</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>151</td>
<td>18.8</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>190</td>
<td>23.6</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>175</td>
<td>21.8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>57</td>
<td>7.1</td>
</tr>
<tr>
<td>Secondary</td>
<td>610</td>
<td>75.9</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>137</td>
<td>17</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>793</td>
<td>98.7</td>
</tr>
<tr>
<td>Voluntary</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>Both</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>193</td>
<td>24</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>164</td>
<td>20.4</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>448</td>
<td>55.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>290</td>
<td>36.1</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>513</td>
<td>63.9</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>501</td>
<td>62.4</td>
</tr>
<tr>
<td>Less than daily</td>
<td>42</td>
<td>5.2</td>
</tr>
<tr>
<td>None</td>
<td>260</td>
<td>32.4</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>552</td>
<td>68.7</td>
</tr>
<tr>
<td>No</td>
<td>252</td>
<td>31.3</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>265.6</td>
<td>25.9</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>431.2</td>
<td>42.1</td>
</tr>
<tr>
<td>&gt;30</td>
<td>283.1</td>
<td>27.6</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>149</td>
<td>18.6</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>&lt;80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>194</td>
<td>24.1</td>
</tr>
<tr>
<td>≥90</td>
<td>461</td>
<td>57.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th>132</th>
<th>16.4</th>
<th>&lt;0.001</th>
<th>1 [Reference]</th>
<th>0.475 (0.119-1.896)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>194</td>
<td>24.2</td>
<td></td>
<td></td>
<td>0.290 (0.0616-1.368)</td>
</tr>
<tr>
<td>≥100</td>
<td>477</td>
<td>59.4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>706</th>
<th>87.8</th>
<th>0.190</th>
<th>1 [Reference]</th>
<th>6.653 (2.057-21.52)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>98</td>
<td>12.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S20: Uncontrolled hypertension by participant characteristics in Russia (N=1,884).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>130</td>
<td>6.9</td>
</tr>
<tr>
<td>40 to 59</td>
<td>744</td>
<td>39.5</td>
</tr>
<tr>
<td>60 to 79</td>
<td>865</td>
<td>45.9</td>
</tr>
<tr>
<td>&gt;80</td>
<td>145</td>
<td>7.7</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>814</td>
<td>43.2</td>
</tr>
<tr>
<td>Female</td>
<td>107</td>
<td>0</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>137</td>
<td>73.2</td>
</tr>
<tr>
<td>Rural</td>
<td>505</td>
<td>26.8</td>
</tr>
<tr>
<td>Income Quintile 1</td>
<td>283</td>
<td>15</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>339</td>
<td>18</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>365</td>
<td>19.4</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>439</td>
<td>23.3</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>458</td>
<td>24.3</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>136</td>
<td>7.2</td>
</tr>
<tr>
<td>Secondary</td>
<td>145</td>
<td>1</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>298</td>
<td>15.8</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>186</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>98.7</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Voluntary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voluntary</td>
<td>8</td>
<td>0.4</td>
</tr>
<tr>
<td>Both</td>
<td>11</td>
<td>0.6</td>
</tr>
<tr>
<td>None</td>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>437</td>
<td>23.2</td>
</tr>
<tr>
<td>&gt;once/yr to ≤ once/mo</td>
<td>659</td>
<td>35</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>788</td>
<td>41.8</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>729</td>
<td>38.7</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>115</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>997</td>
<td>52.9</td>
</tr>
<tr>
<td>Less than daily</td>
<td>164</td>
<td>8.7</td>
</tr>
<tr>
<td>None</td>
<td>723</td>
<td>38.4</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>999</td>
<td>53</td>
</tr>
<tr>
<td>No</td>
<td>885</td>
<td>47</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>367</td>
<td>19.5</td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>654</td>
<td>34.7</td>
</tr>
<tr>
<td>≥30</td>
<td>722</td>
<td>38.3</td>
</tr>
<tr>
<td><strong>Waist circumference (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>262</td>
<td>13.9</td>
</tr>
<tr>
<td>&gt;80 to &lt;90</td>
<td>333</td>
<td>17.7</td>
</tr>
<tr>
<td>≥90</td>
<td>128</td>
<td>68.4</td>
</tr>
<tr>
<td><strong>Hip circumference (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>200</td>
<td>10.6</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>337</td>
<td>17.9</td>
</tr>
<tr>
<td>≥100</td>
<td>134</td>
<td>71.5</td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>----------</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>173</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>91.9</td>
<td>8.1</td>
</tr>
</tbody>
</table>

[Reference]
Table S21: Hypertension prevalence by participant characteristics in South Africa ($N=4,223$).

| Characteristic | Unadjusted | Adjusted
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>569</td>
<td>27</td>
</tr>
<tr>
<td>40 to 59</td>
<td>113</td>
<td>4</td>
</tr>
<tr>
<td>60 to 79</td>
<td>360</td>
<td>17.1</td>
</tr>
<tr>
<td>&gt;80</td>
<td>44</td>
<td>2.1</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>106</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>104</td>
<td>1</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>139</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>716</td>
<td>34</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>360</td>
<td>17.1</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>415</td>
<td>19.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>516</td>
<td>24.5</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>407</td>
<td>19.3</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>409</td>
<td>19.4</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>898</td>
<td>42.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>109</td>
<td>8</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>112</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>175</td>
<td>8.3</td>
</tr>
<tr>
<td>Voluntary</td>
<td>112</td>
<td>5.3</td>
</tr>
<tr>
<td>Both</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>178</td>
<td>84.5</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>316</td>
<td>15</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;once/mo</td>
<td>531</td>
<td>25.2</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>126</td>
<td>59.8</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>910</td>
<td>43.2</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>119</td>
<td>56.8</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>131</td>
<td>1</td>
</tr>
<tr>
<td>Less than daily</td>
<td>533</td>
<td>25.3</td>
</tr>
<tr>
<td>None</td>
<td>263</td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>142</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>685</td>
<td>32.5</td>
</tr>
<tr>
<td><strong>Fruit servings/d</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1/day</td>
<td>107</td>
<td>8</td>
</tr>
<tr>
<td>2-4/day</td>
<td>759</td>
<td>36</td>
</tr>
<tr>
<td>5 or greater/day</td>
<td>270</td>
<td>12.8</td>
</tr>
<tr>
<td><strong>Vegetable servings/d</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1/day</td>
<td>189</td>
<td>90</td>
</tr>
<tr>
<td>Intake</td>
<td>Count</td>
<td>Mean</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>2-4/day</td>
<td>188</td>
<td>8.9</td>
</tr>
<tr>
<td>5 or greater/day</td>
<td>23</td>
<td>1.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI (kg/m²²)</th>
<th>Count</th>
<th>Mean</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>454</td>
<td>21.6</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>524</td>
<td>24.9</td>
<td>1.547 (0.259-9.225)</td>
</tr>
<tr>
<td>≥30</td>
<td>105</td>
<td>49.9</td>
<td>0.849 (0.110-6.519)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waist circumference (cm)</th>
<th>Count</th>
<th>Mean</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80</td>
<td>402</td>
<td>19.1</td>
<td>&lt;0.00 1</td>
</tr>
<tr>
<td>≥80 to &lt;90</td>
<td>365</td>
<td>17.3</td>
<td>0.276 (0.0581-1.314)</td>
</tr>
<tr>
<td>≥90</td>
<td>134</td>
<td>63.6</td>
<td>0.410 (0.0673-2.500)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th>Count</th>
<th>Mean</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>360</td>
<td>17.1</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>436</td>
<td>20.7</td>
<td>8.053 (1.211-53.57)</td>
</tr>
<tr>
<td>&gt;=100</td>
<td>131</td>
<td>62.3</td>
<td>3.525 (0.412-30.13)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Count</th>
<th>Mean</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>183</td>
<td>87.2</td>
<td>0.967 1 [Reference]</td>
</tr>
<tr>
<td>Yes</td>
<td>270</td>
<td>12.8</td>
<td>11.05 (0.805-151.5)</td>
</tr>
</tbody>
</table>
Table S22: Undiagnosed hypertension by participant characteristics in South Africa ($N=1,705$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>678</td>
<td>32.2</td>
</tr>
<tr>
<td>40 to 59</td>
<td>1157</td>
<td>54.9</td>
</tr>
<tr>
<td>60 to 79</td>
<td>238</td>
<td>11.3</td>
</tr>
<tr>
<td>&gt;80</td>
<td>32</td>
<td>1.5</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1165</td>
<td>55.3</td>
</tr>
<tr>
<td>Female</td>
<td>942</td>
<td>44.7</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1353</td>
<td>64.2</td>
</tr>
<tr>
<td>Rural</td>
<td>754</td>
<td>35.8</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>386</td>
<td>18.3</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>434</td>
<td>20.6</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>535</td>
<td>25.4</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>383</td>
<td>18.2</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>369</td>
<td>17.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>839</td>
<td>39.8</td>
</tr>
<tr>
<td>Secondary</td>
<td>1150</td>
<td>54.6</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>Proportion</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>118</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>171</td>
<td>8.1</td>
</tr>
<tr>
<td>Voluntary</td>
<td>86</td>
<td>4.1</td>
</tr>
<tr>
<td>Both</td>
<td>29</td>
<td>1.4</td>
</tr>
<tr>
<td>None</td>
<td>1818</td>
<td>86.3</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>346</td>
<td>16.4</td>
</tr>
<tr>
<td>&gt;once/yr to &lt;once/mo</td>
<td>358</td>
<td>17</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>1405</td>
<td>66.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>917</td>
<td>43.5</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>1190</td>
<td>56.5</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>1285</td>
<td>61</td>
</tr>
<tr>
<td>Less than daily</td>
<td>609</td>
<td>28.9</td>
</tr>
<tr>
<td>None</td>
<td>213</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>Current alcohol use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1466</td>
<td>69.6</td>
</tr>
<tr>
<td>No</td>
<td>641</td>
<td>30.4</td>
</tr>
<tr>
<td><strong>BMI (kg/m^2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>564.5</td>
<td>23.3</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>627.9</td>
<td>25.9</td>
</tr>
<tr>
<td>≥30</td>
<td>1,139</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>2.050</td>
</tr>
<tr>
<td>----------------</td>
<td>----</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Hip circumference (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;90</td>
<td>388</td>
<td>18.4</td>
</tr>
<tr>
<td>≥90 to &lt;100</td>
<td>466</td>
<td>22.1</td>
</tr>
<tr>
<td>≥100</td>
<td>1254</td>
<td>59.5</td>
</tr>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1831</td>
<td>86.9</td>
</tr>
<tr>
<td>Yes</td>
<td>276</td>
<td>13.1</td>
</tr>
</tbody>
</table>

| **Waist circumference (cm)** |     |       |               |
| <80            | 430 | 20.4  | 0.240         |
| ≥80 to <90    | 360 | 17.1  | 0.391 (0.0930- 1.644) |
| ≥90           | 1317| 62.5  | 0.160 (0.0366- 0.695) |
Table S23: Untreated hypertension by participant characteristics in South Africa (N=1,755).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>558</td>
<td>31.8</td>
</tr>
<tr>
<td>40 to 59</td>
<td>958</td>
<td>54.6</td>
</tr>
<tr>
<td>60 to 79</td>
<td>209</td>
<td>11.9</td>
</tr>
<tr>
<td>&gt;80</td>
<td>30</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>953</td>
<td>54.3</td>
</tr>
<tr>
<td>Female</td>
<td>802</td>
<td>45.7</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1130</td>
<td>64.4</td>
</tr>
<tr>
<td>Rural</td>
<td>625</td>
<td>35.6</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>316</td>
<td>18</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>363</td>
<td>20.7</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>437</td>
<td>24.9</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>328</td>
<td>18.7</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>311</td>
<td>17.7</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>707</td>
<td>40.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>951</td>
<td>54.2</td>
</tr>
<tr>
<td>Category</td>
<td>Value 1</td>
<td>Value 2</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Tertiary or more</strong></td>
<td>97</td>
<td>5.5</td>
</tr>
<tr>
<td>Insuranc e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandatory</td>
<td>139</td>
<td>7.9</td>
</tr>
<tr>
<td>Voluntary</td>
<td>79</td>
<td>4.5</td>
</tr>
<tr>
<td>Both</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1502</td>
<td>85.6</td>
</tr>
<tr>
<td><strong>Healthcare visits/yr</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once/yr or less</td>
<td>284</td>
<td>16.2</td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>302</td>
<td>17.2</td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>1169</td>
<td>66.6</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced/widowed</td>
<td>763</td>
<td>43.5</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>992</td>
<td>56.5</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>1074</td>
<td>61.2</td>
</tr>
<tr>
<td>Less than daily</td>
<td>491</td>
<td>28</td>
</tr>
<tr>
<td>None</td>
<td>190</td>
<td>10.8</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1209</td>
<td>68.9</td>
</tr>
<tr>
<td>No</td>
<td>546</td>
<td>31.1</td>
</tr>
<tr>
<td>BMI (kg/m^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥18.5 to &lt;25</td>
<td>585.6</td>
<td>23</td>
</tr>
<tr>
<td>≥25 to &lt;30</td>
<td>655.1</td>
<td>25.7</td>
</tr>
<tr>
<td>≥30</td>
<td>1,212</td>
<td>47.6</td>
</tr>
</tbody>
</table>

HTN in Middle Income Countries  
Appendix Page 72 of 76
<table>
<thead>
<tr>
<th>Waist circumference (cm)</th>
<th>&lt;80</th>
<th>351</th>
<th>20</th>
<th>1 [Reference]</th>
<th>0.905 (0.204-4.021)</th>
<th>0.274</th>
<th>0.275 (0.0758-1.000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;80 to &lt;90</td>
<td>302</td>
<td>17.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;90</td>
<td>1102</td>
<td>62.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip circumference (cm)</td>
<td>&lt;90</td>
<td>316</td>
<td>18</td>
<td>1 [Reference]</td>
<td>12.14 (2.621-56.27)</td>
<td>0.034</td>
<td>0.533 (0.0888-3.201)</td>
</tr>
<tr>
<td></td>
<td>&gt;90 to &lt;100</td>
<td>384</td>
<td>21.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;100</td>
<td>1055</td>
<td>60.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>No</td>
<td>1529</td>
<td>87.1</td>
<td>1 [Reference]</td>
<td>0.880</td>
<td>0.602 (0.111-3.250)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>226</td>
<td>12.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table S24: Uncontrolled hypertension by participant characteristics in South Africa ($N=2,023$).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unadjusted</th>
<th>Adjusted Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% of sample</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>560</td>
<td>27.7</td>
</tr>
<tr>
<td>40 to 59</td>
<td>109</td>
<td>8</td>
</tr>
<tr>
<td>60 to 79</td>
<td>324</td>
<td>16</td>
</tr>
<tr>
<td>&gt;80</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>103</td>
<td>51.3</td>
</tr>
<tr>
<td>Female</td>
<td>985</td>
<td>48.7</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>132</td>
<td>65.3</td>
</tr>
<tr>
<td>Rural</td>
<td>702</td>
<td>34.7</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile 1</td>
<td>354</td>
<td>17.5</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>403</td>
<td>19.9</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>498</td>
<td>24.6</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>380</td>
<td>18.8</td>
</tr>
<tr>
<td>Quintile 5</td>
<td>388</td>
<td>19.2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or less</td>
<td>848</td>
<td>41.9</td>
</tr>
<tr>
<td>Secondary</td>
<td>106</td>
<td>6</td>
</tr>
<tr>
<td>Tertiary or more</td>
<td>107</td>
<td>5.3</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Mandatory</td>
<td>168</td>
<td>8.3</td>
</tr>
<tr>
<td>Voluntary</td>
<td>103</td>
<td>5.1</td>
</tr>
<tr>
<td>Both</td>
<td>36</td>
<td>1.8</td>
</tr>
<tr>
<td>None</td>
<td>171</td>
<td>84.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Healthcare visits/yr</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>once/yr or less</td>
<td>309</td>
<td>15.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;once/yr to &lt; once/mo</td>
<td>479</td>
<td>23.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;once/mo</td>
<td>123</td>
<td>61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital status</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/divorced/widowed</td>
<td>870</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/cohabitation</td>
<td>115</td>
<td>3</td>
<td>57</td>
<td>1.098 (0.191-6.305)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tobacco smoking</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>125</td>
<td>61.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than daily</td>
<td>526</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>245</td>
<td>12.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current alcohol use</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>137</td>
<td>67.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>649</td>
<td>32.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI (kg/m^2)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;18.5 to &lt;25</td>
<td>445</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;25 to &lt;30</td>
<td>506</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥30</td>
<td>999</td>
<td>49.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[Reference]</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>3.024 (0.0950-96.24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.177</td>
<td></td>
<td>0.211 (0.00391-11.35)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.251 (0.156-67.58)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.009</td>
<td>0.771 (0.0761-7.809)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.727 (0.0439-12.02)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.469</td>
<td>1.098 (0.191-6.305)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.783</td>
<td>0.729 (0.0458-11.61)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.670 (0.0807-5.569)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.384</td>
<td>0.457 (0.0963-2.164)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.024</td>
<td>8.735 (1.399-54.54)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.559 (0.0735-4.254)</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>&lt;80</td>
<td>392</td>
<td>19.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;80 to &lt;90</td>
<td>352</td>
<td>17.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;90</td>
<td>128</td>
<td>0</td>
<td>63.3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hip circumference (cm)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;90</td>
<td>352</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>&gt;90 to &lt;100</td>
<td>419</td>
<td>20.7</td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>125</td>
<td>0</td>
<td>61.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercis e</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>176</td>
<td>0</td>
<td>87</td>
</tr>
<tr>
<td>Yes</td>
<td>263</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

1 [Reference] 0.184 (0.00651-5.192) 0.193 (0.00882-4.220) 0.049 0.284 (0.00140-57.61) 0.0176 (0.0000938-3.314) 0.348 0.156 (0.0109-2.230)