Driving change for healthier cities

Partnering to overcome health inequalities

cities changing diabetes

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Foreword

Cities have enormous potential for creating liveable, healthy environments for their citizens. They are engines of economic, social and technological innovation, and more people are living in cities than ever before. But city ecosystems are not always conducive to good health and well-being, and city life can lead to health inequity with some people having fewer opportunities to make healthy choices and being more affected by disease.

The COVID-19 pandemic highlighted the importance of addressing non-communicable diseases (NCDs) such as obesity and type 2 diabetes. As the pandemic progressed, it became evident that people living with NCDs are more likely to have severe forms of COVID-19 and subsequent poor health outcomes. It also revealed the stark differences in opportunities for achieving good health between certain groups of people. The pandemic showed that some groups are more vulnerable to poor health because of the circumstances of where and how they live.

Cities Changing Diabetes is a global programme driving change through local partnerships to propel health higher up city agendas and co-create initiatives that improve population health. Since its launch with five city partners in 2014, the scale and reach of our network have grown to more than 160 partners in more than 40 cities across 24 countries with a combined population of 220 million people.

As we have scaled up, so too has the challenge. Globally, the prevalence of obesity and type 2 diabetes continues to increase and impact millions of lives each year. But bending the curve on preventable diseases such as type 2 diabetes and obesity cannot be achieved without action on the underlying root causes of these conditions. Getting ahead of the problem is essential, and that means focusing on prevention.

Cities are the front line for action, and city leaders are in a prime position to bring about changes that can improve population health. Improving health and reaching the sections of society at higher risk of developing obesity and diabetes requires collaboration, knowledge and coordination.

Nobody can take on this challenge alone, and we hope that the partnerships, evidence and action created within our network, and profiled in this book, will serve as inspiration to anyone eager to join the movement and help create the change we need for healthier cities and populations.

On behalf of the founding partners, we thank you for your interest in and commitment to Cities Changing Diabetes.

NIELS LUND
Vice president, Global Prevention and Health Promotion, Novo Nordisk

MORTEN HULVEJ ROD
Head of Health Promotion, Steno Diabetes Center Copenhagen

The challenge and the opportunity

In 2021, more than 537 million adults worldwide had diabetes, which was responsible for 6.7 million deaths that year.[1] It was also estimated to drive a record 966 billion US dollars in health expenditure.[1] Without action, the number of people living with diabetes is projected to reach 783 million by 2045. As this number rises, so will the impact on individuals, communities and health expenditures.[1]

The link between type 2 diabetes and obesity

There is a strong link between the prevalence of type 2 diabetes and increasing levels of overweight and obesity.[1] Being overweight or having obesity is the main modifiable risk factor for type 2 diabetes.[2–4] In fact, people with obesity have a seven times greater risk of type 2 diabetes compared with those of healthy weight.[5] The risk of developing type 2 diabetes is associated with incremental increases in body weight in early adulthood.[6] In addition, the duration of obesity has also been found to increase the risk of developing type 2 diabetes, with a greater risk among people who have had obesity for longer periods.[7]

This has severe implications for society and health services, given the rising trend of obesity. Already, in 2022, an estimated 764 million people are living with obesity globally.[8] By 2030, it is expected that this number will reach 1 billion.[8]

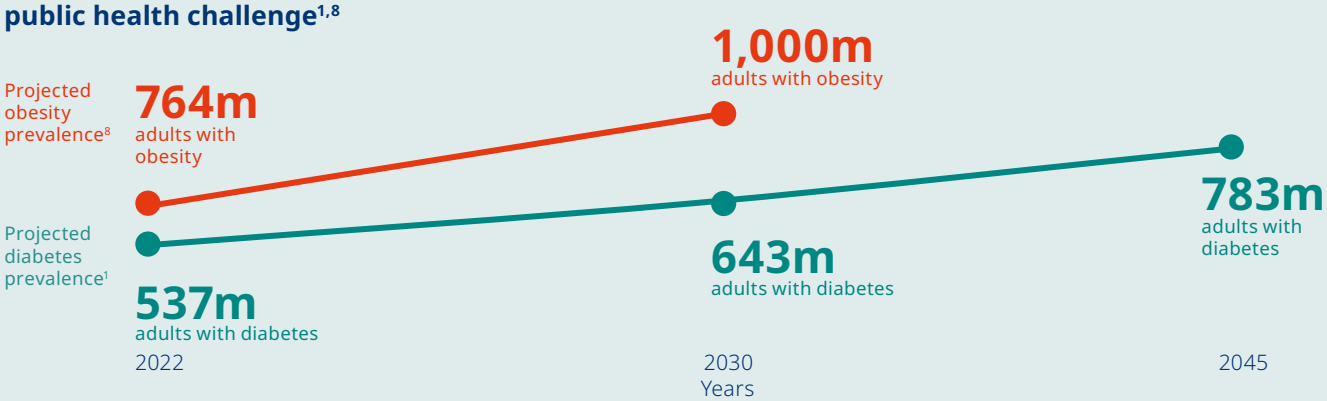
Prevention is the key to halting the rise of obesity and type 2 diabetes

Much of the projected increase is preventable, if opportunities for healthy living are improved and increased. The COVID-19 pandemic exposed the vulnerability of people living with NCDs and highlighted the need for prevention.[9] The pandemic demonstrated that while traditional healthcare is important, there is much more to ensuring a population's health than providing traditional healthcare alone. Social determinants of health – the conditions in which we are born, grow, live, work and age – have a far greater influence.[10] The pandemic also highlighted the great inequities that exist between communities when it comes to achieving and maintaining good health.

With more than half of the world's population now concentrated in urban environments, action to create healthy cities is a major pathway towards halting the rise of obesity, type 2 diabetes and many other NCDs. Furthermore, cities that prioritise prevention can have a multiplier effect and minimise environmental impacts, for example by reducing carbon emissions.

But to have a real and sustainable impact, a whole-of-society approach, focused on preventing obesity, type 2 diabetes and their associated health complications, is required.

The rising obesity and diabetes public health challenge[1,8]



Critical areas that require concerted action

Spaces and places that encourage physical activity

Well-designed places and public spaces promote health and well-being by encouraging people to socialise, walk, play and be physically active.[11,12] Designing places that are in proximity to facilities and services such as shops and schools makes it easier to access them on foot or by bicycle. This, in turn, can help reduce loneliness and social isolation among people and foster healthier and more equitable communities.

Designing urban mobility for better health

Well-designed transport systems enable walking, cycling and public transport use for everyone, while minimising environmental impact. This helps people lead healthier lives and engage in physical activity each day.[13]

Cities that enable and promote safe cycling to school and work can lead to better health. Studies have demonstrated that people who cycle to work are less likely to die from an NCD than those who do not.[14] People who cycle to work also have fewer absences from work and school due to illness each year compared with non-cyclists.[15]

Making healthy food accessible and affordable

Good and healthy food is the cornerstone of a healthy life.[16] Therefore, healthy food needs to be affordable, available and promoted. All people should have the opportunity to access healthy food and eat healthily. Food is not only linked to the health of a population, it is also closely tied to economic development and climate. Transforming local food environments to focus on healthy and sustainable food systems is critical to optimising people's health and protecting the planet.[17]

Creating equal opportunity for healthy lives

Equal opportunity to make healthy choices and live a healthy life should be available to all citizens in a city. However, inequalities in opportunities and resources can create circumstances where living healthily is challenging, making people more vulnerable to poor health.[12,18] Policies need to be created to ensure that people can have a greater influence over their own health. This is emphasised by the World Health Organization, which calls for the inclusion of health in all policies.[19]

Cities are the front line for driving change

Today, more than 55% of the world's population lives in cities.[20] This makes cities the front line for improving people's health and bending the curve on rising levels of NCDs such as diabetes, obesity and cardiovascular disease.[14]

How cities are designed, planned, built and run has considerable influence over many of the basic components of a healthy life: access to decent housing, nutritious food, safe mobility and opportunities for physical activity.[21] But, unfortunately, not all people have equal access to these ingredients, which results in some people and communities being more vulnerable to poor health than others.

Five principles for guiding action

A series of guiding principles has been created based on insights and learnings collected from the Cities Changing Diabetes programme. The five principles are aligned with recommendations from leading health organisations.

1. **Invest in the promotion of health and well-being**
Cities have great potential to be health-promoting environments. This will require a shift towards viewing the prevention of diabetes and its complications as a long-term investment rather than a short-term cost. Therefore, we must prioritise health-promoting policies and actions to improve health and well-being for all.

2. **Address social and cultural determinants and strive for health equity**
Social and cultural determinants are root causes that shape citizens' opportunities for healthy living. Striving for health equity is essential in order to provide healthy opportunities for all. Therefore, we must address social and cultural determinants in order to make the healthy choice the easier choice.

3. **Integrate health into all policies**
Health is linked to other policy agendas, including social, employment, housing and environmental policies. To improve the health and well-being of citizens, health must be integrated into decision-making processes across departments and be driven by shared policy goals. Therefore, we must coordinate action across departments to integrate health into all policies.

4. **Engage communities to ensure sustainable health solutions**
Health is largely created outside the healthcare sector, namely in community settings where people live their everyday lives. Health actions should move beyond the individual level to include the community settings where social norms that shape behaviour are created. Therefore, we must actively engage communities in order to strengthen social cohesion and drive sustainable health-promoting actions.

5. **Create solutions in partnership across sectors**
Health is a shared responsibility. Creating sustainable solutions demands that all members of society acknowledge the health impact of their actions. Combining competences and pooling resources and networks are prerequisites to creating innovative, effective and sustainable solutions. Therefore, we must work together to share the responsibility for creating solutions, as no single entity can solve the challenge alone.

Beirut, Lebanon

Urban Diabetes Declaration

The five Cities Changing Diabetes principles are set out in the Urban Diabetes Declaration, which is a commitment from city leaders to accelerate action to prevent obesity and type 2 diabetes. Top leadership from several cities have already endorsed the Declaration and committed their cities to action.

Find it on our website:
citieschangingdiabetes.com

Committed to driving change

Cities Changing Diabetes is a commitment to drive action against type 2 diabetes and obesity in cities globally. The global public–private partnership programme addresses the systemic issues behind the rise in obesity and type 2 diabetes, and aims to reduce health inequity.

The programme is built on three interconnected elements that enable cities to **map the underlying factors** associated with obesity and diabetes, **share key insights and learnings** and **provide tools that can accelerate local action** on the ground.

Today, the programme includes more than 40 cities, with 160 partnership organisations involved. This includes city leaders, health authorities, academia, diabetes associations, health providers, community groups and business corporations.

Copenhagen, Denmark

40+ cities in the global network

160+ local partners, including public and private sector organisations, academia, NGOs and other organisations

50+ research studies conducted

40+ interventions on urban diabetes and obesity initiated

15+ mayors are signatories of the Urban Diabetes Declaration and committed to action on urban diabetes

The Americas

The Americas are home to 83 million people living with diabetes.[1] This number is expected to reach 97 million people if urgent action is not taken.[1] The United States is the country in the region with the highest number of people with diabetes at 32.2 million.[1]

Cities Changing Diabetes partnerships in the Americas have delivered pioneering interventions and original research, exploring food systems in Bogotá, leveraging supersetting approaches through faith communities in the US and interventions to bring down the barriers faced by socioeconomically vulnerable communities in Mexico.

Bogotá, Colombia

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JOINED IN 2020

Bogotá Colombia

Up to 36% of adults with diabetes in Colombia are living with **undiagnosed diabetes**[22]

Bogotá develops a healthy foodscape strategy

In collaboration with Gehl Institute, Cities Changing Diabetes in Bogotá conducted a foodscape analysis to better understand how public spaces and food places shape eating habits in four of the city's more vulnerable neighbourhoods.

Informed by this foodscape research, Cities Changing Diabetes in Bogotá worked with key city stakeholders to develop a people-first foodscape strategy to improve access to fresh and healthy food.

Problematic public realm

The prevalence of diabetes among the adult population in Colombia is 8.4%, and a similar rate has been found in Bogotá.[1] However, it is estimated that up to 36% of people with diabetes in Bogotá may be undiagnosed and unaware that they have diabetes.[22] More comprehensive mapping of the city is being carried out to establish the extent of the diabetes burden.

Bogotá's public realm poses many challenges to the health of the city's residents. The interplay between social, economic and cultural barriers makes it difficult for people in certain neighbourhoods to access healthy food easily. These dynamics affect food consumption patterns and overall health.

Limited access to fresh, healthy food

A foodscape study led by Gehl, a Cities Changing Diabetes partner, found that public spaces are a greater challenge to healthy eating in the city than monetary cost. Food options tend to be highly processed, and smaller neighbourhoods have limited access to fresh produce. Transit hubs act as food hubs that are often difficult to navigate, and public spaces do not facilitate convenient grocery experiences or allow people to enjoy food socially outdoors.[23]

"Bogotá is taking the lead by implementing the 'Nourishing Citizenry' programme that encourages citizens to make informed food decisions. This cross-sectoral and partnership-building programme seeks to foster awareness around the health, environmental and economic development impacts [that] some food choices have on citizens and their communities. The network co-led with Novo Nordisk and supported by Gehl, among other actors, has spearheaded the generation of strategic alliances that will help inform future actions and food policies in Bogotá."

Bogotá Health Secretariat

Informed by this research, Cities Changing Diabetes in Bogotá has conducted 10 territorial meetings with the Health Secretariat aimed at advancing food citizenship and facilitated health environment training for 250 shopkeepers. The programme has held foodscape workshops with 36 participants from the private and public sectors, non-profit organisations and academia. Community-level initiatives have been implemented to improve access to fresh and healthy food, such as local food markets, small-scale commercialisation channels and pop-up food shops.

Comprehensive mapping of the city

In 2021, Cities Changing Diabetes in Bogotá initiated research to determine the city's diabetes and metabolic syndrome prevalence in partnership with two local universities. University College London is supporting the research to ensure that the study aligns with the tools developed by the global academic partner of the Cities Changing Diabetes network. This study's findings will be published in early 2023.

In addition to this, future goals of Cities Changing Diabetes in Bogotá include the implementation of a pilot project based on the findings of the foodscape study, scaling up existing pilot projects, potential expansion of the network to include other cities and knowledge exchanges with other cities that have been working on foodscape initiatives.

Partners

Bogotá Health Secretariat
Embassy of Denmark
Universidad del Rosario
Universidad Nacional de Colombia
UNICEF

JOINED IN 2018

Buenos Aires Argentina

Two-thirds of adults in Argentina are overweight or living with obesity[25]

Buenos Aires is committed to tackling childhood obesity

Almost half the Argentinian population resides in the metropolitan area of Buenos Aires, making the city a prime spot for interventions related to obesity and diabetes. Cities Changing Diabetes in Buenos Aires is working with local and international academic partners to develop an evidence-based tool to promote physical activity in children.

Urban living weighs on children

The vast majority of Argentina's population (92%) lives in urban areas, with 47.6% concentrated in the metropolitan area of Buenos Aires.[24] Two-thirds (67.9%) of the country's adult population was already overweight or living with obesity in 2019, as were 41.1% of the country's children.[25]

If urgent action is not taken to generate a healthy urban environment, the country's diabetes prevalence of 10% in adults aged 18 and above is likely to increase considerably.[26]

Cities Changing Diabetes in Buenos Aires has decided to target one of the most modifiable factors contributing to the city's rise in diabetes – childhood obesity.[27]

Developing an activity-monitoring system

Chronic non-communicable diseases (NCDs), such as obesity and type 2 diabetes, are Argentina's leading cause of death. Modifiable risk factors include physical inactivity, inadequate diet, smoking and alcohol consumption.

To tackle the first of these, Cities Changing Diabetes in Buenos Aires partnered with academics from Liverpool John Moores University and Universidad Favaloro on the Youth Activity Profile (YAP) research project.

Currently, there is no national standardised and accurate measurement tool to assess the level of physical activity in children and young people. The goal of the YAP project is to develop and validate such a tool. This monitoring system will allow the city to create better public health policies and intervention strategies to prevent NCDs.

Goals to transform a vulnerable neighbourhood

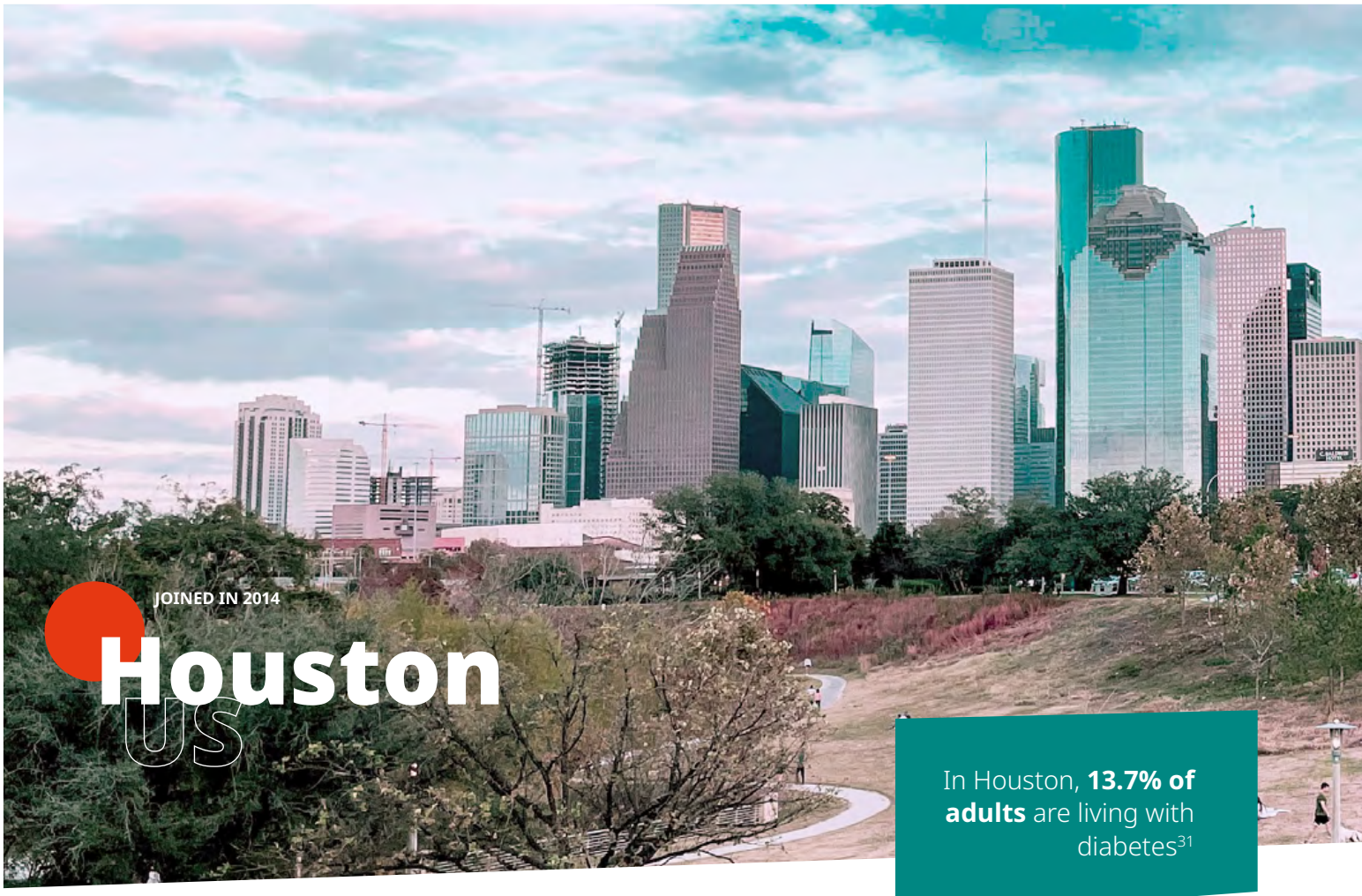
The next step for the Cities Changing Diabetes team in Buenos Aires will be to work with local non-governmental organisations (NGOs) to bring about change in one of the city's vulnerable communities. This will be achieved through the creation of urban gardens, healthy eating and physical activity interventions, sustainable transport options and education around road safety.

"To meet the pressure and challenges brought by rapid growth and the consequences of sedentary lifestyles, especially among children, we've realised the power of physical activity and sport when key players work together to deliver transformative programmes. The Buenos Aires Global Active City certification is a unique model that helps us capture and meet the complexity of our task, focusing on action, impact and continual improvement."

Horacio Rodríguez Larreta
Mayor of Buenos Aires

Partners

Universidad Favaloro
Liverpool John Moores University
Ciudad Autónoma de Buenos Aires



JOINED IN 2014

Houston US

In Houston, **13.7% of adults** are living with diabetes[31]

Houston puts its faith in community-based interventions

The research carried out by Cities Changing Diabetes in Houston highlighted the reach and influence of faith-based organisations. This led the programme to take a community-driven approach to the city's challenge of diabetes and obesity.

Located in one of the fastest-growing regions in the United States, Houston's 7 million residents make it the fourth largest city in the US and home to the country's most ethnically and racially diverse population.[28–30] Based on its research, Cities Changing Diabetes in Houston created four cornerstone projects to address diabetes and obesity in the city's underserved communities.

Problematic public realm

In Houston, 13.7% of adults are living with diabetes,[31] and some communities are disproportionately affected by diabetes and obesity due to health inequities. The members of these communities often experience barriers to accessing the traditional healthcare system. In addition, they do not have the same access to drivers of healthy living as the more socioeconomically advantaged residents of Houston.

Cities Changing Diabetes research revealed that vulnerabilities among Houstonians include low health literacy, long commutes, unhealthy food traditions and living in neighbourhoods undergoing constant change.

The researchers also discovered a lack of trust in the formal healthcare system in certain communities.[32] In these communities, faith leaders are trusted sources for health-related information and support.[33]

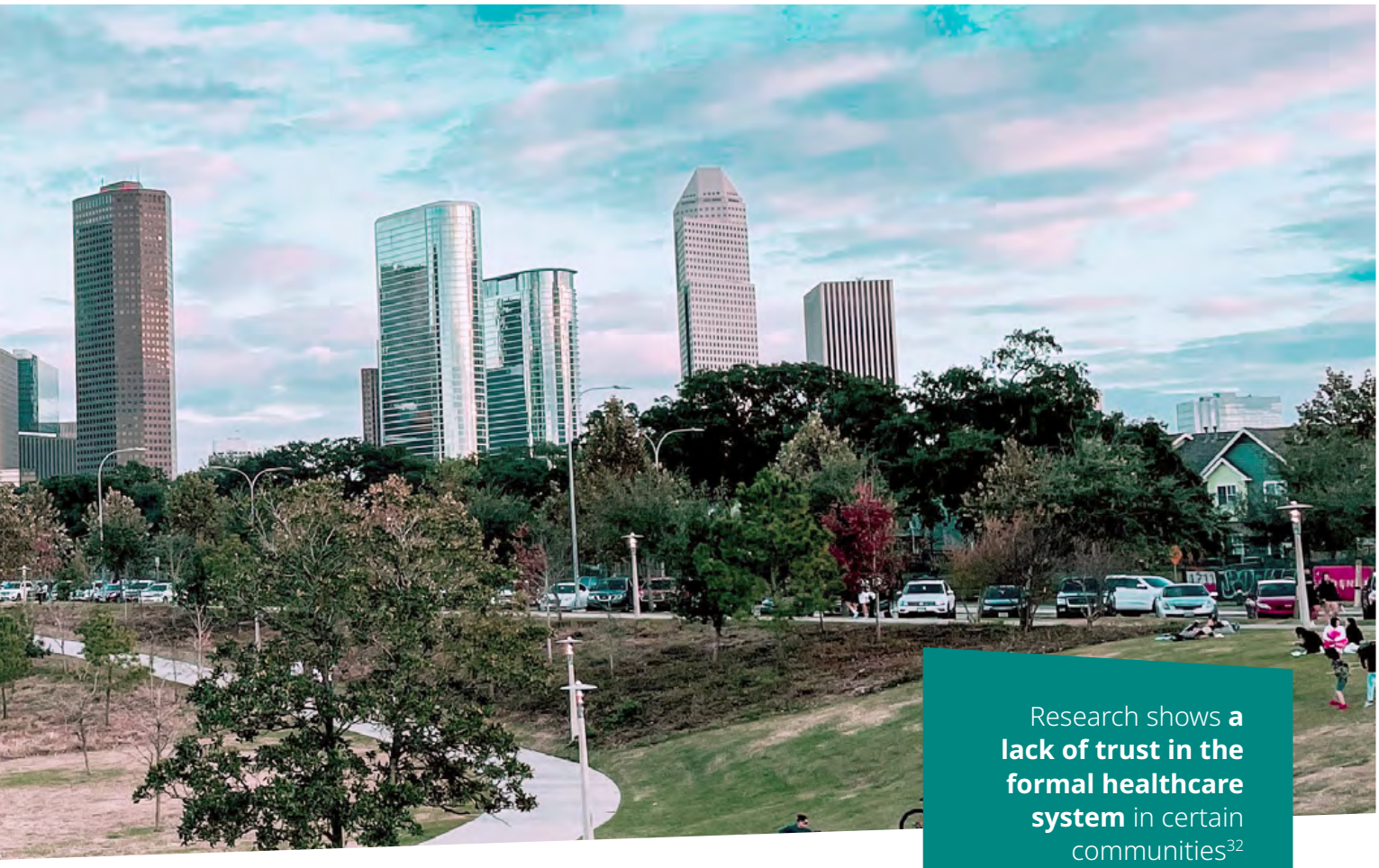
Co-creation is the key to success

The Faith & Diabetes Initiative, which trains volunteers from local houses of faith to implement evidence-based diabetes education and prevention programmes, has emerged as one of the four cornerstone projects of the Cities Changing Diabetes in Houston programme. The initiative serves a population of more than 75,000 residents of different faiths, many of whom are living with diabetes or obesity.

"The Faith & Diabetes Initiative empowers people to creatively leverage their most important beliefs and practices towards self-management and prevention."

Stuart Nelson
Executive Vice President, Institute for Spirituality and Health

The key to the success of this initiative has been the co-creative process involving patients, leaders from houses of faith, healthcare and public health professionals and grassroots organisations to develop a train-the-trainer curriculum that empowers community members to go back and deliver evidence-based diabetes self-management education in their communities.[32]



Research shows **a lack of trust in the formal healthcare system** in certain communities[32]

The leadership training programme draws on evidence-based diabetes research and modules in spirituality and religious studies, allowing the participants to fully understand the context of the intervention setting before commencing the work.

Changing the food environment
The second of the four cornerstone projects for Cities Changing Diabetes in Houston, the Bite of HOPE initiative, strives to change the food environment in two immigrant communities with limited access to healthy food. Drawing in part on the foodscape research conducted with the Gehl Institute, this place-based initiative engages high school students, teachers, staff and parents in healthy cooking classes, sustains the viability of local food businesses through an accelerated business academy, and offers culinary programmes in the community and to other Cities Changing Diabetes projects.

Building a network of peer support
Houston Diabetes Peer Support is a network of small, facilitated groups of people living with diabetes who support each other through exchanging knowledge and experiences. The in-person and virtual group participants can also use a Facebook group to continue discussions and share resources.

Enhancing infrastructure for patient navigation
MyDiabetesHQ.org is an online resource that facilitates communication between people living with diabetes and their peers or healthcare providers. The portal also gives people with diabetes access to specially trained navigators who can help them access the care they need.

Connecting patients to medical homes
During the next phase of the programme, Cities Changing Diabetes in Houston will focus on further integrating the four initiatives and establishing stronger ties to safety net providers (hospitals and clinics focused on care for underserved communities). These new linkages will offer a medical home for people living with diabetes without health insurance or regular primary care.

Partners

Anchor: Houston Health Department

Backbone organisation: The Institute for Spirituality and Health at the Texas Medical Center

Other partners:

American Diabetes Association
American Heart Association
Asian American Health Coalition dba HOPE Clinic
City of Houston HR Dept
Community Health Choice
CORE Initiative
The Fountain of Praise Church
Harris County Medical Society
Harris County Public Health
Harris Health System
Hispanic Health Coalition
Houston Business Group on Health
The Association of Diabetes Care & Education Specialists
UTHealth School of Public Health

JOINED IN 2018

Mérida Mexico

Almost **three-quarters of the adult population** in Mérida is overweight or living with obesity[34]

Mérida focuses on preventing diabetes-related complications

Cities Changing Diabetes in Mérida leveraged its academic and local government partnerships to conduct research into the prevalence of diabetes in the city. This research will guide interventions targeting people living with diabetes who do not have health insurance or access to public healthcare institutions.

Understanding not only who is living with diabetes but also how those with diabetes are living will help Cities Changing Diabetes in Mérida conceptualise and roll out appropriate interventions to reduce the risk of diabetes-related complications.

High rate of overweight adults in the city

Mérida has a diabetes prevalence of 13%,[34] which is lower than the national prevalence of 17%.[1] However, the percentage of adults living with obesity (73%)[34] is considerably higher than the national prevalence of 38%.[35] As living with obesity is a risk factor for diabetes, the city's high prevalence of residents living with obesity will likely lead to a dramatic rise in diabetes.

Approximately half of the people living with type 2 diabetes in the city report having decreased vision, and more than 15% have retinal damage, kidney damage or injuries to their feet or legs that last longer than four weeks.[34] Of those living with diabetes, 23% also have hypertension.[34]

Solid research leads to evidence-based interventions

Cities Changing Diabetes in Mérida partnered with Novo Nordisk, the Autonomous University of Yucatan and the Municipality of Mérida to develop and conduct a study to determine the prevalence of diabetes in urban areas of the municipality of Mérida and to identify the factors impacting geographical differences. The research started in 2020, and the results were presented and published at the end of 2021. Five faculties from the university were involved in the research study and are expected to publish additional research articles.

Based on the study's results, Cities Changing Diabetes in Mérida will focus on improving the lives of those living with diabetes through evidence-based interventions that affect the management of diabetes and the prevention of diabetes-related complications. Moving forward, the Municipality of Mérida will work on creating or adapting existing public policies to improve public health and prevent diabetes.

"Thanks to this study carried out in coordination with Novo Nordisk and the Autonomous University of Yucatan, Mérida will have a database that will allow us to develop detection and care programmes that put a stop to this disease in the municipality."

Renán Barrera Concha
Mayor of Mérida

Partners

Municipality of Mérida
Autonomous University of Yucatan
Diabetes Association of Southeast Mexico

JOINED IN 2014

Mexico City

Mexico

There are an estimated **2.3 million adults** living with diabetes in Mexico City[36]

A city of firsts, Mexico City keeps stepping up to the challenge

The first city to join the Cities Changing Diabetes network, Mexico City is again proving its commitment to bending the curve on diabetes with its newly formed Interinstitutional Commission.

Having already established two concrete interventions, a multidisciplinary diabetes clinic in the district of Iztapalapa and the *El Médico en Tu Casa* (the doctor in your home) initiative, Mexico City is taking a holistic approach to the prevention of diabetes by making health a priority in policy decisions.

At the forefront of the battle against diabetes

Mexico City's commitment to tackling the diabetes challenge is much needed in a country where almost half of all people with diabetes are believed to be living with undiagnosed diabetes.[1] Nearly 16% of adults in Mexico City are already living with diabetes. This translates to 2.3 million people.[36] This number is likely to rise, as approximately 35% of Mexico City's adult population is living with obesity.[37]

As a city at the forefront of the battle against diabetes, Mexico City also ensures that the diabetes challenge is given adequate attention on the international agenda.

In 2016, Mexico City was one of six cities that called on governments worldwide to make health central to the 'New Urban Agenda' by focusing on preventing non-communicable diseases (NCDs), prioritising health in urban policies and employing new models of collaboration.

Improving interinstitutional collaboration

To achieve these goals within Mexico City, the Ministry of Health set up the Interinstitutional Commission under the broad umbrella of the Cities Changing Diabetes programme. Through three separate institutions related to diabetes prevention and management, this commission ensures that health is integrated into all policy decisions.

In 2019, the commission organised a meeting of representatives from various sectors to examine how those sectors can collectively work towards reducing the impact of diabetes on the population of Mexico City.

Creating a broad and strategic approach

Through collaborative consultation, the commission has identified three workstreams:

1. Creating a strategic approach to the prevention of diabetes and obesity
2. Establishing a universal set of indicators and measurement parameters to be used by all institutions collecting data related to diabetes and obesity
3. Working with stakeholders outside the healthcare sector to improve recreational spaces and opportunities for physical exercise.

"We've managed to observe the importance of providing comprehensive care to the patients with diabetes through a multidisciplinary team, and this is also extended to the entire health sector, considering that this can only be achieved through training and resource training allocation, without and not forgetting the importance of promoting the change of habits among the population."

Alberto Gallardo Hernández
Home Healthcare Attention subdirector, Public Healthcare Services of Mexico City

This new collaboration model will help ensure that the Cities Changing Diabetes programme is aligned with the government's goals to improve the city's 840 health units.

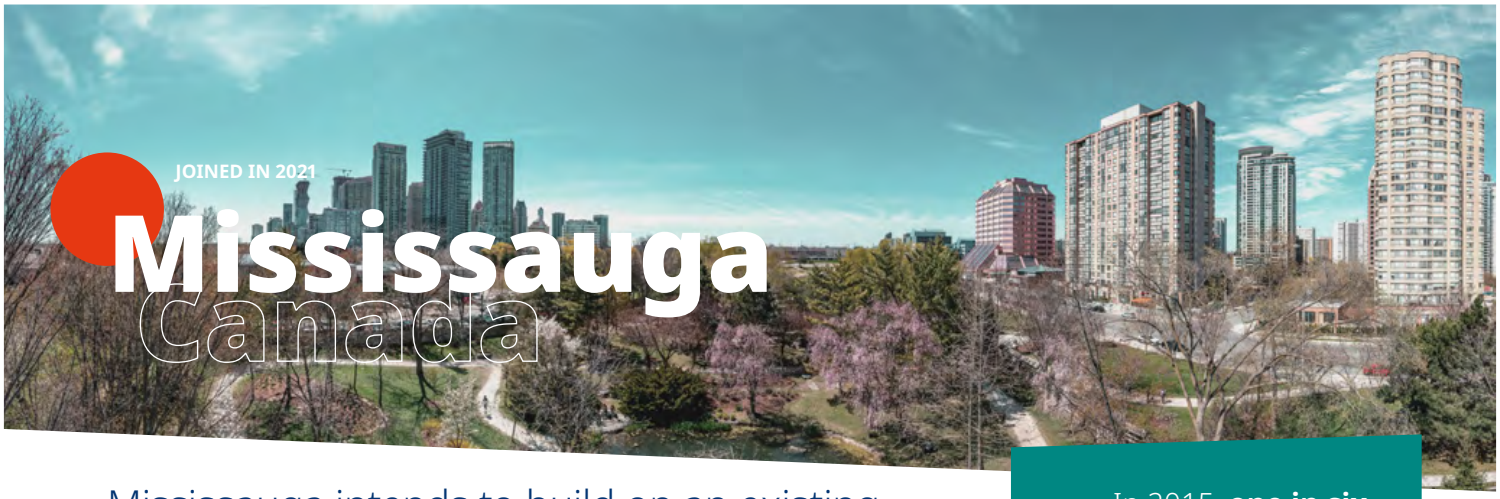
Partners

World Diabetes Foundation

Secretaría de Seguridad Pública del Distrito Federal (SSPDF)

Secretaría de Salud de la Ciudad de México (SEDESA)

National Institute of Public Health Mexico



JOINED IN 2021

Mississauga Canada

Mississauga intends to build on an existing healthy-by-design approach

The seventh-largest city in Canada, Mississauga, is determined to turn the tide on diabetes by developing a diabetes prevention strategy that will promote active living and healthy eating.

In 2015, **one in six adults** in Peel had diabetes[38]

Tackling diabetes is a priority for Mississauga, which committed to examining city policy, conducting new research and exploring community-level interventions when the city joined the Cities Changing Diabetes network in 2021.

High rates of obesity and diabetes

In 2015, Peel Region, which includes Mississauga, had a diabetes incidence (newly diagnosed cases) rate that was 1.4 times higher than Ontario (taking into account differences in age distribution). The number of new cases of diabetes in Peel increased by 182% between 1996 and 2015. This increase was due to the ageing and growing population, and changes in diabetes risk.[38]

In 2015, one in six adults in Peel had diabetes. Overall, an increase in the total number of diabetes cases is expected, given the rising rates of obesity and changing demographics. Mississauga is a richly diverse community.

More than 50% of Peel residents identify as Asian, Arab, black, Hispanic or indigenous peoples[39] and are at increased risk of type 2 diabetes.[38]

Developing a healthy-by-design approach

Mississauga has already implemented several programmes and initiatives to promote healthy living. These include a variety of public fitness and wellness programmes, a strong focus on active transportation opportunities and a healthy food and beverage policy restricting the sale of highly processed foods, pre-packaged foods and deep-fried foods in recreation facilities situated within 500 metres of schools.

"We're committed to taking action to prevent and reduce the rise of type 2 diabetes in Mississauga, and we recognise that no single organisation can tackle this challenge alone. Membership of the Cities Changing Diabetes programme will help us understand our unique urban diabetes challenge and work with partners in the community to develop a strategy to prevent and reduce the rise of type 2 diabetes in Mississauga."

Bonnie Crombie
Mayor of Mississauga

Inclusivity at the core of a successful approach

The journey of Cities Changing Diabetes in Mississauga began with multi-stakeholder engagement. Discussions were held with diverse stakeholders from the Mississauga community to better comprehend the extent and nature of the diabetes challenge. These discussions involved Roots Community Services Inc., which provides culturally relevant programmes and services for black, African and Caribbean communities, and Indus Community Services, which serves the South Asian community.

The City of Mississauga is also collaborating with a group of researchers and clinicians based at the Institute for Better Health and Trillium Health Partners – the Family and Child Health Initiative and the Novo Nordisk Network for Healthy Populations at the University of Toronto. These organisations are conducting critical research on diabetes prevalence in Mississauga and developing strategies and interventions to reduce the inequities in the risk and burden of the disease.

Digital introduction to the programme

Mississauga held a series of webinars to introduce the programme to stakeholders and community groups. These webinars included speakers from the University of Toronto and University College London. Moving forward, the City aims to begin community consultations to develop a diabetes prevention strategy tailored to the needs and challenges of Mississauga's diverse residents. The strategy will be built on a health equity framework.

Partners

City of Mississauga
Novo Nordisk Network for Healthy Populations
University of Toronto
Institute for Better Health – Trillium Health Partners

JOINED IN 2019

Philadelphia US

In Philadelphia, **13.5% of adults** are living with diabetes[40]

Philadelphia is working with grassroots organisations to reach under-resourced communities

Cities Changing Diabetes in Philadelphia brings together more than 100 local stakeholders and community-based organisations to ensure that the programme reaches a wide range of communities that are at increased risk in the city.

Cities Changing Diabetes in Philadelphia is working with a wide range of partners to take a place-based approach that allows for the interconnection of various projects and initiatives. This approach contributes to building a community-based health system that promotes chronic disease awareness and addresses key social determinants of health.

Dramatic increase in diabetes

Over the past 15 years, the prevalence of diabetes in Philadelphia has increased by 50%,[41] with 13.5% of the adult population now living with diabetes.[40] It disproportionately affects groups that are economically and socially marginalised and has a greater impact on specific ethnic groups.[42] Roughly one-third of the population of Philadelphia is living with obesity.[40]

Optimising and coordinating health promotion

Cities Changing Diabetes in Philadelphia has provided an opportunity for a group of individual organisations to work strategically to optimise and coordinate health promotion and disease prevention within under-resourced communities. The partnership with grassroots organisations ensures that diabetes and obesity programming is health literate, culturally sensitive and impactful.

Training advocates for health education

Several projects affiliated with Cities Changing Diabetes in Philadelphia focus on training community health advocates. The Health Promotion Council's Activate! Advocates for Diabetes Prevention teaches young people between the ages of 13 and 18 to campaign for policy and environmental changes to halt the rising obesity and type 2 diabetes epidemic among young people.

Champions of Hope: Latinos Preventing Diabetes is an intergenerational diabetes prevention programme that engages youth leaders, community residents and community health workers to act as catalysts for community health education. Temple University's Developing a Peer & Community Approach for Managing Diabetes in Disability focuses on empowering the community to support individuals with disabilities living with diabetes.

Philadelphia's Faith & Diabetes Initiative builds on a model established in Houston that empowers faith communities to deliver health education and healthy lifestyle support in trusted, community-based settings.

In Philadelphia, as in Houston, houses of faith play an important role in reaching under-resourced communities, providing health and nutrition education and empowering young people.

Making healthy choices easier

In addition to conducting an extensive foodscape analysis, Philabundance's *Neighborhood Thrive Initiative* is implementing community engagement strategies to improve access to healthy food.

The Food Trust's From the Inside Out programme focuses on a historically underserved population that is often overlooked – individuals who have come in contact with the criminal justice system. The nutrition education and cooking programme help justice-involved individuals and returning citizens make healthier food choices, both in prison and upon returning home.

Creating an anchor organisation

Cities Changing Diabetes in Philadelphia has appointed the Health Care Improvement Foundation (HCIF), a local non-profit, as the coordinating entity for all activities. HCIF facilitates cross-sector collaboration to increase self-efficacy for historically marginalised communities, improve access to resources for healthy living and increase the sustainability of programmes.

Through improved collaboration, layered interventions create an approach that addresses individual, community and societal barriers to health knowledge, overall wellness and population health.

Partners

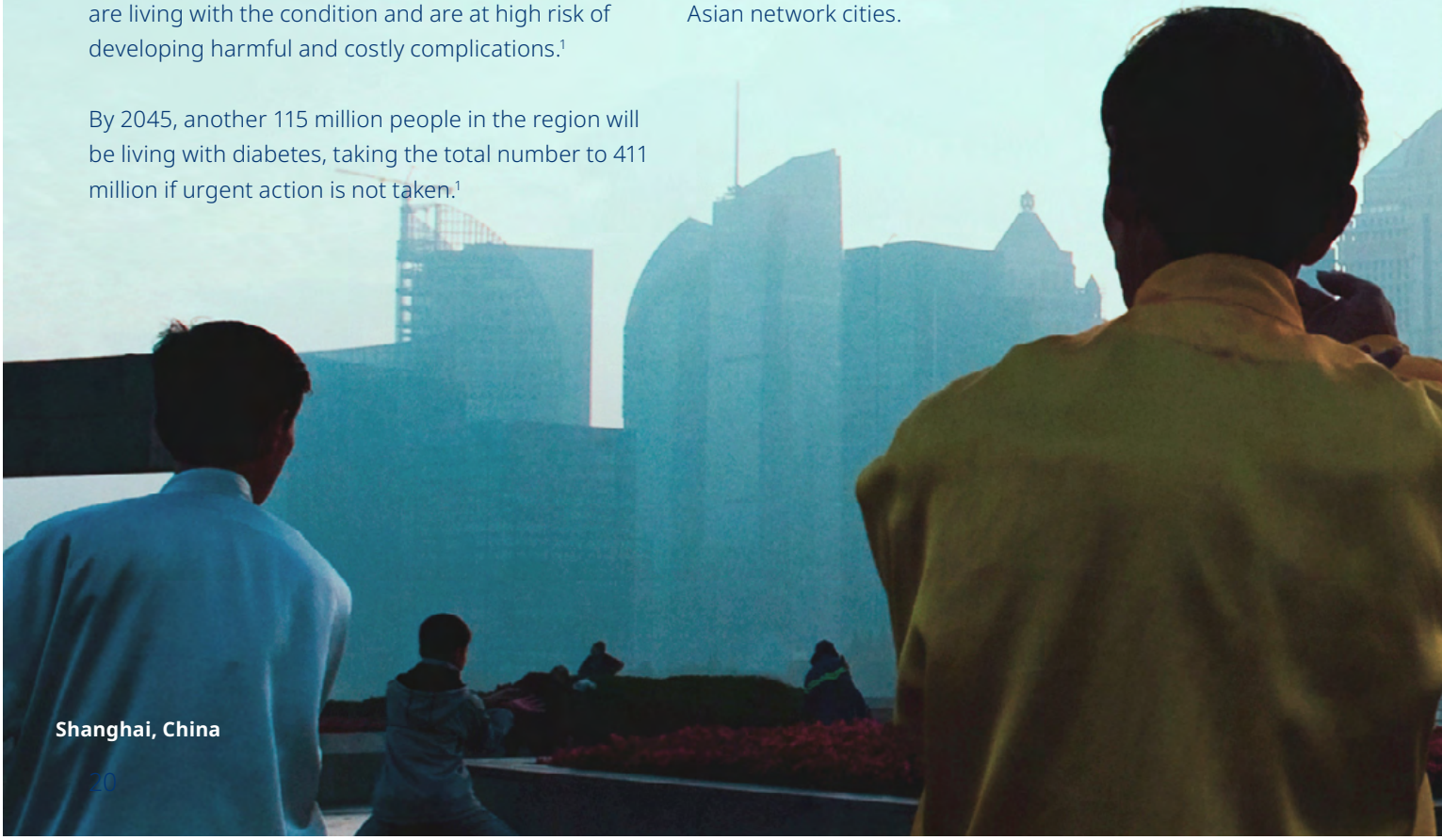
- Bible Way Baptist Church
- Congregation Temple Beth'El
- Dare to Imagine Church
- El Mesias United Methodist Church
- Enon Tabernacle Baptist Church
- Episcopal Diocese of Pennsylvania
- Esperanza College
- The Food Trust
- Health Promotion Council
- Health Care Improvement Foundation
- Salem Baptist Church
- St. Cyprian Catholic Church
- St. Philips United Methodist Church
- Philabundance
- Temple University College of Public Health
- Triumph Baptist Church
- United Muslim Masjid

Asia

At 296 million people, more than half of all people living with diabetes in the world live in Asia and the Western Pacific.[1] In China alone, there are more than 140 million people with diabetes.[1] Half of all people with diabetes in these regions do not know that they are living with the condition and are at high risk of developing harmful and costly complications.[1]

By 2045, another 115 million people in the region will be living with diabetes, taking the total number to 411 million if urgent action is not taken.[1]

Within the network, common ground has been explored on managing diabetes in ageing populations in China, Japan and Korea. Improvements in primary care and the socioeconomic drivers of obesity and diabetes are in the spotlight across all 10 Asian network cities.



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JOINED IN 2021

Asahi Japan

In Asahi city, the **prevalence of diabetes among adults is 9.1%**[45]

Asahi takes a cross-sector approach to implementing health policies

The City of Asahi in Japan has developed a health-related vision and strategy called the Lifelong Active City Concept. The Cities Changing Diabetes project in Asahi aligns with this vision and focuses on overall community development in all policy areas to prevent diabetes and obesity.

Local governments often struggle to implement strategies and actions that cut across all policy areas. However, with Cities Changing Diabetes in Asahi, the city aims to do just that through a collaborative approach to diabetes and obesity prevention.

Ageing population at greater risk

Japan's population has rapidly declined in recent years and shifted to a more elderly demographic. Japan has the most elderly population in the world,[43] and 31% of the population of Asahi is over the age of 65.[44] Given that age is a risk factor for diabetes, an ageing population requires a solid diabetes prevention and management strategy. Currently, 9.1% of adults in Asahi are living with diabetes, and 31.1% are living with obesity.[45]

Population decline and economic stagnation in regional cities prompted the Japanese government to develop numerous policies based on the concept of regional development. Under Mayor Yaichiro Yonemoto, the City of Asahi has developed a vision and strategy called the Lifelong Active City Concept.

This strategy links health promotion to economic development and city planning to promote a health-in-all-policies approach. For example, with the cooperation of private companies, a city development called Mirai Asahi has been developed close to Asahi Central Hospital (a major hospital in the region), with health a key theme.

Young and dynamic team

When Asahi joined the Cities Changing Diabetes network, a special project team was set up under the mayor's direct control. The team comprises young and dynamic government employees who are formulating a comprehensive cross-disciplinary strategy to tackle diabetes in the city. This is the first time a comprehensive cross-sectoral approach has been used in Japan's local government.

The CCD Collaboration Office, a dedicated space in Asahi City Hall, serves as a hub for the project. A series of small group meetings are held once or twice a week in an open 'multi-stakeholder' manner. This collaborative approach and the notion of 'one team' is the underlying philosophy of the Cities Changing Diabetes project in Asahi.

"Not only is this a groundbreaking method of policy-making, but it's also expected to be highly effective in terms of staff development."

Senior city official, City of Asahi

Addressing attitudes and behaviours

Since joining Cities Changing Diabetes, observations have been made regarding the culture in Asahi and attitudes and behaviours around healthy eating and physical activity. Some of these issues relate to infrastructure, such as difficulty walking on the streets, some relate to culture, such as resistance to physical activity, and others relate to the food system.

Moving forward, the Cities Changing Diabetes team in Asahi will develop measures to address these issues related to preventing the onset of the disease. In the area of disease management and reducing diabetes-related complications, the team will continue to conduct interviews with local stakeholders to develop a framework for community collaboration.

"Asahi city is one of the most aged cities in the world, and it's very significant that a comprehensive public–private–academic partnership is being formed here to advance the Cities Changing Diabetes project. The Asahi Cities Changing Diabetes project has two goals: prevention of diabetes onset and prevention of diabetes progression. We aim to disseminate evidence that Asahi city can contribute to the world."

Kensuke Yoshimura
Specially Appointed Professor, Director of the Center for Next Generation of Community Health, Chiba University Hospital

Partners

City of Asahi
Chiba University Hospital Next Generation Medical Concept Center (research partner)
Embassy of Denmark
PHD Corporation

JOINED IN 2017

Beijing China

12% of adults in Beijing are living with obesity[46]

Beijing strives for standardised diabetes management

A key focus of the work by Cities Changing Diabetes in Beijing has been to support the government's efforts to standardise diabetes management by promoting diabetes guidelines in community health centres.

When Beijing became part of the Cities Changing Diabetes network in 2017, the city expanded an existing programme to train staff working in community health centres to diagnose, treat and manage diabetes.

Standardised training module

In Beijing, 12.04% of adults are living with obesity,[46] and 12.02% of adults are living with diabetes.[47] Ensuring these residents receive the diabetes care they need can be challenging in a city as vast and densely populated as Beijing.

Since 2014, the municipality of Beijing has issued 10,000 copies of a document called the Outline of Diagnosis and Treatment of Diabetes in Beijing Communities.

This one-page document, a condensed version of the China Guidelines of Diabetes Diagnosis and Treatment, is issued as part of a training module that supports community doctors in implementing the guidelines.

Network of community doctors

Cities Changing Diabetes in Beijing has focused on an intervention approach at community health centre level to strengthen the health system's capacity and effectiveness in treating type 2 diabetes. A network of community doctors across 30 community health centres has been vital to the programme's success.

The Beijing Community Diabetes Diagnosis and Treatment Programme is targeted at delaying and preventing complications among those already living with diabetes. This programme provides 2,000 high-risk residents with individualised diet and exercise plans. This programme will also assess the effectiveness of the one-page Outline in the city's districts of Dongcheng and Tongzhou.

Intervention control study

Cities Changing Diabetes in Beijing is also involved in an intervention control study as part of the Community Diabetes Diagnosis and Treatment Programme. This comparative study involves 15,000 residents selected from high-risk groups and will evaluate the effectiveness of specific interventions.

Moving forward, the Beijing Cities Changing Diabetes working group will organise education and training programmes to strengthen diabetes management among community doctors, aiming to improve outcome indicators of diabetes in the pilot area.

"The health behaviours of Beijing residents are changing gradually. We will exchange and cooperate through innovative international projects like Cities Changing Diabetes, [and] explore and build the 'Beijing model' to effectively improve the management level and efficiency of diabetes prevention and treatment."

Liu Zejun
Deputy Counsel of Beijing Municipal Health Commission

Partners

Beijing Municipal Health Commission
Beijing Diabetes Research Center
Beijing Tongren Hospital (CMU)
Four community health centres in the districts of Dongcheng and Tongzhou

JOINED IN 2019

Chongqing
China

12.7% of adults in Chongqing were living with diabetes in 2018[49]

Chongqing introduces a 'double prescription' system

As part of its efforts to improve awareness regarding the prevention and control of diabetes at primary care level, Cities Changing Diabetes in Chongqing introduced and implemented the practice of a double prescription, where doctors prescribe not only medical treatment but also a health prescription to guide lifestyle and behaviour changes.

One of the largest cities in the world, Chongqing has a population of almost 17 million people.[48] As in many other megacities, the growing diabetes challenge requires urgent attention. In 2018, 12.7% of adults in the city were living with diabetes, 13.5% were living with obesity and more than one-third were overweight.[49]

Cities Changing Diabetes in Chongqing conducted diabetes screenings in six city districts. The population was divided into three groups based on the screening results: healthy, high risk and those already living with diabetes.

In a population-classified health management exercise, these groups will be given different interventions and management measures to evaluate their efficacy within a given population group.

Double prescription system

The double prescription project was conceived to meet the medical needs of people living with diabetes, change perceptions of a healthy lifestyle and encourage active participation in managing their health and diabetes. The project implements a double prescription system comprising a medical prescription and a health prescription. Cities Changing Diabetes in Chongqing developed a set of guidelines for healthcare professionals to use as a reference when giving out the health prescription. The pilot project demonstrated that the health prescription effectively changed food and physical activity habits.

Cross-system collaboration

Cities Changing Diabetes in Chongqing is also involved in a project to establish a network of diabetes experts across hospital levels. Six third-class hospitals and 12 community hospitals were selected from six districts of the city for this project. One of the goals of this project is to ensure a collaborative relationship between superior and subordinate hospitals.

Establishing a joint service team of clinicians, dieticians, sports medicine professionals and public health physicians that share its resources will ensure that diabetes prevention and treatment are integrated at all levels of the hospital system. Through regular guidance from the joint service team, expert teams at different hospital levels can provide comprehensive health management services for people living with diabetes.

"Chongqing's Cities Changing Diabetes programme will rely on international project cooperation, give full play to resource advantages and build a cooperation platform. Through the programme, the working team will study the future trend of diabetes in Chongqing city, find out the causes of the disease and make feasible plans. They'll also provide information support, decision support and intelligence support, and promote all sectors of society to work together to improve diabetes prevention and control in Chongqing."

Huang Minghui
Director of Chongqing Municipal Health Commission

Partners

Chongqing Municipal Health Commission
Chongqing Medical Association
Chongqing CDC

JOINED IN 2017

Hangzhou
China

In 2021, **13.8% of adults** in Hangzhou were living with diabetes[50]

Hangzhou manages to bend the curve on diabetes

After almost a decade of constructive efforts and interventions, Hangzhou has managed to reduce the prevalence of diabetes in the city. Since 2016, diabetes prevalence in Hangzhou has decreased by 3%.

Consistent cross-sector collaboration and the positioning of community doctors as drivers of change have contributed to the city's success. However, as inspiring as this outcome may be, there is still much work to be done.

Declining, but still high

While the prevalence of diabetes in Hangzhou has decreased in recent years, the city still had a diabetes prevalence of 13.8% in 2021.[50]

When Hangzhou joined the Cities Changing Diabetes network in 2017, the programme identified the quality of health management offered by healthcare professionals, the diabetes management adherence rate, and diabetes-related complications among people living with the condition as areas for potential improvement.

Specialised skills for primary care doctors

Strengthening prevention and improving diabetes management at primary care level has been instrumental in bringing about change in Hangzhou. This was achieved through the Chief Talent Plan training course – a series of standardised training seminars aimed at comprehensively improving the ability of primary care doctors and nurses to prevent and manage diabetes.

"Hangzhou has realised that the key to prevention and control of chronic diseases lies at grassroots level."

Yu Qiang
Deputy Director of Hangzhou Municipal Health Commission

More than 100 general practitioners and their specialised diabetes teams, including nurses, pharmacists and nutritionists, have received training through the Chief Talent Plan. By introducing these specialised skills at primary care level, Hangzhou has made it easier for residents to seek and receive comprehensive diabetes care within their communities.

Empowering residents through an app

To raise awareness of diabetes among the general public, Cities Changing Diabetes partners in Hangzhou launched an online diabetes management app. The app targets residents at high risk of developing diabetes and connects users to medical specialists. These healthcare professionals provide users with one-on-one guidance regarding health management. All the data generated by this platform are collected by the municipality, one of the partners in the cross-sector collaboration that made this initiative possible.

Facilitating lifestyle change

The health management app is just one of several initiatives launched to create awareness about diabetes and facilitate lifestyle change among the residents of Hangzhou. Other initiatives include an annual walk to raise awareness about diabetes, free regular health checks for residents over the age of 35 and screening for diabetes-related complications. More than 23,000 people living with diabetes have been screened for diabetes-related complications.

Partners

Hangzhou Municipal Health Commission

Hangzhou Primary Health Association

JOINED IN 2018

Jakarta Indonesia

More than two-thirds of the people living with diabetes in Indonesia are undiagnosed[52]

Jakarta works to increase the rate of diabetes diagnosis

In Jakarta, a lack of public knowledge and awareness about diabetes means that most people living with the condition in the city are undiagnosed. To change this, Cities Changing Diabetes in Jakarta is working to increase the rate of diabetes diagnosis.

When Jakarta first joined the Cities Changing Diabetes network in 2018, data collected from 10 primary care facilities showed that the rate of diabetes diagnosis was low. In addition, only a limited number of people living with diagnosed diabetes managed to meet their treatment targets.

Low rates of diagnosis and treatment

Over the past 10 years, the prevalence of diabetes in Indonesia has almost doubled, with rates of diabetes higher in urban areas than in rural areas.[51] More than two-thirds of the people living with diabetes in Indonesia are undiagnosed[52] and, in urban areas, 34.9% of people are living with prediabetes.

Of those who have received a diabetes diagnosis, only a limited number manage to meet their treatment targets. This is because Jakarta's primary care system – which acts as a gatekeeper for diabetes screening and management – requires improvement.

Poor implementation of the referral system and a lack of trust in primary care services has pushed the majority of people living with type 2 diabetes to seek care at the city's hospitals.

Raising awareness and improving care

Cities Changing Diabetes in Jakarta is acting through two initiatives to improve diabetes diagnosis and management in the city. The first of these, the Integrated Health Counselling Post, works to raise public awareness about diabetes and increase the rate of diabetes diagnosis. Cities Changing Diabetes in Jakarta is focused on scaling up the activities of this programme in offices, shopping centres, university campuses, schools and places of worship.

Together with its partners, Cities Changing Diabetes in Jakarta aims to upskill healthcare professionals working in community health centres and improve the diagnosis and management of diabetes at primary care level by developing a Diabetes Management Guideline.
Cities Changing Diabetes in Jakarta will also work towards ensuring that the referral system, availability of treatment, and pharmacy supply support diabetes management at primary care level.

Partners

- Jakarta Provincial Government
- Jakarta Health Agency (DINKES)
- Embassy of Denmark
- Endocrinology Association (PERKENI)
- Medical Research Institution, University of Indonesia (IMERI FK UI)
- Ministry of Health
- BPJS (Indonesian national healthcare insurance)
- Centre for Health Economic and Policy Study (CHEPS)
- University of Indonesia

JOINED IN 2018

Koriyama Japan

20.1% of adults over the age of 40 with national health insurance coverage in Koriyama city are living with diabetes[53]

Koriyama explores the reasons for treatment interruption

Cities Changing Diabetes in Koriyama worked with its partners to identify the social, cultural and environmental factors influencing the discontinuation of diabetes treatment in the city. The resulting report found that interruptions in treatment are significantly associated with the development and severity of diabetes-related complications.

Cities Changing Diabetes in Koriyama is founded on the collaboration of stakeholders from government, academia and industry, with the shared goal of making Koriyama the healthiest city in Japan.

Diabetes numbers on the rise

Figures from the national health insurance database indicate that 20.1% of adults in Koriyama city are living with diabetes, and this number is increasing each year.[53] More than half of the city's residents in need of dialysis have diabetes-related complications.

Previous studies have examined the potential reasons why people discontinue their diabetes treatment. These reasons may vary based on the region's population, living environment and medical environment.

Cities Changing Diabetes in Koriyama analysed the social, cultural and environmental factors unique to the city that influence the status of diabetes treatment.

Exploring treatment non-adherence

Cities Changing Diabetes in Koriyama conducted a survey to explore the factors influencing the discontinuation of diabetes treatment across the city's 15 districts.

"Koriyama city has been selected as a UN Sustainable Development Goal Future City in Japan. Under this initiative, Koriyama strives to achieve Sustainable Development Goal 3 by ensuring healthy lives and promoting well-being for all at all ages through the implementation of the 'Future City' model of urban planning."

Masato Shinagawa
Mayor of Koriyama city

The survey comprised interviews, questionnaires and database analysis and found that those who discontinued treatment thought that diabetes treatment caused financial burdens and restricted their lives. Respondents were also unclear about the progression of the disease and the complications that might arise.

Those who continued their treatment uninterrupted were informed about the severity and progression of the disease and understood the importance of good health. They were concerned about becoming a burden to family members or caregivers.

Since many of the people who chose to continue treatment had family members with diabetes, it is possible that they were more aware of the severity of the disease and the importance of continuing treatment.

This suggests that diabetes education for those living with the condition is critical and may improve treatment adherence.

"The project was the first industry–government–academia collaboration, and there was some confusion among those involved at the beginning of the project, but we were able to overcome this confusion and achieve significant results. We believe this process can be presented as one of the models of industry–government–academia collaboration."

Tetsuhito Fukushima
Professor of the Department of Hygiene and Preventive Medicine, School of Medicine, Fukushima Medical University

Partners

City of Koriyama
Fukushima Medical University

JOINED IN 2019

Seoul
South Korea

The estimated prevalence of diabetes among **Korean adults aged 30 and above is 16.7%**[54]

Downtime during the pandemic is used to learn and prepare for future actions in Seoul

During the COVID-19 pandemic, Cities Changing Diabetes in Seoul hosted two international webinars exploring how the pandemic affected those living with diabetes and what measures could be taken to tackle new COVID-related challenges in the fight against diabetes.

Seoul joined the Cities Changing Diabetes network right before the pandemic in 2019, delaying efforts to begin the research and mapping phase of the programme and get local stakeholders on board. Now that pandemic-related restrictions and preoccupations have eased, Seoul has renewed enthusiasm for the programme.

High prevalence of diabetes
In South Korea, the estimated prevalence of diabetes among Korean adults aged 30 and above is 16.7%.[54] Of those living with diabetes, 34.2% are unaware that they have the condition, increasing the likelihood that their diabetes will go unmanaged and that they will develop diabetes-related complications.

Cities Changing Diabetes in South Korea has initiated quantitative research in Seoul, Busan and Daegu to develop a better understanding of the diabetes burden in the country.

Kun-Ho Yoon, who leads Seoul's Cities Changing Diabetes team, conducted a Rule of Halves analysis.

"Through the Cities Changing Diabetes programme, we're taking on a new challenge to find the complex causes and solutions to diabetes problems in Seoul. Like so many urban areas around the world, Seoul has many urban problems and vulnerabilities related to the diabetes epidemic. We'll continue to work to reduce the prevalence of diabetes and improve diabetes management by strengthening solidarity and working with our Cities Changing Diabetes partners."

Kun-Ho Yoon
CCD Ambassador of Korea, Professor of Endocrinology and Metabolism at the Catholic University of Korea, Seoul St Mary's Hospital

The Korean Diabetes Association has a long-standing relationship with Novo Nordisk in Korea, which has laid the foundation for fruitful collaboration on the Cities Changing Diabetes project. In Seoul, the partnership comprises the Seoul Metropolitan Government, the Danish Embassy in South Korea, Novo Nordisk in Korea and the Korean Diabetes Association.

Connecting with network partners
While the pandemic limited the programme's ability to carry out research and engage potential stakeholders, Cities Changing Diabetes in Seoul managed to host two international webinars during this period. These webinars were supported by the Danish Embassy in South Korea and included speakers from the Korean Diabetes Association, University College London and the Copenhagen Diabetes Center.

The first webinar was held in November 2020 and examined how cities in the Cities Changing Diabetes network have worked together and shared their initiatives. The second webinar centred on the theme of diabetes and health inequalities in cities and was streamed in December 2021.

Moving forward, Cities Changing Diabetes in Seoul will conduct a qualitative diabetes vulnerability assessment to determine the city's underlying sociocultural drivers of type 2 diabetes.

Partners

City of Seoul
Korean Diabetes Association
Embassy of Denmark

JOINED IN 2014

Shanghai
China

One in five adults in Shanghai are living with obesity[56]

Shanghai continues to focus on prevention, early diagnosis and better management

Shanghai was already working on bending the curve on diabetes when it joined the Cities Changing Diabetes network in 2014. Since then, a wide range of local stakeholders have collaborated through the Cities Changing Diabetes programme to ensure that diabetes is diagnosed early and managed properly in the city.

In 2015, Shanghai began implementing an action plan that upskilled healthcare professionals at community healthcare centres. This allowed for large-scale diabetes screenings and improved the city's diabetes referral system.

Risk increases with an ageing society

One of the world's largest and fastest-growing megacities, Shanghai is the first city in China to be categorised as an ageing society, with residents living to an average age of 84.[55] Population ageing is accompanied by an increase in the prevalence of non-communicable diseases (NCDs), including type 2 diabetes.[1]

When Shanghai joined the Cities Changing Diabetes network, almost one-third (29.5%)[57] of schoolchildren and 20% of adults were living with obesity.[56]

Other challenges identified in the city included a high proportion of people with undiagnosed diabetes and gaps in healthcare provider knowledge related to the provision of standardised diagnosis and treatment of diabetes.

Standardising diabetes management

Shanghai Sixth People's Hospital was designated as the city's official diabetes prevention and treatment centre under Shanghai's three-year action plan (2015–2017). The hospital collaborated with Shanghai CDC, Shanghai Eye Disease and Treatment Center and Shanghai Laboratory Center to carry out its mandate.

The system was put in place to ensure that all residents had access to a comprehensive system of diabetes prevention, intervention and treatment, and it covers 240 community health centres in the city's 16 districts.

Model for managing NCDs

Between 2016 and 2017, the number of people living with diabetes under standardised management rose from 685,000 to 749,000. By March 2018, the city had completed a diabetes risk assessment for 1 million people.

During this process:

- 37,000 people were diagnosed with diabetes
- 48,000 people were made aware that they were living with prediabetes
- 220,000 people living with diabetes were screened for diabetes-related complications.

The model used to transform diabetes management in Shanghai could potentially be used as a model for the management of other chronic diseases in urban communities across China. It has ensured the upskilling of healthcare professionals at primary care level, made large-scale diabetes screening possible and improved the referral system in Shanghai.

Cities Changing Diabetes in Shanghai will continue to collaborate with local city stakeholders to strengthen the capacity of the city's community health centres to prevent, diagnose and manage diabetes.

"The Cities Changing Diabetes programme could fundamentally change the trend of diabetes, with collaborative participation and action from a broad range of stakeholders."

Jia Wiping
Professor and former director of Diabetes Branch, Chinese Medical Association

Partners

National Office for Diabetes Primary Healthcare

The Sixth People's Hospital affiliated with Shanghai Jiao Tong University

JOINED IN 2014

Tianjin China

The incidence of diabetes in Tianjin among adults is **319 per 100,000**[58]

Tianjin shifts focus from quantity to quality of diabetes care

With a focus on the primary healthcare sector as the nexus of diabetes prevention and treatment, Tianjin has carried out a series of initiatives to strengthen healthcare management in local community health centres.

Lack of trust in community health centres

A vulnerability assessment was conducted as part of the initial research carried out when Tianjin joined the Cities Changing Diabetes network in 2014. The assessment revealed that people living with diabetes had little faith in community health centres, instead preferring to seek care at large hospitals. This placed an unnecessary burden on the tertiary healthcare system and led Tianjin to initiate the Four-in-One Training Project to strengthen the management of diabetes at primary care level.

Specialised diabetes training

Through the Four-in-One Training Project, the capacity for diabetes prevention and treatment has been significantly improved at primary care level.

More than 200 diabetes clinics have been established at community health centres, and nearly 500 chief diabetes doctors and diabetes nurses have received training.

The positive outcomes of this initiative can be seen at primary care level, where approximately 447,000 people living with diabetes receive treatment within their communities. The standardised management rate has reached 80%, and the blood glucose control rate has reached 73.5%.

As a result of this project, both the confidence of doctors working at community health centres and patient trust in community health centres have increased.

Shift to a more holistic approach

While the original focus of Cities Changing Diabetes efforts in Tianjin was to get more people living with diabetes to use primary healthcare services, the focus has now shifted to management quality and effect.

In Tianjin, treating type 2 diabetes is no longer an isolated medical service. Instead, managing diabetes has evolved into providing comprehensive, holistic and continuous health management services.

Moving forward, Cities Changing Diabetes in Tianjin will continue to work with its partners to improve diabetes prevention and management, promote public education, and raise awareness about diabetes and obesity among the residents of Tianjin.

"In the future, Tianjin will rely on the Cities Changing Diabetes platform to enhance diabetes prevention and control continuously, and widely improve diabetes awareness among the general public."

Cao Xiaohong
Deputy mayor of Tianjin

Partners

Tianjin Municipal Health Commission
Tianjin Healthcare Security Bureau
Tianjin Medical Association
Tianjin Medical University

JOINED IN 2017

Xiamen China

Xiamen is determined to maintain a low diabetes prevalence

In Xiamen, the **diabetes prevalence is 4.8%**,[60] which is less than half the national average[61]

An integrated approach to the healthcare system has enabled Xiamen to maintain its relatively low diabetes prevalence. The city's approach begins at grassroots level and goes beyond primary care to prevent diabetes-related complications.

Tiered system of healthcare management

While more than half (53%)[59] of the people living with diabetes in Xiamen are unaware of their condition, the city has a low prevalence of diabetes (4.8%)[60] compared with the national average (10.9%).[61]

The city of Xiamen introduced a system known as the Three-Division Co-management Model in 2015 to create a more integrated healthcare system, with better coordination and communication between primary and tertiary care levels. Cities Changing Diabetes in Xiamen has been supporting the implementation of this model since the city joined the network in 2017.

By strengthening the care provided at primary level through community health centres, Xiamen hopes to reduce the number of people requiring tertiary care in large hospitals for diabetes-related complications.

Team of specialists

Creating and implementing the Three-Division Co-management Model has meant improving and standardising skills related to diagnosing and treating diabetes at grassroots level.

Xiamen has set up additional health clinics in vulnerable communities and trained almost 1,000 health managers to support community-based general practitioners.

Under this model of care, people living with diabetes are cared for by a team of specialists that provides comprehensive, multidisciplinary and holistic healthcare within the community.

Creating a more active city

In addition to improving how citizens are screened and treated for diabetes, Xiamen is also set on changing attitudes towards physical activity. The city intends to build a network of cycle and pedestrian lanes to create a healthier urban environment. By hosting large-scale mass sporting events such as marathons and long-distance swimming competitions, the city hopes to nurture a culture of physical activity.

"The Cities Changing Diabetes project can help the high-risk population to achieve early prevention, not only by expanding the primary prevention of diabetes but also by improving the secondary and tertiary prevention of diabetes-related complications."

Yao Guanhua
Director of Xiamen Municipal Health Commission

Partners

Xiamen Municipal Health Commission

Xiamen Medical Association

National declaration guides Cities Changing Diabetes activities in China

The capacity of governments across the world to tackle the challenge of preventing and effectively managing non-communicable diseases (NCDs) was limited during the COVID-19 pandemic. During this period, Cities Changing Diabetes in China sustained the programme's momentum by advocating for the goals set out in its national declaration document and executing its three-year action plan.

Cities Changing Diabetes in China has played an important role in supporting national health strategies and spreading awareness about diabetes prevention and management through this action plan.

"Several characteristic experiences, such as Xiamen's Three-Division Co-Management Model of Diabetes, the construction of, Shanghai's Diabetes Prevention, Diagnosis and Treatment Service System, Ningbo's Diabetes Information Fine Management and the Cities Changing Diabetes programme have driven the development of diabetes prevention and treatment across the country."

Wang Jianjun
Member of the Leading Party Group of the National Health Commission and Executive Deputy Director of the National Ageing Office

Declaration of Cities Changing Diabetes
In its national declaration, which was released in 2018, Cities Changing Diabetes in China set out the following goals:

- **To support the national strategy** (Healthy China Action), especially the implementation of the Diabetes Special Action
- **To map the current situation** of diabetes prevalence in urban China and identify high-risk groups
- **To set goals** and formulate the corresponding action plans to address the diabetes challenge by offering help with urban planning and management, supporting health policy development and health system enhancement
- **To advocate for societal recognition** of the severity of urban diabetes and take action to lower the prevalence
- **To establish a collaborative mechanism** across sectors, build a supportive environment, guide residents in changing their behaviour and promote standardised diagnosis and treatment.

Shanghai, China

Implementing the declaration

Cities Changing Diabetes in China used the National NCD demonstration areas as the starting point for its 2019–2022 Three-Year Plan, which revolved around the theme of 'early awareness, early treatment and early management'.

Since 2018, the Cities Changing Diabetes programme in China has impacted 88 NCD demonstration areas in 77 cities in China. Approximately 19 million people in these areas have benefited from the programme's mobile app, and 10,000 people have used the app to self-test for diabetes risk.

To provide actionable resources for health management institutions and local governments, the Cities Changing Diabetes team in China has drawn up summaries of best practice cases from Beijing, Shanghai, Tianjin, Xiamen, Hangzhou and Chongqing, the six Chinese cities in the Cities Changing Diabetes network. Cases from four demonstration areas with outstanding performance in diabetes prevention and control have been summarised as well.

The Cities Changing Diabetes team in China also participated in numerous national chronic disease-related conferences and five international academic conferences to promote the programme's work and engage in academic exchange.

Building a healthy environment

Moving forward, Cities Changing Diabetes in China will launch a new initiative called Building a Healthy and Supportive Environment to Change Diabetes in Cities. This initiative will be introduced to Cities Changing Diabetes in China to promote the formation of a social environment conducive to good health.

The action plan for the initiative has been formulated, and a toolkit is in the process of being developed. The goal of the initiative will be to help residents to manage their health and take control of their diabetes as soon as possible.

Partners

Bureau of Disease Control and Prevention, National Health Commission
Chinese Center for Health Education
China National Center for Chronic and Non-communicable Disease Control and Prevention
All-China Journalist Association Office
China Health Promotion Foundation
Chinese Preventive Medicine Association
China National Office for Primary Diabetes Care

Europe

Almost 61 million people are living with diabetes in Europe, and more than one-third of them are undiagnosed.[1] The number of adults in the region living with diabetes is expected to reach 69 million by 2045, as the prevalence of diabetes (9.2%) sees a 13% increase.[1]

With 23 cities on board (mid-2022), expansion and innovation continue to flourish in the European network. Partners have pioneered the first financial bond to improve vulnerable diabetes patient outcomes in Aarhus, Denmark, and a two-city study on diabetes awareness in the education sector in Warsaw and Kraków in Poland has concluded and is informing intervention proposals. Italy continues to unlock the potential of the Urban Diabetes Declaration, expanding the network to its eighth city in 2022, and more mayors nationally are committing to its principles as the first step to joining the network.

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JOINED IN 2020

Bari Italy

The prevalence of diabetes in Bari **rose from 3.3% to 7.7%** in just 17 years[62]

Strong partnerships set Bari on the right track

Cities Changing Diabetes in Bari formed a strong partnership with a network of local pharmacies to spread information about healthy lifestyles to the residents of Bari. The integrated and multidisciplinary approach utilises public–private partnerships to help Bari turn the tide on diabetes in the city.

The incidence of diabetes in Bari rose from 3.3% to 7.7% in just 17 years, and 70–80% of the city's healthcare resources are currently spent on managing chronic diseases such as diabetes.[62] The city is looking to act on the social, cultural, and economic determinants of type 2 diabetes and is working to remove barriers to prevention and access to care from city spaces.

Leveraging the city's natural attributes

Bari, the most southerly Italian city to join the Cities Changing Diabetes network, is situated on the Adriatic Sea. The city has certain natural attributes, such as access to nutritious food, that can be leveraged to promote healthy lifestyles among its residents.

To better focus on the city's natural attributes, Cities Changing Diabetes in Bari formed a strong partnership with local pharmacies to distribute information containing advice on nutrition, glycaemic index, and the role that healthy eating can play in preventing metabolic failure and diseases such as obesity and type 2 diabetes.

Moving forward, Cities Changing Diabetes in Bari will consider how the pharmacy network can be used to measure certain metabolic goals, such as waist circumference, and evaluate the impact of the information distributed.

"The sunshine, running in the city to prevent diseases, Bari football team's promotion to the second division and our traditions are helping us to regain the time we've lost in the past two years. Let's strive to put our city at the top of culture and health: we deserve it!"

Antonio Decaro
Mayor of Bari

Training health city managers

As has been the case in other Italian cities in the Cities Changing Diabetes network, Bari held a special Health City Manager master course in 2021 with the support of the Associazione Nazionale Comuni Italiani. The course trained a group of health city managers to support local authorities in their efforts to incorporate health into all policy frameworks.

Developing a school-based cooking project

Bari's Cities Changing Diabetes team plans to develop and roll out a school-based cooking project to teach children the value of healthy foods and how to prepare them. During the project, children will take photographs of the various steps of the healthy eating experience – from buying fresh ingredients at the market to preparing food and the table experience – that they will then be able to share with their families.

To better understand the current diabetes situation in the city, Cities Changing Diabetes in Bari will collect new data on obesity, diabetes and the sociocultural determinants of vulnerability. This information will be analysed and presented in an ATLAS that will be shared with all city partners.

Partners

- Health City Institute
- Bari Municipality
- University of Bari 'Aldo Moro'
- FOFI Puglia
- Italian Municipalities Association (ANCI)
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Local Patient Association and Citizen Defender

JOINED IN 2020

Belgrade
Serbia

An estimated **39.6% of people with diabetes** in Serbia are living with undiagnosed diabetes[63]

Belgrade expands its Open Blue Circle project

Cities Changing Diabetes in Belgrade is focused on promoting healthier lifestyles in urban areas by increasing physical activity in the city through the Open Blue Circle project.

High prevalence of undiagnosed diabetes

In Serbia, the prevalence of diabetes is 9.1%.[1] However, this figure may not provide an entirely accurate picture of the problem, as an estimated 39.6% of people with diabetes are believed to be undiagnosed, and more than half the population (53.6%) is overweight or living with obesity.[63] Without significant changes in the urban environment, these high prevalence figures are unlikely to change.

Diverse partnerships have allowed Cities Changing Diabetes in Belgrade to create engaging content that attracts media attention and provides extensive outreach.

Expanding the Open Blue Circle project

The Open Blue Circle project uses an online platform to provide users of the platform with information about diabetes, healthy lifestyle choices and walking routes in the city. Once they have downloaded the app, users can clock up kilometres by completing designated routes. The kilometres are then converted into financial donations from Novo Nordisk. The donations are reinvested to facilitate physical activities in Belgrade and expand the project beyond the Serbian capital. Since the Open Blue Circle project was launched in November 2020, users have logged more than 140,000 kilometres. To build on this success, Cities Changing Diabetes in Belgrade recently expanded the scope and reach of the project.

"The Open Blue Circle project is important for our society from various perspectives. It promotes physical activity and raises awareness about healthy lifestyles. In addition, it reminds all of us to contribute to improving the lives of people with diabetes and to help further prevent this disease in the community."

Zoran Radojicic
Mayor of Belgrade

In March 2022, a new trail, constructed with funds earned through the kilometres walked, opened in Belgrade. Furthermore, the project has been expanded to include light mountain hiking sessions, and two more cities outside Belgrade have been included.

Through a collaboration with Belgrade Running Club, the Open Blue Circle project also offers a Nordic walking course for people who are overweight or have diabetes. The course is designed to make this popular sporting discipline more accessible to people who are not usually physically active.

Improving recreational spaces

The next step for Serbia's Cities Changing Diabetes team is to expand the Open Blue Circle project to one more city outside Belgrade. Within Belgrade, the team wants to ensure that the city is open to its inhabitants in a way that increases physical activity and promotes healthy lifestyles. To this end, efforts will be made to improve recreational spaces in the city and create new opportunities for physical exercise in urban areas.

Partners

- Assembly of the City of Belgrade
- Embassy of Denmark
- Faculty of Medicine of Belgrade University
- Diabetes Association of Serbia
- Diabetes Association of DT2 patients 'Krug dvojke Srbije'
- Belgrade Diabetes Association 'Plavi krug'
- Belgrade Running Club
- Mountaineering Association of Serbia
- Stetoskop.info

JOINED IN 2020

Berlin Germany

In Germany, **15% of the adult population** is living with diabetes[27]

Berlin takes a novel approach to improving individual health literacy

Germany's high prevalence of type 2 diabetes and the population's limited awareness of the disease led the city of Berlin, Marzahn-Hellersdorf, to create innovative ways to improve the flow of health information to vulnerable population groups.

About 15% of Germany's adult population is living with diabetes,[27] and the high prevalence of the condition is expensive. At 41.3 billion US dollars, the country's total diabetes-related health expenditure is the fourth-highest globally.[1]

Lack of political and public awareness

Historically, there has been a lack of regional and local political awareness of type 2 diabetes, obesity and cardiovascular disease. This has resulted in health education campaigns to help prevent these costly conditions and improve population health being underprioritised. Therefore, in Berlin, the first German city to join Cities Changing Diabetes, programme partners decided to take action and focus on promoting individual health literacy among the population.

Cooperation, collaboration and communication

Within the network of programme partners, there is a high level of cooperation, knowledge exchange and communication. This cooperation and collaboration are built on a foundation of shared goals and clear roles.

All the partners play a role in promoting Cities Changing Diabetes projects in Berlin, and there is excellent regional support for the projects and broad social media interest.

Promoting a physically active city

To get the residents of Berlin moving and increase their physical activity, Cities Changing Diabetes partners launched the city-wide 30x30 Challenge. This month-long campaign encouraged residents to engage in 30 minutes of physical activity every day.

The popular and effective campaign achieved what many physical activity campaigns fail to do – increase physical activity in the relevant target group. The challenge, promoted via a successful social media campaign, attracted 6,842 participants, who collectively logged 270 million steps. Of those who participated in the challenge, 85% committed to engaging in more physical activity following the challenge, and 90% said they would be keen to repeat the challenge.

Working to reach vulnerable residents

Cities Changing Diabetes in Berlin is working to reach more of the city's vulnerable residents through a conveniently located district health kiosk. The kiosk will provide residents with access to care areas, including nutrition, exercise and counselling. Residents will be offered information on diabetes and obesity and advice about exercise and nutrition. The kiosk will also be used to pilot primary and secondary prevention measures for type 2 diabetes, obesity and cardiovascular disease. The programme will undergo statistical monitoring and evaluation.

"We need awareness that diabetes is an issue we all face together. It's time to act! We have enough think tanks; what we need now is a do tank."

Dr Christian Toussaint
Internist and diabetologist, Berlin Marzahn-Hellersdorf

Moving forward

Cities Changing Diabetes in Berlin will continue to implement measures for diabetes prevention, promote physical activity and provide counselling for vulnerable population groups. Efforts will also be made to improve local healthcare structures and quality of care.

Partners

Marzahn-Hellersdorf District Office
Dein starker Partner für Netzwerke (DSPN)
AOK Nordost
läuft.de
Diabetiker Berlin

JOINED IN 2019

Bologna Italy

Diabetes prevalence among adults in the city **ranges from 3.2% to 6.5%**[64]

Bologna makes the most of COVID-19 pandemic limitations

When the COVID-19 pandemic threatened to halt Bologna's Cities Changing Diabetes plans, the programme worked with its partners to map the burden of type 2 diabetes in the metropolitan and municipal areas of the city.

Mapping the prevalence of type 2 diabetes revealed inequalities between high- and low-income areas, prompting Cities Changing Diabetes in Bologna to initiate evidence-based interventions in the areas most affected by obesity and diabetes.

Higher prevalence in low-income areas

The data collected during the mapping process showed an inverse association between diabetes prevalence and income. Prevalence was lower in high-income areas and higher in low-income neighbourhoods. For example, diabetes prevalence among adults in the high-income southern area of Bologna was lower (3.2%) than among adults in the low-income north-western region of the city (6.5%).[64]

Data collection during the pandemic also presented a unique opportunity for the epidemiological department to analyse diabetes data related to COVID-19. The researchers determined that during the first year of the pandemic, 4.4% of people living with type 2 diabetes were infected with CoV-2, compared with 3.7% of the general population. The mortality rate was almost three times higher among people with type 2 diabetes (19.6%) than those in the general population (6.6%).

Involvement in the Healthy Cities network

The fact that the city of Bologna is an active member of Italy's Città Sane (Healthy Cities) network means that there was a strong foundation already in place when Bologna joined Cities Changing Diabetes. Patient and civil associations were already accustomed to working together to meet the city's health goals.

Cities Changing Diabetes in Bologna leveraged this solid foundation to work with its partners to conduct the mapping during the COVID-19 pandemic. The information and findings from the mapping were also shared with the local health authorities, universities and civic associations in relation to present and future activities to detect critical conditions among city residents and support healthy living in Bologna.

Making physical activity more accessible

Cities Changing Diabetes in Bologna has compiled a physical activity leaflet that shows where and when residents can exercise with the help of independent support groups. A collaboration with local pharmacies and sports associations has helped with the distribution of these leaflets.

In 2021, Cities Changing Diabetes in Bologna and its partners also organised a special master course to train a group of individuals to become health city managers. The aim is for these health city managers to be able to support local authorities in their efforts to incorporate health into all policy frameworks.

New ATLAS to include a frailty map

All of the new data regarding type 2 diabetes in Bologna, focusing on COVID-19 and obesity correlations, are being collected in an ATLAS that will be shared with city partners and regional stakeholders. An exciting feature of this new ATLAS will be the inclusion of a frailty map that details social and cultural determinants of vulnerability.

Partners

- Health City Institute
- Conference of Bologna Metropolitan City
- City of Imola
- University of Alma Mater Studiorum
- Italian Municipalities Association (ANCI)
- FOFI Puglia
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Italian Association of Dietetics and Clinical Nutrition (ADI)
- Patient Association and Citizen Defender

JOINED IN 2014

Copenhagen
Denmark

One in three adults in the Copenhagen region are living with obesity[68]

Copenhagen recommits to addressing vulnerability with a new action plan

Copenhagen, the second city to join Cities Changing Diabetes, has made significant progress in its fight against diabetes. However, despite this progress and universal health coverage, societal inequalities make certain communities more vulnerable to developing diabetes.[65,66]

With its updated 'Diabetes and Heart Action Plan 2022–2025',[67] Copenhagen has reaffirmed its commitment to addressing the vulnerabilities caused by societal inequalities. The action plan comprises four tracks: a coherent primary health services system, health equity, mental well-being; and an interactive knowledge hub that is closely affiliated with healthcare services.

Concerning trend of unhealthy weight

Compared with many other cities in the Cities Changing Diabetes network, Copenhagen has a relatively low prevalence of diabetes, with 5.3% of the adult population diagnosed with the condition.[68] An additional estimated 4.3% of the population is living with prediabetes.[69]

However, almost half (47%) of the residents in the Copenhagen region are overweight, and 15% of adults are severely overweight.[68] This is concerning and may increase the prevalence of type 2 diabetes and other chronic conditions.

The city's Center for Diabetes and Heart Health is popular and effective:[70] three-quarters of people newly diagnosed with diabetes in Copenhagen visit the centre, with the majority finding it helpful.

"The success of this centre is based on the political priority of the diabetes problem, highly skilled and engaged healthcare professionals, collaborations within the healthcare sector and researchers and, finally, strong leadership."

Charlotte Glümer
Head of Center for Diabetes, Copenhagen

On average, people who use the centre experience a 10% drop in blood glucose levels and a steep reduction in diabetes stress. Due to its success, the centre is set to move to a larger facility in 2024.

Reducing vulnerability through collective community action

The centre has recently opened a small satellite clinic in the socially disadvantaged neighbourhood of Tingbjerg in northwest Copenhagen. The hub in this culturally and ethnically diverse neighbourhood focuses on healthy living and preventing type 2 diabetes.

Tingbjerg Changing Diabetes is based on the 'supersetting approach', which involves multi-stakeholder engagement, in-depth understanding of local needs and mobilisation of local resources to strengthen social networks for collective community action. Tingbjerg Changing Diabetes is currently focusing on three areas of intervention: food literacy, entrepreneurship and social investments. Projects include a community garden, a citizen-driven community restaurant that serves affordable healthy meals, and opportunities for skills development at Svanholm organic farm.

Knowledge hub to become a focal point

In the coming years, the Cities Changing Diabetes partnership in Copenhagen, which includes Steno Diabetes Center Copenhagen and Danish diabetes and heart associations, will focus on developing a powerful knowledge hub. Center for Diabetes will function as a scientific hub, creating innovative solutions and sharing them internationally.

Partners

Steno Diabetes Center Copenhagen
Danish Diabetes Association
University of Copenhagen
City of Copenhagen

JOINED IN 2020

Genoa
Italy

Approximately, **5.5% of the adults in Genoa** are living with diabetes[73]

Changing demographics prompts Genoa to launch a screening programme

The city of Genoa is home to a large number of immigrants and elderly residents. As these population groups tend to be at greater risk of developing type 2 diabetes, Cities Changing Diabetes in Genoa worked with the municipality to launch a diabetes screening programme aimed at at-risk population groups.

The municipality of Genoa is determined to make the city a healthier home for all its residents, and Cities Changing Diabetes in Genoa is well equipped to assist in this endeavour.

Changes in city demographics

Historically, the city of Genoa has represented a meeting point between different cultures and absorbed diverse migratory flows. At the end of 2020, immigrants made up 9.5% of the population of Genoa.[71] The metropolitan city of Genoa has witnessed a progressive reduction in its resident population, and a significant proportion of the remaining residents may be considered elderly.

Of the 823,000 residents of Genoa, roughly 30% are over the age of 65.[72] Changes in demographics affect both the prevalence of diabetes and the nature of diabetes interventions, which need to be culturally appropriate in order to be effective.

Already on track for a healthier city

In recent years, the municipality of Genoa has taken important steps to improve the city's health. For example, the city introduced a cycle path along the sea front to help increase physical activity among residents.

The goals of the municipality are to encourage healthy lifestyles, promote a healthy food culture, improve access to sports and exercise facilities, develop sustainability-oriented urban transport policies, and increase access to care, aligning neatly with those of the Cities Changing Diabetes network.

Screening among at-risk populations

Based on collected sociodemographic and epidemiological data, Cities Changing Diabetes in Genoa launched a screening programme in the metropolitan area to identify residents at risk of developing diabetes and metabolic syndrome. The programme is being rolled out in collaboration with local pharmacists and general practitioners. To encourage physical activity among the identified at-risk residents, Cities Changing Diabetes in Genoa is in the process of mapping swimming pools and gyms in order to promote ease of access.

"The city of Genoa wants to develop concrete actions starting from the study of data in order to identify cultural and social dynamics that affect vulnerability to diabetes."

Cities Changing Diabetes stakeholder

Practical training for health managers

In May 2022, Cities Changing Diabetes in Genoa organised a Health City Manager course with support from Associazione Nazionale Comuni Italiani (ANCI). The special course will prepare postgraduate students to support local authorities in incorporating health into all policy frameworks.

Partners

- Health City Institute
- Genoa Municipality
- University of Genoa
- Liguria Region
- Italian Municipalities Association (ANCI)
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Local Patient Association and Citizen Defender

JOINED IN 2020

Istanbul
Turkey

At 14.5%, Turkey has the **highest diabetes prevalence in Europe**[1]

Istanbul commits to fighting childhood obesity

It is projected that, by 2030, 3.4 million children in Turkey will be living with obesity.[37] This will have significant consequences for the future health of the nation. To tackle this problem, Cities Changing Diabetes in Istanbul is working with its partners to mobilise the city against obesity and make healthy living a part of everyday life in Istanbul.

In March 2022, on World Obesity Day, the Istanbul Metropolitan Municipality (IBB) launched its Action Plan for the Fight Against Obesity. Through this action plan, the city aims to prevent childhood obesity, develop healthy eating opportunities, change behaviour towards healthy eating, and expand infrastructure and opportunities for physical activity in the city.

Highest rates of obesity in Europe

Turkey has the highest rates of obesity and diabetes in Europe, with an adult obesity prevalence of 32%[74] and a diabetes prevalence of 14.5%.[1] But this significant public health challenge is not limited to the country's adult population. More than 30% of children in the 5–9 age group and 25% of children between the ages of 10 and 19 are overweight or living with obesity.[75]

With a population of 16 million, Istanbul is well placed to lead the fight against diabetes in Turkey.[76] Cities Changing Diabetes in Istanbul is committed to initiating sustainable health promotion programmes that will create a best practice case to transform Istanbul's obesity action plan at city level into a chronic diseases action plan at country level.

A blueprint for local administrations

Cities Changing Diabetes in Istanbul worked with its partners to conduct in-depth research focusing on the perception of obesity in Istanbul and to determine the social, cultural and urban factors contributing to obesity in the city. Following this research, the IBB launched its Action Plan for the Fight Against Obesity, which prioritises the prevention of childhood obesity and which will act as a blueprint for local administrations.

Prioritising childhood obesity

During the COVID-19 pandemic, an online Social Listening study was conducted, followed by qualitative and quantitative research to better understand children's lifestyles, dietary habits, living conditions and the approaches of their parents. The study aimed to understand the underlying causes of obesity among Istanbul's children.

Following this, an obesity awareness programme that targets pre-school children and their parents was developed. Digital and in-person educational programmes have been created for the nursery school curriculum, and the 'Persona Dolls Educational Initiative' has been implemented as a teaching method in nursery schools to prevent obesity stigmatisation.

"We rank first in Europe in obesity. Moreover, we have the second-highest obesity rate among OECD countries after the US. Although obesity is generally perceived as an adult disease, childhood obesity is unfortunately now a global public health problem."

Şengül Altan Arslan
Istanbul Metropolitan Municipality Deputy Secretary General

Partners

Embassy of Denmark
Turkish Association for the Study of Obesity
Diabetic Children's Foundation
KOÇ University

JOINED IN 2020

Kraków
Poland

In 2018, an estimated **30% of children in Kraków** were overweight[77]

Kraków focuses on children with special dietary needs

Since joining the network in 2020, Cities Changing Diabetes in Kraków has been working with its partners to create a healthier urban environment, specifically focusing on the school environment. Cities Changing Diabetes in Kraków hopes to shape habits and attitudes around healthy eating to prevent obesity through early intervention.

While more general interventions are being designed, the current focus of Kraków's Cities Changing Diabetes programme is on providing support for elementary school children with special dietary needs.

Early intervention for long-term change

An estimated 30% of children in Kraków were overweight or living with obesity in 2018.[77] Without intervention, these children are likely to become adults who are overweight or living with obesity, which will put them at greater risk of developing lifestyle-related non-communicable diseases, such as type 2 diabetes.

Cities Changing Diabetes in Poland surveyed more than 4,000 primary school teachers to determine their attitudes towards and beliefs about healthy eating and diabetes.

Based on this research, experts from the Lazarski University in Warsaw, the Jagiellonian University in Kraków and the scientific council of the Cities Changing Diabetes programme are designing systematic interventions to improve the health of the Polish population.

Supporting children and their families

Cities Changing Diabetes in Kraków is also working with the local government to set up a school kitchen for primary school children with special dietary needs. Children with food allergies, coeliac disease, diabetes, phenylketonuria or cystic fibrosis will be referred to the programme by their head teachers.

The kitchen will be set up at one of the nursing homes and will help meet the needs of families struggling to prepare daily meals that meet specific health and nutritional requirements. The city will finance the kitchen, which is scheduled to open in 2023.

Educational materials planned for schools

In collaboration with Jagiellonian University, Cities Changing Diabetes in Kraków is developing a survey to determine the precise nutritional needs of students attending Kraków's primary schools. The survey will be carried out among the head teachers of schools in the city.

Cities Changing Diabetes in Kraków is also planning to prepare educational materials for teachers and schoolchildren on preventing obesity and diabetes. These materials will be prepared in both Polish and Ukrainian, to cater to the foreign students whose families have taken refuge in Poland following the outbreak of war in Ukraine at the beginning of 2022.

"As a partner city of the Cities Changing Diabetes programme, we plan to host a kitchen dedicated to students with special dietary needs on the grounds of one of the nursing homes. We believe this will help solve the problems of many families struggling with the cost of preparing meals for their children that meet special health requirements."

Elżbieta Kois-Żurek
Director of the Social Policy and Health Department of the City of Kraków

Partners

Institute of Healthcare Management, Lazarski University

The Programme Council of Cities Changing Diabetes in Poland

Representatives of Kraków City Hall

JOINED IN 2021

Kyiv Ukraine

Approximately **18% of the residents** of Kyiv have or are at risk of developing diabetes

Kyiv uses the transport system to spread awareness about diabetes

Kyiv joined the Cities Changing Diabetes network in November 2021. Three months later, Ukraine was invaded by Russia, and much of the country has been subjected to violence, including attacks on the transport network, where partners in Kyiv had initiated their diabetes and obesity awareness-raising intervention.

Inactive transport systems usually put citizens at greater risk of developing diabetes, but yet they offer huge potential to reach commuters with positive health messages. Prior to the invasion in February 2022, Cities Changing Diabetes in Kyiv had launched a public awareness campaign across national media and had put the advertising space on the transportation network to good use.

When the last count was possible, it was estimated that more than 2 million people had been exposed to the information campaign about diabetes. Initially, partners in Kyiv had focused on conducting research related to the prevalence of diabetes in the city and running media campaigns to raise awareness about the disease.

High levels of uncontrolled diabetes

It is estimated that approximately 18% of Kyiv's residents have diabetes or are at risk of developing the condition. Challenges at city level include a high prevalence of diabetes and obesity, low levels of diagnosis, and poorly controlled diabetes.

Online marathon series

As part of the programme in Kyiv, a series of 15 online Cities Changing Diabetes marathons were held and reached almost 860,000 people. During the marathons, healthcare experts discussed diabetes, the treatment and management of the condition, proper nutrition, mental health, and other related topics. This initiative continues to this day. The broadcasts are released once a month on Novo Nordisk's Facebook page and YouTube channel.

Public transport drives diabetes awareness

In December 2021 and January 2022, Novo Nordisk in Ukraine made the most of the public transport system by running an awareness campaign on the buses, trolleys and metro. The campaign focused on conveying messages about how to live a full and healthy life with diabetes. For example, different metro cars were used to describe specific messages, including how to prevent obesity and diabetes, and others contained information about how unhealthy lifestyles increase the risk of developing diabetes.

Goals to increase diagnosis rates and decrease complications

It is credit to the determination and commitment of Cities Changing Diabetes partners in Kyiv that dialogue sharing, participation in digital events and enthusiasm for engaging with global partners have been maintained. Activities have been interrupted, though it is hoped a safe and swift resolution to the conflict will allow a timely restoration of activities in due course.

"We're always happy to take initiatives that complement current city events by working with international partners, socially responsible businesses and patient organisations. I'm convinced that such synergy will bring even more benefits to Kyiv citizens."

Anna Starostenko
Deputy Head of the Kyiv City State Administration

When circumstances allow, Cities Changing Diabetes in Kyiv will roll out programmes to increase diagnosis rates through pop-up screening initiatives near subway stations, shopping malls and public parks.

Partners

Kyiv City State Administration
Embassy of Denmark
Kyiv Charity Foundation Diabetik
International Diabetic Association of Ukraine (MDAU)
IQVIA

JOINED IN 2019

Lisbon
Portugal

Approximately **10.5% of adults in Lisbon have diabetes**[79]

Lisbon focuses on the link between obesity, diabetes, food and the built environment

To understand how the built environment affects people's food behaviours, Cities Changing Diabetes in Lisbon is conducting a foodscape assessment in the city's Ajuda parish. Based on this assessment, a series of small-scale pilot interventions will be developed to bring about rapid change in one of the capital's vulnerable communities.

Cities Changing Diabetes in Lisbon is committed to generating new data on the social and cultural determinants of obesity and diabetes and making sure that these non-communicable diseases are placed high on the healthcare agenda and on the agenda of those who design and manage the city.

Leveraging collective skills and resources

Portugal's capital city, Lisbon, is home to almost 3 million people.[78] The city has a diabetes prevalence of 10.5%, but 31.1% of adults in the metropolitan area are overweight and 22.5% are living with obesity.[79]

To address the socioeconomic and cultural determinants of health, Cities Changing Diabetes in Lisbon has brought together a diverse range of stakeholders to leverage their collective intelligence, skills and resources.

On-the-spot diabetes screening

To raise awareness of diabetes when the COVID-19 pandemic limited access to health services in 2020, Cities Changing Diabetes in Lisbon offered on-the-spot diabetes screenings. The screenings consisted of a type 2 diabetes risk assessment conducted with a digital app that delivered instant results. If the results indicated that the participant fell into a moderate-, high- or very high-risk category, they were invited to take an HbA1c test immediately. Appropriate follow-up care was then scheduled when the participant received their blood test results.

Changing the food environment

Cities Changing Diabetes in Lisbon, Gehl Institute and the Portuguese local association Locals Approach, are working together in the parish of Ajuda to co-create a foodscape assessment toolkit, test the toolkit and advance community-based projects that make it easier for people in the community to access healthy food.

The local approach makes it easier for researchers to connect with community members and collect data on their experiences of accessing healthy food. The data will be used to understand the relationship between the public realm and the community's everyday food behaviours. As a result, policy decisions can be better informed, and strategies can be developed to bring about long-term changes in the food environment.

Bringing context to the discussion on diabetes

The results from the foodscape assessment will be publicly shared with the programme's stakeholders to promote a better understanding of the impact of the urban environment on public health and inspire other cities to use the foodscape assessment toolkit.

Partners

- Municipality of Lisbon
- National Diabetes Association (APDP)
- Health Regional Administration Lisboa e Vale do Tejo
- NOVA Medical School
- Santa Casa de Misericórdia de Lisboa (SCML)
- Locals Approach
- Embassy of Denmark

JOINED IN 2018

Leicester UK

60.2% of adults in Leicester are overweight or living with obesity[82]

Leicester targets health inequalities within its diverse population

The overarching mission of the Leicester Changing Diabetes programme has been to educate and train communities to deliver type 2 diabetes prevention, support and lifestyle education.

By drawing on the insights and expertise of a broad range of stakeholders, Leicester Changing Diabetes has managed to target health inequalities within its ethnically diverse population.

The Cities Changing Diabetes programme in Leicester was funded and developed in collaboration between Novo Nordisk and Leicester Diabetes Centre, and has been supported by local partners under a joint working agreement.

Identifying health inequalities

More than 30,000 people in Leicester are living with type 2 diabetes.[80,81] In the city, 60% of the adult population is overweight or living with obesity.[82] The recorded diabetes prevalence in Leicester is 9.6%, which is slightly higher than the national average of 7.1%.[83] In addition, Cities Changing Diabetes research suggests that a significant number of people within Leicester are living with undiagnosed diabetes or prediabetes.

Research conducted during the initial phase of the Cities Changing Diabetes in Leicester programme identified that the city's large South Asian community and sedentary working-age adults were at a greater risk of developing type 2 diabetes. The research suggested that targeted interventions could help to address these groups.

Transfer of skills and expertise

Collaboration is a cornerstone of the Leicester Changing Diabetes partnership and the reason behind many of its successes. Working alongside local communities has allowed Cities Changing Diabetes partners in Leicester to understand the community's specific needs and create tailored interventions.

Academics from the Leicester Changing Diabetes team have used their experience of securing funding grants to support Leicester City in the Community in its efforts to secure funding from the Premier League Fund. This funding was used to support the delivery of community health and well-being programmes at the football club.

There has also been a transfer of skills and expertise among the stakeholders.

With support from the Cities Changing Diabetes programme, Leicester Diabetes Centre has been able to train staff from Leicester City in the Community, the community arm of Leicester City Football Club, to offer physical activity opportunities and deliver lifestyle advice to the community.

Longer-term partnerships have developed between stakeholders, with Leicester Diabetes Centre and the Centre for Ethnic Health Research now routinely working alongside Leicester City Council to support each other's efforts to improve public health.

Empowering the community with healthy goals

The Cities Changing Diabetes partnership in Leicester has resulted in two key programmes thus far: the Healthy Goals programme and the Empowering Communities programme.

The Healthy Goals programme, which Leicester City runs in the community, is tailored to meet the needs of those from the local South Asian community in particular. The programme offers participants the opportunity to engage in physical activity and to receive culturally appropriate education and advice about healthy lifestyles.

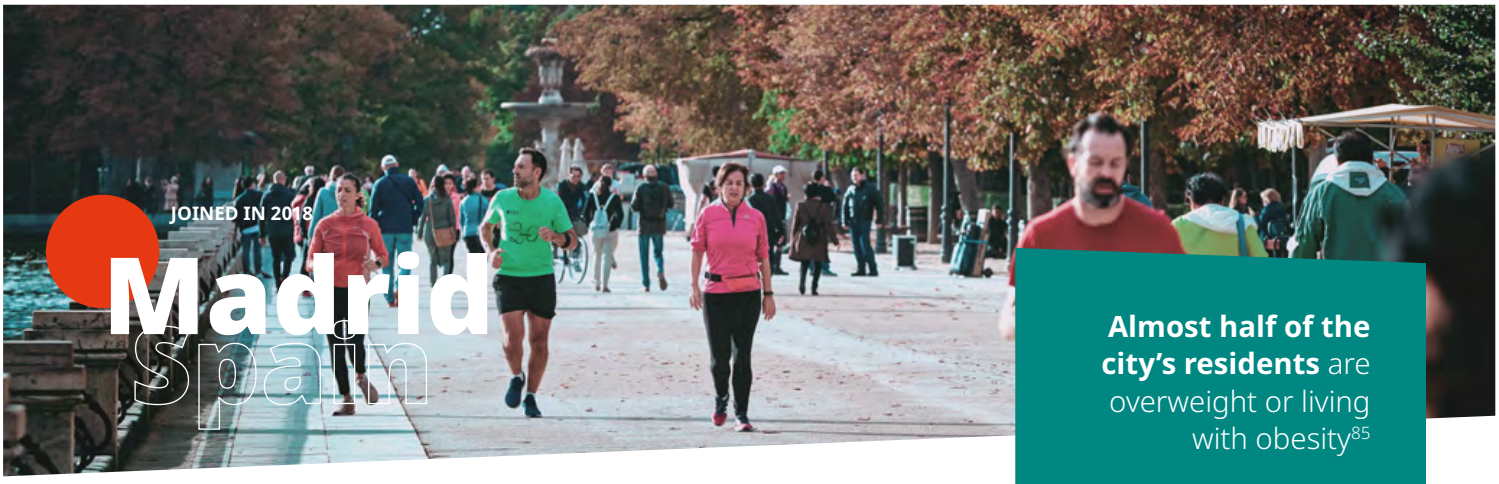
The Empowering Communities programme has trained local champions to help raise awareness about type 2 diabetes within their communities. In addition to promoting healthy behaviours and sharing information about how the risks of developing type 2 diabetes can be reduced, these champions also play a vital role in directing their peers to the appropriate health services.

"The Cities Changing Diabetes initiative has brought many partners and stakeholders across Leicester together to tackle a common cause: to improve the prevention and management of type 2 diabetes in the city. It has allowed partners to learn from one another and to make the best use of the different skills we have locally to tackle the challenge."

Sophie Leonardi
Operational manager, Centre for Ethnic Health Research

Partners

Leicester Diabetes Centre and local NHS partners
Leicester City in the Community
Leicester City Council
The Centre for Ethnic Health Research
Local Interfaith Forum



JOINED IN 2018

Madrid
Spain

Almost half of the city's residents are overweight or living with obesity[85]

Madrid builds on a solid foundation of health interventions

For more than a decade, Madrid Salud, the city government institution responsible for health promotion and disease prevention, has been running a comprehensive programme to promote healthy living among the residents of Madrid. Cities Changing Diabetes has helped assess the efficacy of this programme and is collaborating on new diabetes prevention initiatives.

Madrid Salud's *Alimentación, Actividad física y Salud* (ALAS – Food, Physical Activity and Health) programme is focused on creating awareness about healthy food products and labelling, the effect of nutrition and exercise on health, and the fact that unhealthy habits can be changed. As part of its wide range of activities, the ALAS programme includes a series of workshops for at-risk individuals and awareness activities in the urban environment, such as 21 walking routes throughout the city.

Targeting various sectors of society

Addressing obesity is a priority for Madrid, because almost half of the city's 6.6 million residents are overweight or living with obesity.[84] The problem is not limited to the city's adult population; 40.9% of children between the ages of three and 12 are overweight or living with obesity.[85] Approximately 600,000 people in the Madrid region are living with diabetes.[85]

Madrid Salud's health strategy targets various sectors of society and provides more intensive interventions for people at higher risk of developing type 2 diabetes.

The individuals at higher risk are invited to participate in a six-month therapeutic change programme, which includes a series of workshops to reduce the risk factors for type 2 diabetes by helping the participants acquire healthier habits and modify existing eating and exercise patterns.

Research already shows promising results

An informal report based on the Cities Changing Diabetes research conducted with the data collected from 1,629 people indicates that the ALAS programme's interventions are working. An impressive 85% of the high-risk participants in the programme managed to lose weight, and 35% of the participants classified as prediabetic managed to normalise their blood sugar levels.

Another report analysing the impact of the COVID-19 lockdown on the ALAS programme suggests that participants were able to maintain their healthy habits, despite the taxing circumstances of the pandemic, because the ALAS programme switched to a virtual format and Madrid Salud shared weekly online challenges related to food and physical activity. The report shows that 60% of the participants lost weight during the studied period, and 25% of the participants increased their physical activity.

Extending the reach of a new initiative

As part of the ALAS programme's transition to a virtual format, Madrid Salud created the Healthy and Economic Food Project, an online initiative providing information about how to plan and create healthy, affordable menus. To increase accessibility, Cities Changing Diabetes in Madrid will help Madrid Salud print and distribute the materials throughout the city, focusing on vulnerable communities.

Cities Changing Diabetes in Madrid will continue its research efforts, with plans to publish research studies in scientific journals evaluating the impact of the ALAS programme and focus on the effects of the COVID-19 lockdown on the health-related habits of participants.

"In Madrid, we're aware of the importance of addressing obesity and preventing type 2 diabetes by improving citizens' quality of life. With this objective, we've been through the Food, Physical Activity and Health programme to promote a healthy lifestyle and prevent these diseases. We believe our participation in the Cities Changing Diabetes programme will boost our actions in this regard."

Antonio Prieto
General Manager, Madrid Salud

Partners

Madrid Salud
Ayuntamiento de Madrid
APLICA Cooperation

JOINED IN 2022

Mainz Germany

Mainz lays the foundation for planning interventions

As the second German city to join Cities Changing Diabetes, Mainz is off to a strong start following the programme's launch in September 2022. Three programmes that aim to boost physical activity levels for all residents have been launched to halt the rise of overweight and obesity in Mainz. The anchor partner, the City of Mainz, has embraced data from a preliminary study conducted by a health economics expert and promoted swimming and cycling in the programme's launch year.

Approximately **8% of adults** in Mainz are living with diabetes[86]

Cities Changing Diabetes in Mainz mapped the diabetes prevalence in the city and explored opportunities to intervene in partnership with Prof Dr Günter Neubauer, a leading scientist in the field of health economics.

Study informs programme formation

An analysis of the diabetes situation in five German cities, including Mainz, was commissioned by Cities Changing Diabetes in Germany. The study focused on inner-city differences in diabetes prevalence and care. Data for Mainz were evaluated in cooperation with the largest German health insurance companies offering coverage in the city. Completed in November 2021, the findings laid the foundations for dialogue with the City of Mainz and informed the initial planning of interventions so that target groups could be reached.

The Mainz partnership was launched in September 2022 with a media event hosted by the health mayor of Mainz, Dr Eckart Lensch.

Programme makes a splash with children's swimming lessons

Two projects to encourage children to exercise have been launched:, a school cycling campaign to promote active transport and swimming courses for primary schoolchildren during the school summer holidays.

Swimming lessons in schools have been reduced in recent years, resulting in a lack of swimming skills among approximately one-third of children. The sports faculty of Johannes Gutenberg University and a private swimming company organised the courses as partners.

Cycling initiative is just the beginning for adults

A city cycling initiative has been launched to encourage Mainz residents to increase the amount of time they spend being active. Future initiatives will build on this theme, with a continued focus on integrating more exercise into daily life. In time, it is hoped that healthy eating and diabetes awareness education projects will complement the physical activity interventions.

Partners

City of Mainz

JOINED IN 2019

Malmö Sweden

The prevalence of type 2 diabetes in Malmö **doubled between 2011 and 2018**[87]

Malmö takes a whole-system approach to tackling diabetes

Having mapped diabetes in the city, Cities Changing Diabetes in Malmö has created three collaborative workstreams and working groups to take a whole-system approach to children and adults at risk of developing diabetes and diabetes-related complications.

Cities Changing Diabetes in Malmö is focused on addressing the significant differences in the prevalence of type 2 diabetes across communities, paying particular attention to the socioeconomic and cultural factors that make some communities in this multicultural city more vulnerable.

Diabetes prevalence soars

In 2019, Malmö became the first Swedish city to join the Cities Changing Diabetes network. In recent years, the city's diabetes problem has grown significantly; between 2011 and 2018, the prevalence of type 2 diabetes in Malmö doubled.[87] While the average prevalence of type 2 diabetes in the city is 4.3%, there are considerable differences between neighbourhoods, where the prevalence ranges from 2.6% to 6.4%.[88]

Mapping by Cities Changing Diabetes in Malmö revealed that prevalence is associated with socioeconomic status. The highest prevalence of type 2 diabetes is in an area with a lower income level and a lower level of education.

Putting preventative healthcare on the agenda

The whole-system approach is geared towards putting preventative healthcare high on the agenda for the stakeholders involved in the programme and the rest of society. Experts in the working groups represent all stakeholders engaged in Cities Changing Diabetes in Malmö. This cross-collaborative working model has allowed for in-depth discussions that have resulted in feasible intervention ideas.

The proposed interventions range from communicating healthy habits to young children and introducing health promotion into teacher training to initiating programmes that take a more structured approach to the care of people newly diagnosed with diabetes.

Based on the evidence collected during the mapping phase, intervention ideas are currently being designed for implementation and evaluation.

"The causes of diabetes are complex and interlinked. That means that knowledge and experience sharing in partnerships such as Cities Changing Diabetes is crucial in addressing many of the modifiable social and environmental factors that lead to obesity and diabetes. This work can also be strongly linked to Malmö City's focus on sustainable development within the framework of Agenda 2030."

Katrin Jammeh
Mayor of Malmö

Partners

City of Malmö
Malmö University
Region Skåne

JOINED IN 2019

Manchester UK

One in four people living in Greater Manchester are expected to develop 2 diabetes in their lifetime[89]

Manchester identifies the importance of tailored interventions

The initial phase of the Cities Changing Diabetes programme in Manchester was supported by a joint working agreement, funded and developed in collaboration between Novo Nordisk in the UK and Health Innovation Manchester, working alongside other local partners. The work to date has focused on engaging the community and conducting research to better establish the nature of the type 2 diabetes challenge within Greater Manchester.

The research revealed that, while health services are working to support those at risk of, or already living with type 2 diabetes, further action is needed to ensure support is tailored to the needs of local ethnic minority communities and the increasing number of younger people who are affected by the condition within Greater Manchester.

Underdiagnosis of type 2 diabetes

It is expected that more than one in four people living in the Greater Manchester area will develop type 2 diabetes in their lifetime,[89] while more than 61% of adults living within the Manchester city area are overweight or have obesity.[90]

Using research methods established by the Cities Changing Diabetes programme, the team in Manchester completed a Rule of Halves analysis and an Urban Diabetes Priority Assessment, to understand more about the challenge of type 2 diabetes within the Greater Manchester area.

Cities Changing Diabetes in Manchester found that people under the age of 40, particularly men of white ethnic origin and people living in the most deprived neighbourhoods, are most likely to experience underdiagnosis of type 2 diabetes.

Many of these individuals said that the existing care and support are not tailored to their needs and felt that interventions to support the self-management of type 2 diabetes are aimed at an older audience. This highlighted the importance of ensuring a personalised approach to care and support, which includes taking into account the needs of a growing number of younger people living with type 2 diabetes in Greater Manchester.

Understanding the needs of ethnic minorities

Cities Changing Diabetes found that Greater Manchester has numerous research strengths, in terms of helping to better understand how to manage diabetes.

This includes research into the use of digital technologies to help manage health and prevent diabetes-related health complications. However, partners identified a lack of research focused on understanding the needs of ethnic minority communities.

The work of Cities Changing Diabetes in Manchester concluded that specific diabetes interventions tailored to the needs of ethnic minority communities should be established. These interventions should reflect cultural and religious beliefs, taking into account any linguistic challenges to help reduce the barriers that individuals in these communities may face in accessing services or managing their health.

The report summarising the research conducted by Cities Changing Diabetes in Manchester also suggested that community influencers – including local faith leaders – should be engaged to help raise awareness of type 2 diabetes. They are uniquely capable of reaching their communities with messaging and information about the risks of type 2 diabetes and the lifestyle changes that can be made to help prevent type 2 diabetes.

Learning from other cities in the network and building new local partnerships

As part of the Cities Changing Diabetes network, Greater Manchester has already begun learning from and sharing experiences with other cities in the network. The city's British Muslim Heritage Centre took part in a workshop with participants from Houston's Faith & Diabetes Initiative to explore how faith leaders can help reduce the impact of type 2 diabetes in communities.

New local working partnerships have also been established between partners in Greater Manchester as a result of the Cities Changing Diabetes programme in Manchester.

Partners

- Health Innovation Manchester
- National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater Manchester
- University of Salford
- Manchester Metropolitan University
- British Muslim Heritage Centre

JOINED IN 2018

Milan Italy

Of the adult residents of Milan, **5.75% are living with diabetes**[91]

Milan creates a network of municipalities to fight diabetes

Since Milan joined the Cities Changing Diabetes network in 2018, 23 of the city's major municipalities, accounting for 65% of the population, have signed the Urban Diabetes Manifesto and joined the Cities Changing Diabetes in Milan Metropolitan Network.

Through this network, the various municipalities in Milan can share projects and best practices regarding city planning and interventions designed to improve the health of residents.

Milan launches action plan to tackle inequalities

More than a quarter (27.7%) of the adult population in Milan is overweight and 7.8% is living with obesity.[91] The diabetes prevalence of 5.75% in Milan is likely to increase if something is not done to address the prevalence of overweight and obesity.[91]

In early 2020, Cities Changing Diabetes in Milan launched the Milano Diabetes Atlas, which contains the quantitative research collected during the mapping phase of the Cities Changing Diabetes programme. Based on this research, and in collaboration with the Municipality of Milan, the University of Milan, the Health City Institute and more than 80 experts, the City of Milan drew up the Cities Changing Diabetes Action Plan 2022–2025. This action plan outlines proposals to guide joint action in tackling the challenge of diabetes and health inequalities in urban areas.

Integrating health into policymaking

To support local authorities in their efforts to incorporate health into policymaking, Cities Changing Diabetes, with the support of the Associazione Nazionale Comuni Italiani, organised a special Health City Manager master course. The purpose of this course was to empower a group of individuals so that they would be able to help local authorities in their efforts to integrate health into policymaking.

Making Milan an Olympic Active City

Inspired by Cities Changing Diabetes in Rome, Milan has created 34 walking routes around the city to encourage citizens to engage in more physical activity. These walking routes, which cover 175 kilometres, take in some of the city's famous landmarks and green spaces.

Milan is looking to become the first Olympic Active City when it hosts the XXV Winter Olympic Games in 2026. It plans to create an additional 133 walking routes (one for each municipality) by the start of the 2026 Olympics.

"Cities Changing Diabetes has been promoted to enhance the prevention of chronic diseases, particularly diabetes, caused by the impact of urbanisation. It's necessary for policymakers to be more aware of urban health topics, identify better prevention policies and improve the care network."

Giuseppe Sala
Mayor of Milan

Partners

- ANIAD
- C14+
- Censis Foundation
- Centres for Outcomes Research and Clinical Epidemiology (CORESEARCH)
- Cittadinanzattiva
- CONI
- Diabete Italia
- FIDAL
- Fitwalking Association
- Health City Institute
- Humanitas University
- BDO Foundation
- Institute for Competitiveness (I-COM)
- Italian Association of Diabetics and Clinical Nutrition
- Italian Diabetes Society
- Italian Diabetologist Association
- Italian Municipalities Association
- Italian Obesity Association
- Italian Society of GPs
- Italian Society of Paediatric Endos
- IULM University
- Lombardy Patient Association Federation
- Lombardy Region
- Medipragama
- Milan City Municipality
- National Institute for Health
- National Institute of Statistics
- Obesity Study and Research Centre
- University of Milan
- Parliamentary Intergroup on QoL in Cities
- Polytechnic University of Milan
- Science and Technology Museum
- University of Bocconi of Milan
- University of Milan
- University of Milano-Bicocca
- Vita-Salute San Raffaele University

JOINED IN 2021

Naples Italy

In Naples, **more than 200,000 people** are living with diabetes[92]

Naples is motivated to tackle diabetes and obesity

The high population density in the city of Naples exacerbates health inequalities and puts vulnerable communities at risk of developing obesity and diabetes.

Naples was the seventh Italian city to join the Cities Changing Diabetes network, working with governmental and academic partners to collect new data and map the city's diabetes challenge. While some data already exist for diabetes in the city, the obesity data are fragmented and incomprehensive.

Overcrowding exacerbates inequalities

While Naples has the lowest cost of living of the 14 Italian metropolitan cities, it has the third largest population. The city has the highest population density of Italy's metropolitan cities, with more than 3 million inhabitants across 92 municipalities. This density has created strong socioeconomic imbalances that make some communities more vulnerable to chronic non-communicable diseases (NCDs) such as obesity and type 2 diabetes.

At 6.7%, the diabetes prevalence in Naples is slightly higher than the national average of 5.8%.[92] This figure translates into approximately 200,000 people living with diabetes in Naples.[92] While health data for diabetes are available, a consolidated obesity data source in the city is still needed.

Research to be published in an atlas

Cities Changing Diabetes in Naples has partnered with regional health institutions and two local universities to research the prevalence of diabetes and obesity in Naples and the socioeconomic or cultural factors that influence vulnerability. The data and findings from this research will be collected in an atlas to be presented to all Cities Changing Diabetes partners.

Cities Changing Diabetes in Naples plans to solidify stakeholder support by getting more government officials to sign the Urban Diabetes Declaration.

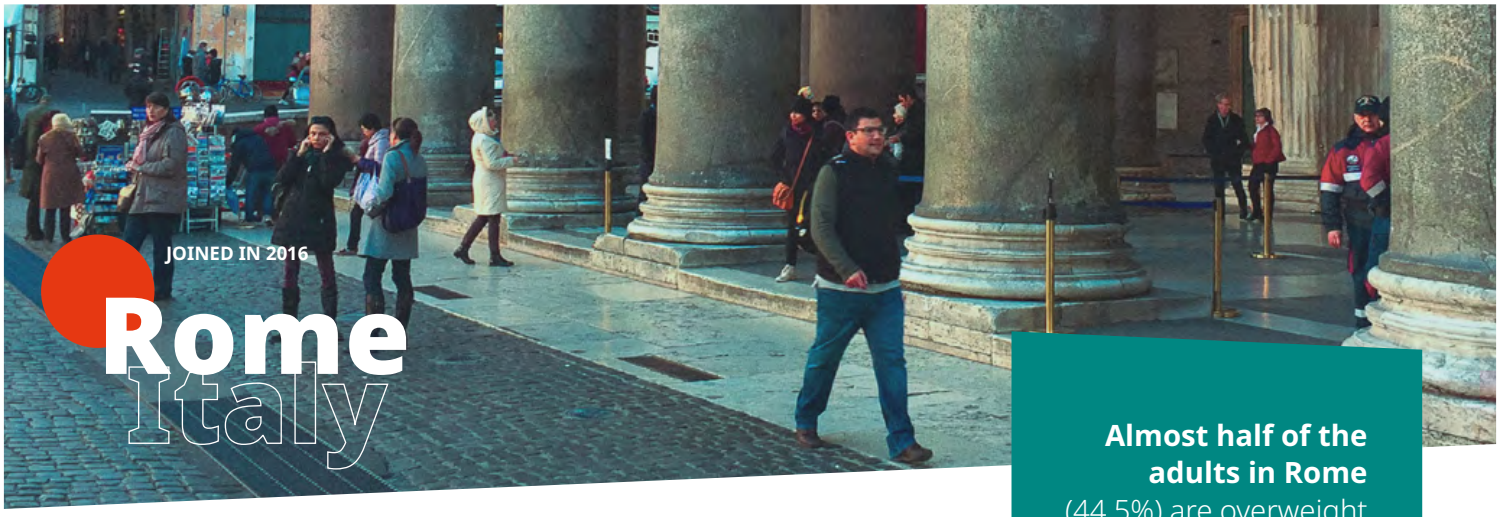
In collaboration with a group of general practitioners operating in the city, Cities Changing Diabetes in Naples has launched an obesity screening programme. The team also works with these healthcare professionals to develop diabetes and obesity prevention programmes.

"We strongly adhere, as a municipal administration, to the international Cities Changing Diabetes programme. We're aware that a collective response is needed to the alarming increase in diabetes in urban environments. From this point of view, local authorities can make long-term and short-term practical efforts. In fact, we're already working to make our city more liveable and sustainable. Health is a common good, and we have a duty to protect it; the last two years have shown this."

Gaetano Manfredi
Mayor of Naples

Partners

- Health City Institute
- Municipality of Naples
- University of Naples Federico II
- University of Campania Luigi Vanvitelli
- Italian Municipalities Association (ANCI)
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Local Patient Association and Citizen Defender



JOINED IN 2016

Rome Italy

Almost half of the adults in Rome (44.5%) are overweight or living with obesity[94]

Rome walks its way to better health

Cities Changing Diabetes in Rome conducted a three-year mapping project, revealing that 40% of Rome residents consider themselves physically inactive.[93] To address this, the city collaborated with its partners to create 74 walking routes that cover approximately 460 km in Rome's metropolitan area.

The walking routes, which are used by approximately 100,000 people, allow residents to engage in accessible physical activity for free.

Special measures have been taken to ensure that people living with diabetes are encouraged to make use of these walking routes. Several other cities in Italy have already been inspired to replicate this simple but effective intervention.

Designed by Olympic gold medallist Maurizio Damilano, the routes cover urban, tourist, environmental and athletic itineraries. Each route includes information about places of interest, facilities and amenities. The information is accessible via a smartphone app that allows users to track how far they have walked and interact with other users.

Comprehensive assessment of the problem

After joining Cities Changing Diabetes, Rome mapped the city's prevalence of diabetes and obesity. This mapping process lasted three years. More than 130 experts and researchers were involved in examining the impact of urbanisation on type 2 diabetes in the metropolitan area of Italy's largest city.

The data gathered during this process were used to develop the Rome Cities Changing Diabetes Atlas, which provides information about the prevalence of diabetes and contains information relating to health-promoting policies, urban planning and community health.

Educating city managers for better health

Changing the health of urban communities requires health to be at the centre of policy decision-making. A credible route to acquiring the necessary skills and knowledge to create health-centred policies was lacking in Rome, leading Cities Changing Diabetes to work with the Health City Institute to create the Health City Manager curriculum. Offered at Sapienza University of Rome, the course provides students with the skills and knowledge to manage city health effectively. Those who graduate from this course can work with authorities responsible for public health to ensure that health promotion and disease prevention are considered when policies are made.

"Within the European Cities Changing Diabetes programme, Rome was the first city to present a passport with urban and tourist itineraries to visit specific areas by walking through the city. Walking is healthy, and this administration is proud of contributing to making Rome the first walkable city by developing 74 itineraries which cover a total of 460 km of well-being by encouraging exercise and healthy activities."

Angelo Diario
Chair of Rome City Council's Committee for Sports, Wellness, and Quality of Life

Partners

- C14+
- Censis Foundation
- Centre for Outcomes Research and Clinical Epidemiology
- Cittadinanzattiva
- CONI
- Diabete Italia
- FederDiabete Lazio
- FIDAL
- Fitwalking Association
- Fondazione SportCity
- Health City Institute
- IBDO Foundation
- Institute for Competitiveness
- IO-Net
- Italian Association of Dietetics and Clinical Nutrition (ADI)
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Italian Endos Society (SIE)
- Italian Municipalities Association (ANCI)
- Italian Obesity Association (SIO)
- Italian Society of GPs (SIMG)
- Italian Society of Paediatric Endos (SIEDP)
- Ministry for Youth Policies
- National Institute of Health
- National Institute of Statistics (ISTAT)
- Parliamentary Intergroup on QoL in Cities
- Rome Capital City
- University of Roma Foro Italico
- University of Roma La Sapienza
- University of Roma Tor Vergata

JOINED IN 2020

Strasbourg France

The **prevalence of diabetes** among the population in the region is **5.7%**[95]

Strasbourg demonstrates the effectiveness of public–private collaboration

The first French city to join the Cities Changing Diabetes network, Strasbourg has demonstrated that it is possible to use the private–public partnership model effectively in a country that does not often see this type of collaboration.

While the Cities Changing Diabetes programme is not a substitute for broader national health policies, it can complement them locally. Furthermore, successful interventions may convince local decision-makers in other municipalities of the effectiveness of the Cities Changing Diabetes programme.

Basis for action

In 2021, the Regional Health Observatory conducted a mapping of diabetes and obesity in the Eurometropolis of Strasbourg. This research revealed that 5.7% of the population in the region is living with diabetes[95] and that one in eight children of nursery school age are overweight.[96]

The Cities Changing Diabetes programme has demonstrated that, in order for a prevention intervention to be effective, it must be implemented with local communities and capitalise on social links. The school setting is, therefore, an ideal place to begin implementing obesity prevention interventions.

Increasing physical activity in schools

Cities Changing Diabetes in Strasbourg has been working with *Unis vers le Sport* to run physical activity sessions during lunch breaks in six local schools. After six months, 100 schoolchildren had participated in these lunchtime activity sessions. Another sports organisation will begin a similar programme in a seventh school.

Unis vers le Sport also runs adapted versions of these physical activity sessions for adults with diabetes and obesity in five sports clubs. A third organisation, Maison Sport Santé de Strasbourg, will soon join the Cities Changing Diabetes partnership in Strasbourg.

"The Embassy of Denmark in France is glad to partner with the Cities Changing Diabetes programme. This partnership is built on our desire to strengthen the ties between France and Denmark, more specifically, to allow French and Danish stakeholders alike to share their public health experience. This programme, which unites private and public stakeholders around the Strasbourg municipality and Eurometropolis, is highly important to enable a fruitful collaboration on prevention."

Michael Starbæk Christensen
Danish Ambassador to France

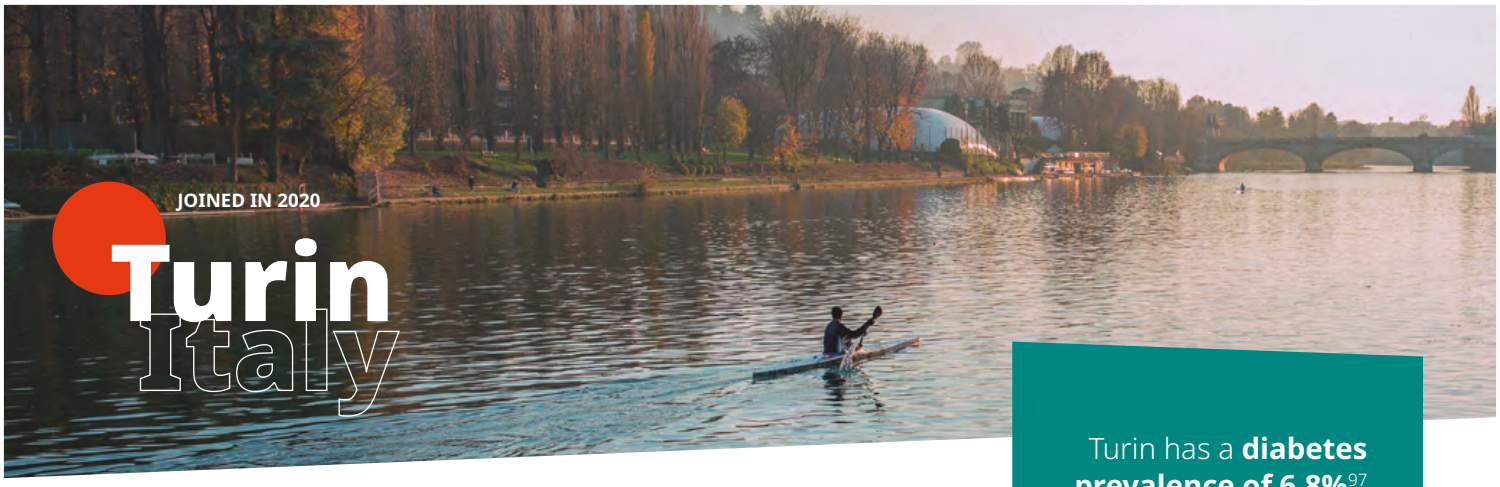
Changing perceptions about the food system

In addition to targeting physical inactivity, Cities Changing Diabetes in Strasbourg has also focused on promoting healthy eating. Later this year, community greenhouses will be installed at a cultural and social centre and at a primary school. The school greenhouse will teach children about growing fruit and vegetables and the benefits of eating healthy foods.

Cities Changing Diabetes in Strasbourg also organised awareness and screening sessions with the European Diabetes Study Center. They produced information leaflets in collaboration with National Food Banks and the National Diabetes Federation.

Partners

Eurometropolis and the City of Strasbourg
Embassy of Denmark
University Hospital of Strasbourg
French Diabetes Federation
Food Banks
Unis vers le Sport
Siel Bleu
Maison Sport Santé de Strasbourg



JOINED IN 2020

Turin
Italy

Turin has a **diabetes prevalence of 6.8%**[97]

Turin addresses the socioeconomic determinants of health among residents

There is considerable variation in socioeconomic and cultural factors in the city of Turin, and this is reflected in the prevalence of diabetes and obesity, which varies from one neighbourhood to the next.

Through the Cities Changing Diabetes programme, Turin is mapping obesity and type 2 diabetes in the city's neighbourhoods and promoting socially and culturally appropriate interventions to improve the health of its residents.

Fragmented metropolitan city

The prevalence of diabetes in Turin increased from 3.8% in 2003 to 6.8% in 2018.[97] One in four people between the ages of 18 and 69 are overweight, and 7% are living with obesity.[97]

The mapping phase of the Cities Changing Diabetes programme in Turin revealed that the highest prevalence of type 2 diabetes was found in the neighbourhoods in the north and west of the city. The lowest prevalence was recorded in the neighbourhoods beyond the River Po in the old town.

These differences correlate with variations in socioeconomic status. For example, the research indicates that the prevalence of overweight and obesity is 35% higher among people with a lower level of education.[97]

Walking inspiration from Rome

Turin boasts many natural advantages, as a city with 21 square kilometres of green spaces, 320 kilometres of tree-lined avenues and 207 kilometres of cycle paths. Taking inspiration from Rome, another Italian city in the Cities Changing Diabetes network, Turin has produced an itinerary of walking routes through the city's metropolitan area. These routes, which cover almost 100 km of urban walking paths, are collated in a pocket-sized guide called the Turin Passport. Through this initiative, Cities Changing Diabetes in Turin aims to promote a culture of physical activity in the city.

"At present, the most critical problems can only be understood and solved if an analysis is made of the social, economic and environmental determinants and the risk factors impacting health. The relationship between health, quality of life and the environment is now a topic of central interest for the social, environmental and medical sciences."

Alessandro Stecco
President of the Health Commission of the Piedmont Region

Training Health City Managers

As was the case in other Italian cities in the network, Turin also organised a special Health City Manager course with the support of the Associazione Nazionale Comuni Italiani. This course is designed to equip participants with the skills necessary to support local authorities in their efforts to incorporate health into policymaking.

Activating social relations to combat disease

Cities Changing Diabetes in Turin is running a pilot project in Vallette that focuses on activating social relationships to improve health outcomes. Community support can play a vital role in disease prevention through the dissemination of accurate information and through peers sharing their healthy behaviours and choices.

To share accurate diabetes knowledge, a mobile diabetes information booth called the Dirittibus was created to spread information about the condition and raise awareness of the benefits of healthy eating and physical activity.

Partners

- Turin City Municipality
- Turin Metropolitan City
- IRES Economic and Social Research Institute
- Parliamentary Intergroup on QoL in Cities
- Health City Institute
- Italian Municipalities Association (ANCI)
- IBDO Foundation
- University of Turin
- Censis Foundation
- National Institute of Statistics (ISTAT)
- Institute for Competitiveness (I-COM)
- Centre for Outcomes Research and Clinical Epidemiology (CORESEARCH)
- Medipragma
- Italian Diabetes Society (SID)
- Italian Diabetologist Association (AMD)
- Italian Society of GPs (SIMG)
- Caped Associations of people with diabetes in Piedmont
- Diabete Italia
- C14+
- Cittadinanzattiva
- CONI
- FIDAL
- Italian Society of Paediatric Endos (SIEDP)
- Italian Obesity Association (SIO)
- Italian Association of Dietetics and Clinical Nutrition (ADI)
- Fitwalking Association TO Walk LAB
- ANIAD

JOINED IN 2022

Venice
Italy

The **prevalence of diabetes** among the population in the region is **5.7%**

Venice gets started

The city is at the beginning of its Cities Changing Diabetes story.

The city of Venice joined the Cities Changing Diabetes network in May 2022 after Mayor Luigi Brugnaro signed the Urban Diabetes Declaration and joined the C14+ network. This clear sign of public support from the local government goes hand in hand with a strong commitment from local programme partners.

In Venice, 5.7% of the population self-reports as having diabetes, and the hospitalisation rates for uncontrolled diabetes and diabetes-related complications are higher than the national average. The city consists of 44 municipalities, and the metropolitan city has the largest Local Health Unit in the region. Metropolitan Venice has five public hospitals with endo-diabetes wards as well as public and private metabolic out-patient clinics.

Cities Changing Diabetes in Venice will work with its partners and the commitment of the local government to address the challenge of diabetes in the city.

Partners

Health City Institute
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Italian Municipalities Association (ANCI)
Coordination of Diabetes POs Veneto
University of Padua

JOINED IN 2019

Warsaw
Poland

One in five children in Warsaw are overweight[98]

Warsaw prioritises early intervention in local schools

Based on research reports published by Cities Changing Diabetes in Poland, Warsaw is prioritising efforts to prevent obesity and diabetes among the city's young residents. This will involve systemic changes to the schooling system to raise awareness of obesity and diabetes in the city.

Cities Changing Diabetes in Warsaw is working to raise the profile of obesity and type 2 diabetes at national policy level and support the implementation of evidence-based systemic solutions. The programme's partners provide unique opportunities to collaborate with local authorities and implement solutions that can be used as models for local interventions throughout the country.

Averting a future health crisis

In Warsaw, 20–30% of children are overweight.[98] Many children will likely develop obesity or type 2 diabetes without timely intervention. Early intervention is vital in altering this trajectory when children are still developing attitudes and habits around eating and physical activity.

***Experts from Cities Changing Diabetes in Poland collaborated with researchers from Lazarski University to compile a report entitled* Schools, communities, systems – Partnership against the epidemic of obesity and diabetes.**

The report explores the health, attitudes and behaviours of Polish students and teachers in the context of obesity and diabetes.

Educating the teachers

The report outlines the clinical and social aspects of diabetes, summarises the history of obesity and type 2 diabetes and reviews secondary research on the health and lifestyles of Polish students. It also provides the findings of a survey conducted among 4,200 primary school teachers in Warsaw and Kraków. This survey explored the level of knowledge that these teachers have about diabetes, their experiences of teaching students with type 1 diabetes and their subjective assessments of body weight and lifestyle.

Supporting local authorities

The report includes recommendations about possible interventions. The Cities Changing Diabetes team in Warsaw will support local authorities in planning and implementing interventions to prevent obesity and type 2 diabetes among children and adolescents. These solutions will potentially be used as models for local interventions across Poland.

Educational materials will be published in both Polish and Ukrainian, to meet the needs of students who have taken refuge in Poland following the outbreak of war in Ukraine at the beginning of 2022.

"There's no doubt that the Cities Changing Diabetes programme is a timely initiative in Poland. The great advantage of the programme is the possibility of adapting its activities to the specificity of our country, which is of particular concern to the Cities Changing Diabetes Scientific Council. We've taken a long-term decision to concentrate the activities on the community of children and schoolchildren; hence, the first step in Poland was to investigate the knowledge and pro-health attitudes of teachers as a group educating pupils."

Leszek Czupryniak
Professor, MD, head of the Department of Diabetology and Internal Medicine of the Medical University of Warsaw

Partners

Institute of Healthcare Management, Lazarski University

The Programme Council of Cities Changing Diabetes in Poland

Representatives of Warsaw City Hall

JOINED IN 2020

Aarhus Denmark

In Aarhus, **4% of the adult population** is living with diabetes[101]

Aarhus supports vulnerable citizens using innovative funding

To expand services to vulnerable citizens living with type 2 diabetes, the Cities Changing Diabetes partnership in Aarhus turned to an innovative funding model in order to benefit not only the recipients of the programme but also investors and the city itself.

The Cities Changing Diabetes programme in Aarhus is based on a clear set of principles and emphasises four priority areas: family and health equity, prevention and early intervention, support for citizens with type 1 diabetes, and coherent treatment and care for all citizens living with diabetes.[99]

Chronic diseases weigh heavily on the city

In Aarhus, more than 40% of the population has at least two chronic diseases.[100] Of these citizens, approximately 11,000 have been diagnosed with diabetes.[101] This number, which represents a diabetes prevalence of 4%, is expected to rise considerably in the coming years.

"It's often difficult to estimate the expected effect of a given intervention. To do so, you need to have an in-depth understanding of the disease, the target group and the context in which the intervention will be delivered. With this programme, we're intervening at the root of the challenge."

Annelli Sandbæk
Professor and head of unit, Steno Diabetes Center Aarhus

The Cities Changing Diabetes partners in Aarhus have decided to focus their efforts on ensuring that vulnerable citizens newly diagnosed with diabetes receive adequate care and support. This targeted early intervention aims to reduce the likelihood of diabetes-related complications and improve quality of life.

Innovative approach to funding

Although vulnerable citizens living with type 2 diabetes were already receiving ongoing support, the existing health budget did not allow for more targeted and intensive services. The Cities Changing Diabetes partners in Aarhus began considering a social investment funding model as an alternative.

"Our ambition with this project has been to reduce the burden of diabetes by changing the way we talk about and manage prevention and care in everyday practice. The development process has generated a value that has the potential to exceed the value of the investment project itself, with better collaboration and knowledge sharing. In addition, the project has provided us with access to a new, powerful tool in terms of social impact bonds, which we can use to address these challenges."

Otto Ohrt
Director of Public Health, City of Aarhus

Two years of development and stakeholder engagement resulted in an attractive investment model with a strong economic case for action in reducing the cost of diabetes-related complications.

The programme's goal, funded by the National Social Investment Fund and the City's Council for Social Investments via diabetes impact bonds, is to provide targeted support to 450 people over three years, starting in 2022.

The target group comprises people of working age who are newly diagnosed with diabetes. The intervention takes the form of a referral from general practitioners, with support services delivered by the local health centre. Success is measured in terms of reduced blood glucose levels, with a financial payment model based on results.

Partners

Steno Diabetes Center Aarhus
Central Denmark Region
Aarhus University
City of Aarhus

Middle East and Africa

There are more than 97 million people living with diabetes in Africa and the Middle East, and more than half of them are undiagnosed, meaning that they are unaware of the diabetes-related complications they are at risk of developing.[1]

As urbanisation increases and populations age, type 2 diabetes will pose an ever-growing challenge. Africa and the Middle East are expected to have the highest future percentage increase in the number of people with diabetes compared with other parts of the world.[1] By 2045, there will be nearly 191 million people with diabetes in this region – almost double the current figure.[1]

Both partner cities, Johannesburg and Beirut, have relatively young populations and are witnessing an increased prevalence of obesity and diabetes. Actions to intervene with young people through health and lifestyle education initiatives, and public–private initiatives to improve living conditions for people living with obesity and diabetes have been prioritised.

Beirut, Lebanon

Cities in the Middle East and Africa

Beirut, Lebanon
Beirut shines a spotlight on the diabetes crisis 62

Johannesburg, South Africa
Johannesburg strengthens its stakeholder network 63

JOINED IN 2018

Beirut Lebanon

Almost half (42%) of all residents in Beirut are living with overweight and obesity[104]

Beirut shines a spotlight on the diabetes crisis

Overcrowding, inadequate city planning and an economic crisis put the residents of Beirut at higher risk of developing lifestyle diseases such as obesity and type 2 diabetes. Cities Changing Diabetes in Beirut is determined to bend the curve on diabetes by working with the local government, creating public awareness and initiating projects to improve public spaces.

Cities Changing Diabetes in Beirut is in the process of mapping the diabetes prevalence in the city. The findings from this study will be used to develop initiatives to drive change.

Two crises impact vulnerability

Lebanon is host to approximately 1.5 million refugees from Syria, and more than 209,000 other refugees, which has driven rapid national population growth in recent years.[102] A severe economic crisis since 2019 has led to the displacement of many people within the country and has contributed to the unstructured expansion of urban areas. In 2020, Beirut suffered a devastating explosion at its port, exacerbating the city's challenges.

According to the World Bank, Lebanon is facing one of the world's worst economic and financial crises of the last 150 years. The bank reports that real GDP declined by 10.5% in 2021, following a 21.4% drop in 2020. Overall, Lebanon's economy has contracted by nearly 60% since 2019, which is the biggest contraction of all the 193 countries measured during that time.[103]

Approximately 88% of the country's 6 million residents live in urban areas that are densely populated and poorly planned, and 93% of adults with diabetes live in urban areas.[61]

These conditions have been worsened by the prolonged nature of the economic crisis, which has increased the vulnerability of the city's residents to developing obesity and type 2 diabetes.[1] Almost half (42%) of the adults in Beirut are living with obesity, and two out of five adults are at high risk of developing diabetes.[104]

Revitalising public spaces

A significant percentage (39.1%) of the adult population in Beirut is physically inactive.[104] Cities Changing Diabetes in Beirut has been involved in a project to renovate St Nicolas' Garden in Ashrafiyeh to make physical activity more accessible and appealing.

Reviving this green space in an urban setting has increased the number of people using the garden for physical activity. Due to the situation in the country, the affiliate did not manage to inaugurate the garden, although it is proud of this achievement, especially since people enjoy spending time in the garden.

Current status

The economic crisis and the impact of the 2020 explosion meant that the Cities Changing Diabetes programme in Beirut pivoted to work with national authorities to help prioritise type 2 diabetes and put the treatment and management of diabetes on the national agenda during both crises. Projects have been halted in light of the current situation, but the Lebanese affiliate is always looking for the best opportunities to revitalise and implement Cities Changing Diabetes projects whenever appropriate.

Partners

- Municipality of Beirut
- Ministry of Public Health
- Lebanese Society of Endocrinology, Diabetes and Lipids
- Chronic Care Centre
- Lebanese University

JOINED IN 2016

Johannesburg South Africa

More than **1 in 10 adults** in South Africa are living with diabetes[1]

Johannesburg strengthens its stakeholder network

Johannesburg, one of the most populated African cities, is working to strengthen and expand its stakeholder network to ensure a more integrated approach to diabetes and obesity prevention.

Cities Changing Diabetes in Johannesburg will use the Urban Diabetes Risk Assessment to create engaging materials, engage with city officials and spread awareness about obesity, diabetes and healthy lifestyles.

Rapid urbanisation fuels obesity

Johannesburg is South Africa's largest city and home to approximately 6.1 million people.[48] Rapid urbanisation has created a city environment conducive to lifestyle-related non-communicable diseases (NCDs) such as obesity and type 2 diabetes. More than half the South African population is overweight or living with obesity,[105] and 10.8% of adults in the country are living with diabetes.[1]

To tackle this health crisis, the City of Johannesburg has incorporated various initiatives, such as NCD awareness programmes and public gyms, into its health and social service strategies.

As part of the C40 Cities Climate Leadership Group, the city is committed to exploring how green policies can be used to drive change towards healthy cities.

A youth-driven youth initiative

In 2017, the Johannesburg Junior City Council joined Cities Changing Diabetes in Johannesburg as a partner. They ran a school-based diabetes education and awareness campaign, which consisted of a one-off performance about diabetes and reached almost 3,000 children. During the presentation, children were given examples of healthy meals and physical activities and were encouraged to share the information with their families and friends.

Community workshops

Cities Changing Diabetes in Johannesburg conducted community roundtable workshops with the city's essential services in early 2020. Workshop participants were tasked with creating solutions to different themes, such as how to increase awareness about and help prevent type 2 diabetes.

From research to action

Johannesburg will soon begin a three-phase process to disseminate the results of the Urban Diabetes Risk Assessment. During the first phase, the programme will present the findings of the Risk Assessment to stakeholders and create materials that can be used to engage with the mayor, city officials and other potential partners, such as the provincial and national governments. The second phase will be the presentation of findings to funders, healthcare professionals, the Diabetes Alliance, and other key stakeholders. Finally, the engaging materials created in the first phase will be used to pitch stories to the media and raise awareness about diabetes and obesity among the people of Johannesburg.

"The Cities Changing Diabetes research findings are a key component in the fight against diabetes as they will largely inform all efforts aimed at decreasing the burden of non-communicable or chronic diseases in the city of Johannesburg."

Mpho Phalatse
Councillor, City of Johannesburg

Partners

City of Johannesburg
Johannesburg Junior City Council
University of the Witwatersrand

Driving change in partnership

Partnerships for a healthy future
Challenges such as the rising prevalence of diabetes and obesity require a 'whole of society' approach. They are too large and too complex for either the public sector or the private sector to address alone. It is essential that the public and private sectors address them together, by combining complementary capabilities through public–private partnerships, to achieve progress.

Through Cities Changing Diabetes, we work together across sectors and disciplines to co-create and pilot ideas that can reach scale and have impact across communities.

C40 Cities: health benefits of urban climate actions
C40 Cities is a global network of cities committed to addressing the challenge of climate change by driving urban action that reduces greenhouse gas emissions and climate risks. C40 Cities and Cities Changing Diabetes are working together to tackle health and climate change at city level.

Since the partnership began in 2015, Cities Changing Diabetes and C40 have focused on the health benefits of urban climate actions in relation to active transportation. This culminated in the release of a walking and cycling benefits tool that has been applied in more than 20 cities. The collaboration has further evolved into exploring the health benefits of the 15-minute city concept, where work has been conducted with leading experts in the field to do with how a tool can be designed to help cities use the 15-minute city concept in designing new mobility actions for health and climate benefits.

EAT Foundation: creating a fair and sustainable food system
Founded as a non-profit organisation in 2014, EAT is a global science-based platform dedicated to creating a fair and sustainable food system for healthy people and planet – leaving no one behind. In pursuit of these goals, EAT uses sound science, impatient disruption and novel partnerships.

Cities Changing Diabetes supported work conducted in Copenhagen related to shifting urban diets, and developing an understanding of how children interact with local food environments. Together, Cities Changing Diabetes and EAT continue to explore ways to further the agenda on healthier and more sustainable food for all, including driving advocacy for the implementation of the planetary health diet.

UNICEF: preventing childhood overweight and obesity
Novo Nordisk and UNICEF are partnering to contribute to the prevention of childhood overweight and obesity – a major risk factor for diabetes, and an issue that affects twice the number of children between the ages of five and 19 that it did 15 years ago.[106] The two organisations are combining efforts to enhance knowledge about and awareness of how to prevent overweight and obesity and address their root causes. With an initial focus on interventions in Latin America and the Caribbean, the partnership aims to be a catalyst for broader regional and global efforts.

In 2022, the Healthy Childhood Challenge was initiated by Novo Nordisk in collaboration with UNICEF. The Healthy Childhood Challenge is looking for great ideas that will improve and support environments where children live and enable them to eat well, be active and maintain a healthy weight.

BLOXHUB: advocating for healthier urban development

BLOXHUB is a community of organisations, companies and others working with urban sustainability. The Bloxhub Urban Partnerships programme is a knowledge-sharing platform that connects people with the same passion for solving urban challenges.

The collaboration with Cities Changing Diabetes focuses on advocating for healthier urban development through formats such as workshops, webinars, speaker events and networking. These events ensure a dynamic partnership that bridges the mutual needs and wants between BLOXHUB organisations and Cities Changing Diabetes.

Gehl: actively creating the future we want to live in

Gehl is committed to actively creating the future we want to live in. Gehl is continually building upon our understanding of life and form, and the shared systems that help us to have an even greater impact on health, climate and equity.

Gehl has been a partner of Cities Changing Diabetes since the start, bringing valuable knowledge and skills in the fields of urban planning, design and the links to human behaviour. Recently, it took the lead on the development of the foodscape concept, to understand and address the inequalities in access to healthy food in urban environments. This work has involved several Cities Changing Diabetes network cities and is now available in the form of a Foodscape toolkit that can be applied in any city interested in investigating and improving the local food environment.

Dalberg: new models for financing diabetes prevention

Dalberg – a global group of change makers working to build a more inclusive and sustainable world – works with governments, philanthropic foundations, businesses and communities to resolve some of the world's most pressing challenges. Dalberg has major competences and experience of designing innovative finance models for global development, including health.

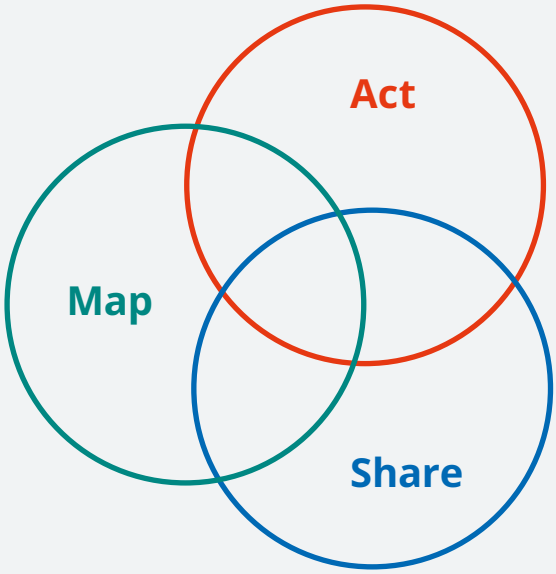
In the context of Cities Changing Diabetes, Dalberg has played a central role in developing the Aarhus diabetes impact bond to fund an immediate expansion of support services to citizens newly diagnosed with type 2 diabetes (see page 59).

In the coming years, the collaboration with Dalberg aims to support the development of more exemplary cases of innovative obesity and diabetes prevention funding. To that end, a how-to guide has been developed. In late 2022, a few promising projects will accelerate the development of their investment cases in a masterclass process co-hosted with the World Diabetes Foundation. A new prevention investment masterclass will be announced in 2023.

University College London

University College London (UCL) is a founding partner of Cities Changing Diabetes but is not currently a global partner in the programme. As the global academic lead, UCL has collaborated with local Cities Changing Diabetes researchers on designing and implementing Diabetes Vulnerability Assessments. The assessments explore the urban context of vulnerability to type 2 diabetes and identify social factors and cultural determinants relevant to health, well-being and diabetes. UCL is a global expert in understanding the complexity of diabetes vulnerability and has contributed to rethinking the drivers of diabetes globally.

Cities Changing Diabetes



The three interconnected elements of Cities Changing Diabetes

Map the challenge to understand the areas of greatest risk and vulnerability and guide the design of interventions

Share research findings and action insights through strong partnerships in each city and global knowledge networks and events

Act in partnership through specific health interventions and policy decisions, based on evidence and experience

Novo Nordisk

Novo Nordisk is at the forefront of discovery, development and manufacturing of next-generation medicines for the treatment of diabetes and is committed to making them accessible wherever they are needed. But living with chronic disease requires more than medicine, which is why Novo Nordisk helps people achieve the right outcomes through improved disease management. Novo Nordisk is committed to fighting diabetes on all fronts, and Cities Changing Diabetes is at the heart of this commitment.

For more information, visit novonordisk.com

Steno Diabetes Center Copenhagen

Steno Diabetes Center Copenhagen is a world-leading diabetes hospital offering world-class treatment to people with diabetes. The centre brings together competences related to treatment, clinical research, education and health promotion research under the same roof. Steno Diabetes Center Copenhagen is a global founding partner of Cities Changing Diabetes and has contributed with intervention and community action research. It is driving Tingbjerg Changing Diabetes, which is a long-term community action research programme in Copenhagen.

For more information, visit sdcc.dk and tingbjergchangingdiabetes.dk

Platforms for knowledge sharing

citieschangingdiabetes.com

Portal to good practice cases, tools and stories from the Cities Changing Diabetes programme.

CCD Rounds

CCD Rounds presents bi-monthly topic-specific live events to provide inspiration for driving public health interventions.

Newsletter

Every other week, Cities Changing Diabetes shares a newsletter with updates from across the partner network.

CCD Twitter

@CitiesDiabetes on Twitter is a social media channel used for disseminating information about urban health and programme partners' activities.

CCD Action Case Catalogue

The CCD Action Case Catalogue is a collection of case examples of diabetes prevention and health promotion initiatives implemented by Cities Changing Diabetes city partners. This catalogue is meant to inform and inspire new action within the Cities Changing Diabetes network and beyond.

City partners

Cities Changing Diabetes has demonstrated the power of new types of public–private partnership, with more than 160 global and local partners collaborating across disciplines to map the diabetes challenge, share solutions and drive actions to bend the curve on urban diabetes.

Partners include city leaders and ministries, academia, diabetes associations, health insurers, community groups and business corporations. The rise in urban diabetes is a shared challenge for all of society.

Asahi, Japan
City of Asahi
Chiba University Hospital Next Generation Medical Concept Center
PHD Corporation
Embassy of Denmark

Bari, Italy
Health City Institute
Italian Municipalities Association (ANCI)
Bari Municipality
University of Bari Aldo Moro
FOFI Puglia
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Local Patient Association and Citizen Defender

Beijing, China
Beijing Municipal Health Commission
Beijing Diabetes Research Center
Beijing Tongren Hospital (CMU)
Four communicty centres in the districts of Dongcheng and Tongzhou

Beirut, Lebanon
Municipality of Beirut
Ministry of Public Health
Lebanese Society of Endocrinology, Diabetes and Lipids
Chronic Care Centre
Lebanese University

Belgrade, Serbia
Assembly of the City of Belgrade
Embassy of Denmark
Faculty of Medicine of Belgrade University
Diabetes Association of DT2 patients 'Krug dvojke Srbije'
Belgrade Diabetes Association 'Plavi krug'
Belgrade Running Club Stetoskop.info
Diabetes Association of Serbia
Mountaineering Association of Serbia

Berlin, Germany
Marzahn-Hellersdorf District Office
Dein starker Partner für Netzwerke (DSPN)
AOK Nordost
läuft.de
Diabetiker Berlin

Bogotá, Colombia
Bogotá Health Secretariat
Embassy of Denmark
Universidad del Rosario
Universidad Nacional de Colombia
UNICEF

Bologna, Italy
Health City Institute
Conference of Bologna Metropolitan City
City of Imola
University of Alma Mater Studiorum
Italian Municipalities Association (ANCI)
FOFI Puglia
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Italian Association of Dietetics and Clinical Nutrition (ADI)
Patient Association and Citizen Defender

Buenos Aires, Argentina
Universidad Favaloro
Liverpool John Moores University
Ciudad Autónoma de Buenos Aires

Chongqing, China
Chongqing Municipal Health Commission
Chongqing Medical Association
Chongqing CDC

Copenhagen, Denmark
Steno Diabetes Center Copenhagen
Danish Diabetes Association
University of Copenhagen
City of Copenhagen

Genoa, Italy
Health City Institute
Genoa Municipality
University of Genoa
Liguria Region
Italian Municipalities Association (ANCI)
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Local Patient Association and Citizen Defender

Hangzhou, China
Hangzhou Municipal Health Commission
Hangzhou Primary Health Association

Houston, US
Houston Health Department (Anchor)
The Institute for Spirituality and Health at the Texas Medical Center
American Diabetes Association
American Heart Association
Asian American Health Coalition dba HOPE Clinic
City of Houston HR Dept
Community Health Choice
CORE Initiative
The Fountain of Praise Church
Harris County Medical Society
Harris County Public Health
Harris Health System
Hispanic Health Coalition
Houston Business Group on Health
The Association of Diabetes Care & Education Specialists
UTHealth School of Public Health

Istanbul, Turkey
Embassy of Denmark
Turkish Association for the Study of Obesity
Diabetic Children's Foundation
KOÇ University

Jakarta, Indonesia
Jakarta Provincial Government
Jakarta Health Agency (DINKES)
Embassy of Denmark
Endocrinology Association (PERKENI)
Medical Research Institution, University of Indonesia (IMERI FK UI)
Ministry of Health
BPJS (Indonesian national healthcare insurance)
Centre for Health Economic and Policy Study (CHEPS)
University of Indonesia

Johannesburg, South Africa
City of Johannesburg
Johannesburg Junior City Council
University of the Witwatersrand

Kyiv, Ukraine
Kyiv City State Administration
Embassy of Denmark
Kyiv Charity Foundation Diabetik
International Diabetic Association of Ukraine (MDAU)
IQVIA

Koriyama, Japan
City of Koriyama
Fukushima Medical University

Kraków, Poland
Institute of Healthcare Management, Łazarski University
The Programme Council of CCD in Poland
Representatives of Kraków City Hall

Leicester, UK
Leicester City in the Community
Leicester City Council
The Centre for Ethnic Health Research
Local Interfaith Forum
Leicester Diabetes Centre and local NHS partners

Lisbon, Portugal
Municipality of Lisbon
National Diabetes Association (APDP)
Health Regional Administration Lisboa e Vale do Tejo
NOVA Medical School
Santa Casa de Misericórdia de Lisboa (SCML)
Locals Approach
Embassy of Denmark

Madrid, Spain
Ayuntamiento de Madrid
APLICA Cooperation
Madrid Salud

Mainz, Germany
City of Mainz

Malmö, Sweden
City of Malmö
Malmö University
Region Skåne

Manchester, UK
National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater

Manchester
University of Salford
Manchester Metropolitan University
British Muslim Heritage Centre
Health Innovation Manchester

Mérida, Mexico

Municipality of Mérida
Autonomous University of Yucatan
Diabetes Association of Southeast Mexico

Mexico City, Mexico

World Diabetes Foundation
Secretaría de Seguridad Pública del Distrito Federal (SSPDF)
Secretaría de Salud de la Ciudad de México (SEDESA)
National Institute of Public Health Mexico

Milan, Italy

ANIAD
C14+
Censis Foundation
Centres for Outcomes Research and Clinical Epidemiology (CORESEARCH)
Cittadinanzattiva
CONI
Diabete Italia
FIDAL
Fitwalking Association
Health City Institute
Humanitas University
BDO Foundation
Institute for Competitiveness (I-COM)
Italian Association of Diabetics and Clinical Nutrition
Italian Diabetes Society
Italian Diabetologist Association
Italian Municipalities Association
Italian Obesity Association
Italian Society of GPs
Italian Society of Paediatric Endos
IULM University
Lombardy Patient Association Federation
Lombardy Region
Medipragama
Milan City Municipality
National Institute for Health
National Institute of Statistics
Obesity Study and Research Centre
University of Milan
Parliamentary Intergroup on QoL in Cities
Polytechnic University of Milan
Science and Technology Museum
University of Bocconi of Milan
University of Milan
University of Milano-Bicocca
Vita-Salute San Raffaele University

Mississauga, Canada

Novo Nordisk Network for Healthy Populations
University of Toronto
Institute for Better Health – Trillium Health Partners
City of Mississauga

Naples, Italy

Health City Institute
Municipality of Naples
University of Naples Federico II
University of Campania Luigi Vanvitelli
Italian Municipalities Association (ANCI)
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Local Patient Association and Citizen Defender

Philadelphia, US

Bible Way Baptist Church
Congregation Temple Beth'El
Dare to Imagine Church
El Mesias United Methodist Church
Enon Tabernacle Baptist Church
Episcopal Diocese of Pennsylvania
Esperanza College
The Food Trust
Health Promotion Council
Health Care Improvement Foundation
Salem Baptist Church
St. Cyprian Catholic Church
St. Philips United Methodist Church
Philabundance
Temple University College of Public Health
Triumph Baptist Church
United Muslim Masjid

Rome, Italy

C14+
Censis Foundation
Centre for Outcomes Research and Clinical Epidemiology (CORESEARCH)
Cittadinanzattiva
CONI
Diabete Italia
FederDiabete Lazio
FIDAL
Fitwalking Association
Fondazione SportCity
Health City Institute
IBDO Foundation
Institute for Competitiveness
IO-Net
Italian Association of Dietetics and Clinical Nutrition (ADI)
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Italian Endos Society (SIE)
Italian Municipalities Association (ANCI)
Italian Obesity Association (SIO)
Italian Society of GPs (SIMG)
Italian Society of Paediatric Endos (SIEDP)
Ministry for Youth Policies
National Institute of Health
National Institute of Statistics (ISTAT)
Parliamentary Intergroup on QoL in Cities
Rome Capital City
University of Roma Foro Italico
University of Roma La Sapienza
University of Roma Tor Vergata

Seoul, South Korea

Korean Diabetes Association
Embassy of Denmark
City of Seoul

Shanghai, China

National Office for Diabetes Primary Healthcare
The Sixth People's Hospital affiliated with Shanghai Jiao Tong University

Strasbourg, France

Eurometropolis and the City of Strasbourg
Embassy of Denmark
University Hospital of Strasbourg
French Diabetes Federation
Food Banks
Unis vers le Sport
Siel Bleu
Maison Sport Santé de Strasbourg

Tianjin, China

Tianjin Municipal Health Commission
Tianjin Healthcare Security Bureau
Tianjin Medical Association
Tianjin Medical University

Turin, Italy

Turin City Municipality
Turin Metropolitan City
IRES Economic and Social Research Institute
Parliamentary Intergroup on QoL in Cities
Health City Institute
Italian Municipalities Association (ANCI)
IBDO Foundation
University of Turin
Censis Foundation
National Institute of Statistics (ISTAT)
Institute for Competitiveness (I-COM)
Centre for Outcomes Research and Clinical Epidemiology (CORESEARCH)
Medipragma
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Italian Society of GPs (SIMG)
Caped Associations of people with diabetes in Piedmont
Diabete Italia
C14+
Cittadinanzattiva
CONI
FIDAL
Italian Society of Paediatric Endos (SIEDP)
Italian Obesity Association (SIO)
Italian Association of Dietetics and Clinical Nutrition (ADI)
Fitwalking Association TO Walk LAB
ANIAD

Venice, Italy

Health City Institute
Italian Diabetes Society (SID)
Italian Diabetologist Association (AMD)
Italian Municipalities Association (ANCI)
Coordination of Diabetes POs Veneto
University of Padua

Warsaw, Poland

Institute of Healthcare Management, Łazarski University
The Programme Council of CCD in Poland
Representatives of Warsaw City Hall

Xiamen, China

Xiamen Municipal Health Commission
Xiamen Medical Association

Aarhus, Denmark

Steno Diabetes Center Aarhus
Central Denmark Region
Aarhus University
City of Aarhus

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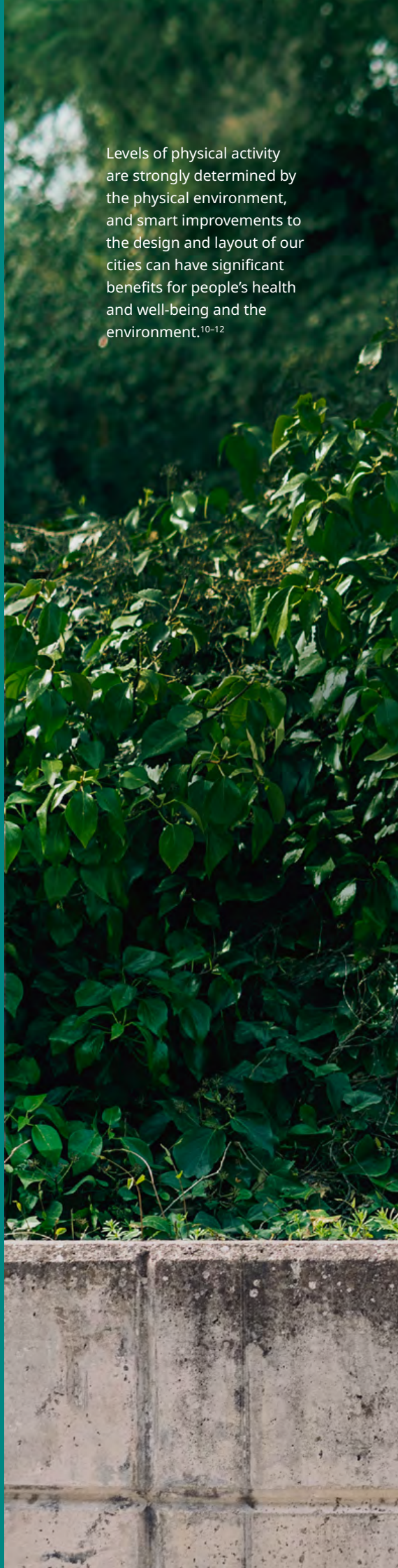

Levels of physical activity are strongly determined by the physical environment, and smart improvements to the design and layout of our cities can have significant benefits for people's health and well-being and the environment.[10–12]

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