

SCIENCE

How to eat well - and save the planet Switching to a healthier diet can reduce an individual's water footprint by as much as 55%. According to new research, turning vegetarian has the biggest impact, but even cutting down on meat gives a saving of at least 10%. Shifting to a healthy diet is a "win-win situation", say researchers. Citizens will be healthier and their food can be produced using less of one of our most precious natural resources - water.



"The main message is that if you shift to a healthy diet, be it with meat or without (vegetarian or pescetarian), according to your own preference, it's not only good for your health, but it's also very good for the environment in the sense that you reduce your water footprint substantially," said Dr Davy Vanham of the European Commission's Joint Research Centre, in Ispra, Italy.

Facts from the study

● The water footprint from food consumption (domestic and imported food) per person per day is 2,757 litres in the UK, compared with 2,929 for Germany and 3,861 for France

● Switching to a healthy diet with meat (all food groups; based on national guidelines) would reduce water consumption by 11-35%

A healthy pescetarian diet (meat is replaced with fish and pulses, animal fat is replaced with oils from crops) reduces water consumption by 33-35%

● A healthy vegetarian diet (no fish or meat, oils from crops in place of animal fat) reduces water consumption by 35-55%.

Freshwater resources are already scarce, but the problem is set to get worse, due to population growth, changing lifestyles and climate change. Public messages on saving water by taking shorter showers or turning off the tap when brushing teeth are well known. But there is lower awareness of the amount of water used to produce food. Raising livestock uses up a lot of water. Oils, sugars and fats also require large amounts of water to produce, but growing fruits and vegetables is more water efficient. "If you look at the numbers for the countries it goes to 3,000 - 4,000 litres per person per day; these are enormous amounts when you compare them with direct water use at home," said Dr Vanham. The results were broadly similar in the three countries, confirming that people in Europe tend to eat too much red meat, sugar and fat, but do not eat enough fruit and vegetables, he said. The research, carried out in the UK, France and Germany, is published in the journal, *Nature Sustainability*. It is based on analysis of food-related water consumption for current and recommended diets (healthy diet with meat, healthy pescetarian diet and healthy vegetarian diet) down to the level of individual boroughs, in the most detailed study of its kind. The authors acknowledge that encouraging people to change their diet is not straightforward and requires a number of interventions, from taxing unhealthy food to better food labelling. *BBC*

'A single piece of plastic' can kill sea turtles, says study A new study suggests that ingesting even a single piece of plastic can be deadly for sea turtles. Researchers found there was a one in five chance of death for a turtle who consumed just one item - rising to 50% for 14 pieces. The team found that younger turtles are at a higher risk of dying from exposure to plastic than adults. The authors say their research raises concerns over the long term survival of some turtle species. The never ending surge of plastic into the world's oceans is taking an increasing toll on iconic marine species. While it has been relatively straightforward for researchers to document the threat to animals who become entangled in plastic and drown, determining the impact of consumed plastic is much harder. The authors of this study estimate that around half of all the sea turtles on the planet have ingested plastic - this rises to 90% among juvenile green sea turtles off the coast of Brazil. To determine how this exposure was impacting the species, the researchers looked at post mortem reports and animal stranding records relating to sea turtles in Queensland. From that information they were able to deduce the role of plastic in causing death - if an animal had ingested more than 200 pieces of plastic, death was inevitable. Fourteen pieces meant a 50% chance of dying - while one piece gave a 22% chance of mortality. "Because of their digestive tract, they don't regurgitate anything," lead author Dr Britta Denise Hardesty from Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), told *BBC News*. "If it ends up in the wrong place, even one little thin, filmy piece of plastic can block that canal and mean that nothing can pass and ultimately the blockage can result in death."



As well as causing blockages, harder pieces caused internal injuries which often lead to death as well. The research team also found that younger turtles were taking in far more plastic than adults. Around 23% of juveniles and 54% of post-hatchling turtles had ingested plastic compared to 16% of adults. The scientists say that this greater susceptibility is down to where they live and how they feed. "Young small turtles actually drift and float with the ocean currents as does much of the buoyant, small lightweight plastic," said Dr Hardesty. "We think that small turtles are less selective in what they eat than large adults who eat sea grass and crustaceans, the young turtles are out in the oceanic area offshore and the older animals are feeding in closer to shore." While sea turtles can live until they are about 80 and reproduce for decades, researchers are concerned for the longer term impact of so many juveniles consuming so much plastic. "We know that disproportionately finding it more in younger animals who won't make it to the reproductive state will have long term consequences for the survival of the species," said Dr Hardesty. "It's very concerning." Other experts in this field say the new study is an important step towards quantifying the scale of the threat that plastic poses to the lives of sea turtles. "The authors offer a very defensible framework for allowing us to measure the mortality risk resultant from plastic ingestion," said Prof Brendan Godley, from the University of Exeter, who wasn't involved with the study. "It also points to the likelihood that plastic may be a key threat to the smallest life stages. This is of particular concern as pieces of plastics and baby turtles are both likely to be aggregated together in similar areas." The authors of the new study want to raise awareness among consumers and political leaders about the threat from plastic and to encourage creative solutions to the issue. One option may well be a plastic tax or deposit scheme. "Let's rethink our relationship with plastic," said Dr Hardesty. "Let's put a true cost on plastic so they have a similar value to aluminium cans which we don't find lost in the environment, they get picked up and they don't get mismanaged and find their way out into the ocean," she added. *BBC*

HEALTH

Cancers 'rising around the world' There will be 18.1 million new cases of cancer and 9.6 million people will die with the disease this year worldwide, a report predicts. The rise, from 14.1 million cases and 8.2 million deaths in 2012, is partly due to a growing and ageing population. The figures suggest one in five men and one in six women will develop the disease in their lifetime. And as countries become wealthier, more people get cancers related to lifestyle rather than those linked to poverty. The International Agency for Research on Cancer (IARC) provides regular snapshots of the scale of cancer around the world, looking closely at 36 different cancers in 185 countries. Researchers say while ways of measuring and collecting cancer data have improved over the years, the overall trend is that cancer rates and deaths have risen year on year. The latest report suggests lung cancer, female breast cancer, and bowel cancer are responsible for a third of all cancer cases and deaths worldwide. **'Tobacco control'** And the authors say lung cancer is now the leading cause of cancer death in women in 28 countries. The worst hit countries include the USA, Hungary, Denmark, China and New Zealand. George Butterworth, from the charity Cancer Research UK, said: "Tobacco is the single biggest reason why more women across the world are getting lung cancer than ever before. In the UK smoking among women became more prolific later than it did for men, so it's not surprising that we're seeing increasing lung cancer rates now. Similarly, cigarettes are now increasingly popular among women in low and middle income countries and the tobacco industry's aggressive marketing to them is influencing this." Meanwhile, Dr Freddie Bray, of the IARC, said: "The results highlight the need to continue to put in place targeted and effective tobacco control policies in every country in the world." 'Extraordinary diversity' Overall, the report estimates, nearly half of all cases and most cancer deaths in the world this year will occur in Asia, partly because of the large numbers of people living in the continent and partly because some cancers with higher death rates are more common in this region. This includes, for example, high rates of liver cancer, which generally has a poor prognosis, in China. Beyond this, the authors say, there is "extraordinary diversity" in the types of cancer and patterns of illness around the world. They say because of this countries need to consider tailoring how they try to prevent and treat cancer. *BBC*



Egg freezing in your 40s 'not sensible' Clinics must make it clear that there is little point in women over 40 freezing their eggs, because the odds of a future pregnancy are very slim, says UK fertility regulator the HFEA. Fertility declines with age, so the optimum time for egg freezing is before a woman turns 35, it says. Yet data shows that the most common age at which women are treated is 38, with many freezing eggs into their 40s. NHS clinics usually have a younger cut-off age, but private ones may not. Women can only get egg freezing on the NHS if it



is for medical reasons, such as needing a cancer treatment which may cause them later fertility problems. Private clinics also offer it to women who want it for social reasons, like delaying starting a family because they haven't met the right partner yet. In 2016, 80% of the 1,310 freezing procedures carried out were done in private clinics. Around 890 of all the treatments were for women aged 35 and over, compared with 419 treatments for women younger than this. The HFEA says it is not clear why patients of this age are freezing eggs. Most women freezing eggs using NHS funding were aged below 35, with 89% below 38. It says women must be given clear information about the risks, costs and likely success rates of egg freezing, which is becoming an increasingly popular "fertility insurance" back-up plan. **Egg freezing facts**

- Success rates can be low
- Egg quality and number naturally drops as a woman gets older
- It is not a simple fix for delaying motherhood
- NHS funding may be available if you are having medical treatment that affects your fertility
- Frozen eggs can usually only be stored for 10 years (although there are some exceptions for medical reasons)

Egg freezing costs anywhere between £2,720 and £3,920 per go. Most clinics will include a couple of years of storage in that price, but there may be an extra annual charge of up to £350 for that service. The complete cost if you then opt to thaw and use your eggs in a future treatment, is £7,000 to £8,000. Birth rates from frozen own eggs are increasing but remain below that of conventional IVF treatment cycles, being successful one in every five times, on average, compared to around one in three for "fresh egg" IVF. While a woman's age at thaw has relatively little impact on a woman's chances of success, the age at freeze does, with evidence suggesting that if eggs are frozen below the age of 35, the chances of success will be higher than the natural conception rate as the woman gets older, says the HFEA. HFEA Chair Sally Cheshire said: "Clinics have an ethical responsibility to be clear that egg freezing below the age of 35 offers women their best chance of creating their much longed-for family." Aileen Feeney from Fertility Network said women should know their fertility "vital statistics" 28:35:42: "By 28, female fertility has already begun to fall; 35, female fertility plummets; 42, your chance of becoming a biological mother is vanishingly small." Prof Simon Fishel, from the independent IVF provider CARE Fertility Group, said women face a hard choice, knowing that if they freeze eggs early they can still only be stored for 10 years. *BBC*

Poor mental health at work 'widespread' Poor mental health affects half of all employees, according to a survey of 44,000 people carried out by the mental health charity Mind. Only half of those who had experienced problems with stress, anxiety or low mood had talked to their employer about it. That's something that must change, says Mind. Fear, shame and job insecurity are some of the reasons people may choose to hide their worries. Natalie Hunt, 34, from Salford, got her first job at 18. That role was working in a department store, serving customers, but she found it extremely stressful. "It was dealing with complaints and helping people with queries. I'd had anxiety and depression as a teenager and the full-time job made me really anxious. I began to get shy and withdrawn, going more and more into myself, and I was worried about having a panic attack at work. Colleagues started to notice and eventually my boss wanted a word." Under pressure Natalie says that at the time, her employer didn't really understand or know what to do. There was no support. She then left the workplace altogether and took up an art course at college. She now teaches art classes to people with mental health problems, and at a homeless shelter. She also works part-time in an office, even though sometimes she can go through stages of poor mental health. Natalie says it makes a huge difference when the workplace is supportive - they have flexible hours and regular catch-ups. "I first started back in the workplace with a bit of voluntary work in a charity shop, which was great. Because it was voluntary and part-time, I didn't feel pressured and it helped me regain some confidence. That was when I was 20. Now I run my own art classes for people with mental health conditions. It's lovely to be making a difference." Mind says around 300,000 people lose their job each year due to a mental health problem. *BBC*