Explanatory Notes for 2025 Hypertension Profiles

PROFILE HEADER

Total population (2024): The total population estimates for the year 2024 were taken from the most recent United Nations Population Division World Population Prospects ***(1)***. Data were rounded to two to four significant digits depending on the value.

HYPERTENSION PREVALENCE AND RELATED GRAPHS AND STATEMENTS

Prevalence of hypertension among adults aged 30-79 years (2024): Prevalence of hypertension (defined as having systolic blood pressure (SBP) ≥140 mmHg, diastolic blood pressure (DBP) ≥90 mmHg, or taking medication for hypertension) among adults aged 30–79. A total of 1,201 population-based studies that included measured blood pressure and data on blood pressure treatment in 104 million individuals aged 30–79 years were used to estimate trends in hypertension and hypertension diagnosis, treatment and control from 1990 to 2019. Full details of input and data methods are available in the related publication ***(2)***. To obtain estimates for 2024, the prevalence of hypertension was projected assuming trends 2010-2019 continue. To do so, a regression was fit for each Bayesian model iteration, country, 5-year age group, and sex, with the probit of hypertension prevalence as the dependent variable, and year as the independent variable. The regression was used to predict hypertension prevalence for each model iteration, country, age, sex and projection year. Crude prevalence of hypertension for adults aged 30-79 was obtained by weighting each age- and sex-specific prevalence by the relevant 2024 population from the United Nations Population Division World Population Prospects ***(1)***, to obtain crude prevalence estimates for each country, projection year and Bayesian iteration, for all adults aged 30-79***.*** Finally, estimates for each country and projection year were obtained by computing the mean of the crude prevalence value projected from each Bayesian iteration.

Prevalence of diagnosed, treated and controlled hypertension among adults aged 30-79 years with hypertension (2024): The percentage of adults aged 30-79 with hypertension (as defined above) with a previous diagnosis of hypertension, receiving treatment (taking medication for hypertension) and who have their hypertension under control (defined as taking medication for hypertension and having SBP <140mmHg and DBP <90mmHg). These estimates were calculated in the same modelling exercise noted above. The control rate shown in the country comparison graph is the same value in the graph above it and thus also shows the

percentage of adults aged 30-79 years with hypertension who have their hypertension under control.

Number of adults aged 30-79 years with hypertension, number of adults aged 30-79 years with hypertension who do not have the condition under control, who have diagnosed hypertension, treated hypertension or controlled hypertension (2024): The number of adults aged 30-79 with hypertension was computed by multiplying the projected age-sex specific prevalence rate for 2024 by the number of adults for the same age-sex group from the 2024 estimated population from the United Nations Population Division World Population Prospects, and then summing over all males and females in age groups 30-79 years of age *(1).* The number of adults aged 30-79 who do not have their hypertension under control, who have diagnosed hypertension, treated hypertension or controlled hypertension were computed by multiplying the prevalence of each indicator among people with hypertension by the estimated number of adults with hypertension for males and females in each age group 30-79 years of age.

Trends in hypertension disaggregated by diagnosis, treatment and control in adults aged 30-79 years (2000-2030): The numbers of adults aged 30-79 with undiagnosed hypertension, diagnosed hypertension, treated but not controlled hypertension and controlled hypertension were derived from the same modelling exercise noted above *(2)*. Projections from 2019 through 2030 were made assuming a continuation of past trends.

MORTALITY

Total deaths (2021): Mortality estimates for all deaths were taken from the WHO Global Health Estimates 2021 (*3*). Values were rounded to two to four significant digits depending on the value.

Probability of premature mortality from NCDs (2021): Percentage of 30-year-old-people who would die before their 70th birthday from any of cardiovascular diseases, cancer, diabetes or chronic respiratory diseases, assuming that s/he would experience current mortality rates at every age and s/he would not die from any other cause of death (e.g. injuries or HIV/AIDS). Probability of death between exact age 30 and exact age 70 was calculated using cause-specific mortality rates in each 5-year age group and standard life table methods. The estimates were derived from the WHO Global Health Estimates 2021 *(3)*. Vital registration systems which record deaths with sufficient completeness and quality of cause of death information were used as the preferred data source for the WHO Global Health Estimates 2021. In countries which do not have reliable vital registration systems that record causes of death, some NCD deaths were included in a separate

category called “other-pandemic-related mortality” in 2021. Estimates of NCD deaths in 2021 may be underestimated in these countries, which are marked with a dagger (†) in the header of this section. Estimates for countries without reliable vital registration systems should be interpreted with caution.

Cardiovascular disease deaths (2021): Mortality estimates for cardiovascular diseases were taken from the WHO Global Health Estimates 2021 *(3)*. Values were rounded to two to four significant digits depending on the value. As noted for the probability of premature mortality from NCDs indicator just above, estimates of cardiovascular deaths in 2021 may be underestimated in countries without reliable vital registration systems. These countries are marked with a dagger (†) in the header of this section.

Cardiovascular disease deaths attributable to high systolic blood pressure (2021): Percentage of cardiovascular deaths that would have been averted in 2021 if all adults had theoretical minimum risk level of systolic blood pressure, estimated to be in the range 110-115 mmHg. Estimates are from the Global Burden of Disease 2021 study *(4)*, and additional details on methods can be found in a related publication *(5)*.

RISK FACTORS

Mean population salt intake, adults aged 25+ years (g/day) (2021): Mean daily population salt intake, in grams/day, among adults aged 25+ years. Estimates for mean population sodium intake are from the Global Burden of Disease 2021 study *(6)*, and additional details on methods can be found in a related publication *(5).* Estimates were converted to salt intake by multiplying by 2.5.

Current tobacco use, adults aged 15+ (2022): The percentage of the population aged 15 years and over who currently use any tobacco product (smoked and/or smokeless tobacco). “Current” means either daily or non-daily (occasional) use at the time of the survey. Tobacco products include cigarettes, pipes, cigars, cigarillos, waterpipes (hookah, shisha), bidis, kretek, heated tobacco products, and all forms of smokeless (oral and nasal) tobacco. Tobacco products exclude products that do not contain tobacco, such as electronic nicotine delivery system (ENDS) of which e-cigarettes are a common type, as well as “e-cigars”, “e-hookahs”, JUUL and “e-pipes”. Estimates were based on a modelling process published elsewhere *(7)*. Estimates were produced only for countries who had at least two nationally representative population-based surveys with prevalence rates broken down by age and sex, completed from 1990-2022 (and if only two, they were at least two years apart), one of which was in the field since 2011. Twenty-nine countries did not meet these criteria and thus do not have any estimates. For 62

countries, the estimate only reflects tobacco smoking as there was insufficient survey data on all tobacco use. These are noted with a footnote on these countries' profiles *(8)*.

Obesity, adults aged 18+ years (2022): Prevalence of obesity (defined as having a body mass index ≥ 30 kg/m^2) among adults aged 18+ years. Based on measured height and weight. Input data and methods are described in the related publication *(9)*.

Total alcohol per capita consumption, adults aged 15+ years (litres) (2022): Total APC is defined as the total (sum of three-year average recorded and three-year average unrecorded APC, adjusted for three-year average tourist consumption) amount of alcohol consumed per adult (15+ years) over a calendar year, in litres of pure alcohol. Recorded alcohol consumption refers to official statistics (production, import, export, and sales or taxation data), while the unrecorded alcohol consumption refers to alcohol which is not taxed and is outside the usual system of governmental control. Tourist consumption takes into account tourists visiting the country and inhabitants visiting other countries. Positive figures denote alcohol consumption of outbound tourists being greater than alcohol consumption by inbound tourists, negative numbers the opposite. Tourist consumption is based on UN tourist statistics. Recorded alcohol per capita (15+) consumption of pure alcohol is calculated as the sum of beverage-specific alcohol consumption of pure alcohol (beer, wine, spirits, other) from different sources: the first priority in the decision tree is given to government statistics; second are country-specific alcohol industry statistics in the public domain based on interviews or field work (GlobalData, formerly Canadean; IWSR-International Wine and Spirit Research; Wine Institute, historically World Drink Trends), or data from the International Organisation of Vine and Wine (OIV); third is the Food and Agriculture Organization of the United Nations' statistical database (FAOSTAT); and fourth is data from alcohol industry statistics in the public domain based on desk review. For countries, where the data source is FAOSTAT the unrecorded consumption may be included in the recorded consumption. As from the introduction of the "Other" beverage-specific category, beer includes malt beers, wine includes wine made from grapes, spirits include all distilled beverages, and other includes one or several other alcoholic beverages, such as fermented beverages made from sorghum, maize, millet, rice, or cider, fruit wine, fortified wine.

Physical inactivity, adults aged 18+ (2022): Percentage of adults aged 18+ years attaining less than 150 minutes of moderate-intensity physical activity per week, or less than 75 minutes of vigorous-intensity physical activity per week, or equivalent. The estimates are based on self-reported physical activity captured using the GPAQ (Global Physical Activity Questionnaire), the IPAQ (International Physical

Activity Questionnaire) or a similar questionnaire covering activity at work/in the household, for transport, and during leisure time. Where necessary, adjustments were made for the reported definition (in case it was different to the indicator definition), for known over-reporting of activity in questionnaires such as the IPAQ, and for survey coverage (in case a survey only covered urban areas). A Bayesian hierarchical model was used to produce estimates for each country or territory, age, sex and year. Full details of methods have been previously published ***(10)***.

NATIONAL RESPONSE

National targets for salt, blood pressure (2023): Data were drawn from country responses to the WHO 2023 NCD Country Capacity Survey (NCD CCS) (https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs). The NCD CCS is a web-based survey of NCD focal points or designated colleagues within the Ministry of Health or a national institute or agency in all WHO Member States. While all but one Member State responded to the 2023 NCD CCS, it is possible for countries to leave questions blank or respond "don't know", resulting in "no data" or "don't know" values on the profiles. For the question on national targets, respondents were asked to provide documentation of national targets which are based on the WHO Global Monitoring Framework for NCDs[1]. Countries who reported having national targets for either salt or blood pressure on their profiles needed to submit evidence of these targets to WHO.

National guidelines on hypertension management (2023): Data were drawn from country responses to the WHO 2023 NCD Country Capacity Survey (see above for more details). Respondents indicated whether evidence-based national guidelines/protocols/ standards are available for the management (diagnosis and treatment) of hypertension through a primary care approach recognized/approved by government or competent authorities. Countries reporting that they have hypertension management guidelines needed to submit copies of these guidelines to WHO.

Conducted recent, national survey measuring raised blood pressure/hypertension, salt/sodium intake (2023): Data were drawn from country responses to the WHO 2023 NCD Country Capacity Survey (see above for more details). Countries with a positive value on their profile had to have indicated that they have conducted a recent (i.e. in the past 5 years since the 2023 NCD Country Capacity Survey), national adult risk factor survey covering the risk factor and provided documentation of the survey. Data for those countries who have implemented an NCD risk factor survey covering blood pressure or salt under WHO's technical guidance since 2023 have been updated accordingly.

[1] https://www.who.int/teams/ncds/surveillance/monitoring-capacity/gmf

Functioning system for generating reliable cause-specific mortality data on a routine basis (2024): Countries with a functioning system for generating reliable cause-specific mortality data on a routine basis ensure that the International Form of Medical Certificate of the Cause of Death is completed by certifiers, the International Classification of Diseases (ICD) is used to code the causes of death, and that data compiled are made available to policy-makers and researchers. The WHO collects mortality data, including cause of death, from civil registration systems in the WHO mortality database through a routine annual call for data. Data are considered to generate reliable cause-specific mortality data on a routine basis if: 1) Data from the five most recent reporting years are, on average, at least 70% usable (usability is calculated as: (Completeness (%))*(1- Proportion Garbage)), 2) At least five years of cause-of-death data have been reported to the WHO in the last 10 years and 3) The most recent year of data reported to the WHO is no more than five years old.

Standardized patient information system broadly available at the primary health care level that captures CVD-related patient data (2023): Data were drawn from country responses to the WHO 2023 NCD Country Capacity Survey (see above for more details). Countries with a positive value on their profile had to have indicated that they have a standardized system for recording patient level data relating to cardiovascular diseases in more than 50% of public primary care centres.

References

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