



## Milan Urban Food Policy Pact Monitoring Framework

Draft version, July 2018

**Indicator 11:** Number of adults with type 2 diabetes

MUFPP framework of actions' category: Sustainable diets and nutrition

*This indicator measures the number and/or prevalence of type 2 diabetes among adults, youth and children.*

### Overview table

MUFPP Work stream	Sustainable Diets and Nutrition
<b>MUFPP action</b>	<b>Address non-communicable diseases associated with poor diets and obesity,</b> giving specific attention where appropriate to reducing intake of sugar, salt, transfats, meat and dairy products and increasing consumption of fruits and vegetables and non-processed foods.
<b>What the indicator measures</b>	Number of adults with type 2 diabetes
<b>Which variables need to be measured / what data are needed</b>	<ul style="list-style-type: none"> <li>▪ Geography</li> <li>▪ Socioeconomic variables</li> <li>▪ Sex</li> <li>▪ Race/ethnicity</li> </ul>
<b>Unit of measurement</b> <i>(i.e. Percentages, averages, number of people, etc.)</i>	-Number of adults, percentage of the population  Note: The indicator can also be applied to other population groups such as "Number of children or youth with type 2 diabetes"
<b>Unit(s) of Analysis</b> <i>(i.e people under 5 years old, etc.)</i>	Instances of diagnosed and undiagnosed diabetes
<b>Possible sources of information of such data</b>	-National health department surveillance systems -WHO diabetes country profiles
<b>Possible methods/tools for data-collection</b>	-Review of national datasets -Surveys among primary healthcare providers
<b>Expertise required</b>	Data analysis, survey design and implementation

<b>Resources required/ estimated costs</b>	
<b>Specific observations</b>	Prevalence data generally does not distinguish between type 1 & 2 diabetes but 90-95% of instances are type 2.
<b>Examples of application</b>	

### Rationale/evidence

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. This reflects an increase in associated risk factors such as being overweight or obese. Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries. Diabetes caused 1.5 million deaths in 2012. Higher-than-optimal blood glucose caused an additional 2.2 million deaths, by increasing the risks of cardiovascular and other diseases. Because sophisticated laboratory tests are usually required to distinguish between type 1 diabetes (which requires insulin injections for survival) and type 2 diabetes (where the body cannot properly use the insulin it produces), separate global estimates of diabetes prevalence for type 1 and type 2 do not exist. The majority of people with diabetes are affected by type 2 diabetes. This used to occur nearly entirely among adults, but now occurs in children too. Diabetes and its complications bring about substantial economic loss to people with diabetes and their families, and to health systems and national economies through direct medical costs and loss of work and wages. While the major cost drivers are hospital and outpatient care, a contributing factor is the rise in cost for analogue insulins which are increasingly prescribed despite little evidence that they provide significant advantages over cheaper human insulins<sup>1</sup>.

### Glossary/concepts/definitions used

**Type 2 diabetes:** Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves. Type 2 diabetes is much more common and accounts for around 90% of all diabetes cases worldwide. It occurs most frequently in adults, but is being noted increasingly in adolescents as well<sup>2</sup>.

### Preparations

A meeting should be organised with all staff who will be involved in this activity to:

- Familiarise them with diabetes surveillance data and measurement
- Agree on the objectives and scope of the analysis and data collection requirements
- Define the methodology to be applied for data collection and analysis, and
- How to coordinate the activities.

<sup>1</sup> World Health Organization. (2016). Global report on diabetes. World Health Organization. [http://apps.who.int/iris/bitstream/handle/10665/204871/9789241565257\\_eng.pdf;jsessionid=5066019369BD F5A33376336470B598A1?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/204871/9789241565257_eng.pdf;jsessionid=5066019369BD F5A33376336470B598A1?sequence=1)

<sup>2</sup> WHO Fact Sheet #138: Diabetes Mellitus. Available from <http://www.who.int/mediacentre/factsheets/fs138/en/>.

## Data Collection and Analysis

Crude estimates of urban diabetes prevalence may be drawn based on the WHO 2016 country level estimates<sup>3</sup>. This could be achieved by prorating national statistics according to the urban population in question. This would not take into account urban vs rural differences. A second approach would be to search for existing population health surveillance datasets or conducting a survey among households and primary care professionals using a randomized sample to estimate the city's diabetes prevalence. The U.S. Centres for Disease Control and Prevention (CDC) has published detailed diabetes estimates along with explanations of their methodologies<sup>4</sup>.

### CDC Estimates of Diagnosed and Undiagnosed Diabetes among Adults Aged 18 Years or Older

The percentage of adults aged 18 years or older with diabetes (diagnosed or undiagnosed) was obtained using 2011–2014 National Health and Nutrition Examination Survey (NHANES) data. People who self-reported being told by a doctor or health professional that they had diabetes (other than during pregnancy) were classified as having diagnosed diabetes. Those not reporting a history of diagnosed diabetes but who had either a fasting plasma glucose greater than or equal to 126 mg/dl or an A1C level greater than or equal to 6.5% were classified as having undiagnosed diabetes. For consistency with earlier estimates, fasting glucose values were adjusted using recommended regression equations. People with missing values for either fasting glucose or A1C and pregnant women were excluded. People with diagnosed diabetes from the interviewed sample were combined with people with undiagnosed diabetes from the fasting plasma glucose subsample. Appropriate sampling weights were used so that the sum of the weights added to the total U.S. population.

The age-specific percentages of diagnosed and undiagnosed diabetes for age groups 18–44, 45–64, and 65 years or older were then applied to the corresponding July 1, 2015 U.S. resident population estimates from the U.S. Census Bureau to derive the age-specific numbers of adults with diagnosed and undiagnosed diabetes. These age-specific numbers of adults were added to obtain the estimated total number of adults with diagnosed and undiagnosed diabetes. The same procedure was used to obtain the total number of adults with diagnosed and undiagnosed diabetes by sex. Age-adjusted percentages of diagnosed and undiagnosed diabetes were calculated among adults aged 18 years or older by sex, race/ethnicity, and education level by the direct method to the 2000 U.S. Census standard population, using age groups 18–44, 45–64, and 65 years or older<sup>5</sup>.

## References and links to reports/tools

Centers for Disease Control and Prevention. (2014). National diabetes statistics report: estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: US Department of Health and Human Services, 2014.

World Health Organization: Diabetes country profiles (2016). Available from

<http://www.who.int/diabetes/country-profiles/en/>

World Health Organization. (2016). Global report on diabetes. World Health Organization.

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<sup>3</sup> World Health Organization: Diabetes country profiles 2016. Available from

<http://www.who.int/diabetes/country-profiles/en/>.

<sup>4</sup> Centers for Disease Control and Prevention. (2014). National diabetes statistics report: estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: US Department of Health and Human Services, 2014.

<sup>5</sup> CDC (2014). Op. cit.