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Linking diet and health: Europe's drive to curb cardiovascular diseases and obesity

From calorie counting glasses to healthy-eating video games for children, EU-funded researchers are developing new approaches in support of healthy lifestyles and eating habits.

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One of the biggest challenges in studying how diet impacts disease is understanding what people really eat. Food diaries and surveys are still the standard tools, but they often fall short as people forget, misjudge portions, or play down less healthy choices.

To tackle this, EU-funded researchers are testing something new: a discreet wearable camera paired with AI. The system can automatically detect food types and estimate portion sizes in real time, offering a sharper and more dependable picture of daily eating habits.

Picture a morning routine. You open the fridge to prepare breakfast. A small camera clipped to your glasses quietly records what goes on your plate. There is no guesswork and no chance for cover-ups.

Watching what you eat

The technology is being trialled in CoDiet, a four-year EU-funded collaboration running until the end of 2026.

It brings together 17 institutions across eight EU countries and associated countries such as the UK to explore how diet contributes to non-communicable diseases such as diabetes, obesity and heart conditions.

Some 200 volunteers across Europe wore the cameras daily under the supervision of Dr Aygul Dagbasi, a dietitian and postdoctoral researcher at Imperial College London in the UK.

"People were motivated to participate because it gave them a deeper understanding of their diet and its impact on their health," said Dagbasi.

The key advantage is objectivity. “When we ask patients what they eat, the answer we receive is only their perception,” she explained. “If we don’t know what people really eat, our findings and advice will be inaccurate.”

A picture of health

CoDiet researchers are going further by combining food records with AI analysis of biomarkers from blood and urine samples. By factoring in genetics, metabolism and gut bacteria, they hope to explain why people do not all respond to the same diet in the same way.

The next step is to build a tool that delivers personalised diet advice, with trials planned in Greece, Ireland, Spain and the UK.

“We hope this will make dietary advice more personalised and effective, but also more accessible,” said Dagbasi. “In many parts of the world, access to a qualified dietitian is limited.” That means the most vulnerable groups such as children, teenagers and elderly often do not get the help they need.

One size does not fit all

Preventing obesity, however, involves far more than what appears on the plate.

“The relationship between diet and health is very complex,” said Dr Itziar Tueros, head of the Food and Health Department at AZTI, a leading research centre in the Basque Country, Spain, and coordinator of the CoDiet research team.

“Everybody’s metabolism is unique, which means people respond very differently to the same diet.”

Alongside personalised advice, the CoDiet team is examining food policies in six EU countries. They are looking into how regulation, education or greater access to healthy food could help reduce disease rates across whole communities.

“Our goal is to develop tools that help individuals make healthier choices, while also shaping evidence-based policies to support obesity prevention and chronic disease reduction,” said Tueros.

Europe’s push for prevention

The CoDiet research is part of a wider European drive to confront obesity and strengthen preventative health care.

Over recent decades, obesity has reached epidemic proportions, affecting more than a billion people worldwide. In the EU, more than half of all adults are overweight or obese, and the numbers are rising rapidly.

Childhood obesity is particularly concerning, with cases expected to double between 2020 and 2035, according to the World Obesity Federation.

“Obesity rates are very high at the moment,” warned Dagbasi. “We see that people eat differently in different countries, yet we all have the same obesity problems.”

In response, nine EU-backed projects, including CoDiet, have joined forces in OBEClust (European cluster of obesity research projects). This collaboration pools knowledge to better understand risks, promote prevention and behavioural change, and develop personalised strategies for maintaining a healthy weight throughout life.

“The cluster gives us a wider vision of the activities and research related to the topic, allowing us to create more synergies,” said Tueros.

A multidisciplinary approach is essential here, she said. “If you go alone, you might go faster, but not further.”

Personalised risks for the young

Another OBEClust project, PAS GRAS, focuses on personalised risk assessment for children and young adults. Coordinated by Paulo Oliveira, vice-president of the Center for Neuroscience and Cell Biology at the University of Coimbra, Portugal, the five-year project runs until 2028.

“It’s important to predict who is most at risk, because obesity is not as straightforward as people might think,” said Oliveira. “There’s a stigma that obese people simply eat too much and don’t move enough. In reality, many factors influence obesity.”

Sixteen organisations in seven EU countries and the UK are developing fresh tools to predict obesity risk and the likelihood of related health complications.

“Even though obesity is associated with many health complications, each patient develops them differently – and we don’t yet know why,” said Oliveira.

Mediterranean diet

PAS GRAS researchers are also designing lifestyle interventions, with a focus on the Mediterranean diet. Their studies are identifying which molecules in traditional foods help accelerate metabolism, burn fat or regulate appetite.

For instance, they are investigating the anti-oxidant, anti-inflammatory and digestive properties of mushrooms and Za'atar, a Middle Eastern mix of herbs and spices, to see if they help reduce belly fat and improve metabolic health.

Sharing these insights with those who need them is another challenge. The team has created literacy campaigns for children and young adults, including a colouring book, comics and a video game to help them understand how their diet and lifestyle impact their body.

Like CoDiet, PAS GRAS will also provide policy guidelines. Oliveira, who also chairs OBEClust, stressed that real change requires collective input.

“To change policies, you need evidence from many projects, not just one. Working together helps us establish common ground for common policies.”

Shifting focus to prevention

The message from researchers is clear: prevention must take centre stage.

“We are treating obesity reactively. We try to cure instead of prevent,” said Oliveira. “We need to focus more on prevention and decrease risks while there is time.”

Tueros agrees. “An open international collaboration will hopefully help us achieve our main goal – real world impact. With new solutions for both patients and healthcare professionals.”

The link between obesity and other chronic diseases is well established. A recent study in Global Heart warned that rising obesity is fuelling cardiovascular disease (CVD) worldwide.

With CVD already Europe's leading cause of death, the European Commission is now drawing up an EU Cardiovascular Health Plan.

The aim is to cut premature deaths from CVDs by promoting healthier lifestyles, preventing obesity, and improving early detection and treatment.

"Obesity is one of the biggest health concerns of our time, and we need to address it," said Dagbasi. "Having a holistic understanding of its causes will help us tackle the problem better."

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More info

- CoDiet (CORDIS)
- CoDiet project website
- PAS GRAS (CORDIS)
- PAS GRAS project website
- Eurostat – Overweight and obesity statistics
- EU health research and innovation
- EU research on cardiovascular diseases
- EU Cardiovascular Health Plan