

## New IARC report: comprehensive analysis of factors driving obesity

**Lyon, France, 27 September 2017** – A new Working Group Report published by the International Agency for Research on Cancer (IARC), the specialized cancer agency of the World Health Organization, reviews the drivers of obesity, including the roles of excess energy intake and specific foods and nutrients in the global obesity epidemic.

The report, entitled *Energy Balance and Obesity*,<sup>1</sup> is the result of a collaborative work of 17 international experts and is based on the latest scientific evidence.

Chapters of the report cover energy intake and expenditure, the dietary composition of foods and dietary patterns, physical activity and sedentary behaviours, and their roles as causes of obesity. The report also includes an overview of global trends in obesity, an analysis of the impact of genetic and lifestyle factors, a discussion of potential mechanisms in obesity, and available options to prevent and control the obesity epidemic. A summary of the Working Group Report has been published in the journal *Cancer Causes & Control*.<sup>2</sup>

### Obesity and cancer

A recent evaluation of the global cancer burden linked to obesity estimated that 481 000 or 3.6% of all new cancer cases in adults in 2012 were attributable to high body mass index (BMI).<sup>3,4,5</sup>

According to the IARC [Global Cancer Observatory](#), in 2012 the number of cancer cases caused by obesity was largest in North America, with approximately 110 000 new attributable cases,<sup>6</sup> followed by European countries, where 3.7–8.5% of all newly diagnosed cancer cases were attributable to obesity.<sup>7</sup>

Individuals who are overweight or obese are at a higher risk of developing several different types of cancer, including cancers of the breast (in postmenopausal women), ovary, colon and rectum, liver, kidney, pancreas, gastric cardia, oesophagus, and endometrium of the uterus, as well as advanced prostate cancer, cancers of the gallbladder and thyroid, and multiple myeloma and meningioma.<sup>8</sup>

<sup>1</sup> Romieu I, Dossus L, Willett WC, editors (2017). *Energy Balance and Obesity*. Lyon, France: International Agency for Research on Cancer (IARC Working Group Reports, No. 10). Available from: <http://publications.iarc.fr/553>.

<sup>2</sup> Romieu I, Dossus L, Barquera S, Blotière HM, Franks PW, Gunter M, et al.; IARC Working Group on Energy Balance and Obesity (2017). Energy balance and obesity: what are the main drivers? *Cancer Causes Control*. 28(3):247–58. <http://dx.doi.org/10.1007/s10552-017-0869-z> PMID:28210884

<sup>3</sup> Arnold M, Pandeya N, Byrnes G, Renehan AG, Stevens GA, Ezzati M, et al. (2015). Global burden of cancer attributable to high body-mass index in 2012: a population-based study. *Lancet Oncol*. 16(1):36–46. [http://dx.doi.org/10.1016/S1470-2045\(14\)71123-4](http://dx.doi.org/10.1016/S1470-2045(14)71123-4) PMID:25467404

<sup>4</sup> BMI is a measure of body fatness, calculated by dividing the weight in kilograms by the square of the height in metres. The World Health Organization defines overweight as BMI  $\geq$  25 kg/m<sup>2</sup> and obesity as BMI  $\geq$  30 kg/m<sup>2</sup>.

<sup>5</sup> In the paper of Arnold et al. (2015), “excess BMI” refers to BMI  $\geq$  25 kg/m<sup>2</sup>, corresponding to overweight and obesity.

<sup>6</sup> <https://gco.iarc.fr/obesity/tools-bars>

<sup>7</sup> <https://gco.iarc.fr/obesity/tools-map>

<sup>8</sup> [http://www.iarc.fr/en/media-centre/iarcnews/2016/handbook16\\_iarc2016.php](http://www.iarc.fr/en/media-centre/iarcnews/2016/handbook16_iarc2016.php)

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Interestingly, women are disproportionately affected by cancer attributable to obesity overall.

This new report analyses the multiple mechanisms that underlie the risk of cancer associated with obesity, such as the way in which obesity can influence cancer development and progression, including through metabolic perturbations involving hormonal, growth factor, and inflammatory alterations.

### Geography and demography of obesity

The obesity epidemic has become a major public health concern worldwide, including in low- and middle-income countries (LMICs), carrying increased risks of cardiovascular diseases, diabetes, and cancer. Globally in 2014, more than 1.9 billion adults were overweight (among approximately 4.7 billion adults<sup>9</sup>), and of these 600 million were obese. The problem in children is particularly striking; the number of overweight children in LMICs has more than doubled since 1990, from 7.5 million to 15.5 million.

The prevalence rates of obesity tend to be highest in developed countries, but rates in many developing countries are catching up. Rapid economic growth and urbanization in LMICs have resulted in changes in dietary patterns and lifestyles: traditional dietary patterns are being replaced with increasing consumption of highly processed foods, while increases in sedentary behaviours are often combined with reductions in physical activity. As a result, in parts of sub-Saharan Africa, South Asia, and South-East Asia, obesity (overnutrition) coexists with undernutrition. This “double burden of malnutrition” is linked to poor quality of diet and imbalanced energy intake.

### Energy intake: a key factor

The excess of energy intake over energy expenditure is the main driver of weight gain. During adulthood, the maintenance of a stable body weight depends on the energy derived from food and drink (energy intake) being equal to the total energy expenditure over time.

“There have been a lot of misconceptions and debates about the factors driving the obesity epidemic,” says Dr Isabelle Romieu, a Senior Visiting Scientist in the Section of Nutrition and Metabolism at IARC and one of the editors of the report. “This report shows that excess energy intake is the main responsible factor. Although genetic factors play a role, these cannot explain the upward trends in obesity rates, and in turn the report shows that increased physical activity alone cannot solve the problem.”

### Diet quality

The quality of diet has an important effect on energy balance through complex hormonal and neurological pathways that influence satiety. Dietary patterns that include higher intakes of fruits, vegetables, legumes, whole grains, nuts, seeds, and unsaturated fat, as well as lower intakes of refined starch, red meat, trans and saturated fats, and sugar-sweetened foods and drinks can contribute to long-term weight control.

“Most of the drivers of obesity are linked to the food environment, and advertising and marketing of foods and drinks have an important role in terms of increasing obesity rates worldwide,” says Professor Walter C. Willett of the Harvard Chan School of Public Health, an editor of the report.

<sup>9</sup> [http://www.prb.org/pdf14/2014-world-population-data-sheet\\_eng.pdf](http://www.prb.org/pdf14/2014-world-population-data-sheet_eng.pdf)

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“Raising awareness about the factors driving obesity is critical, and global action is needed to create an environment that promotes a better diet quality and regular physical activity.”

### Prevention at all stages of life

Overweight develops progressively, so that a relatively small excess of energy intake can easily produce large weight changes over time. Therefore, it is important to regularly monitor energy intake.

“The prevalence of obesity in children and adults is reaching alarming proportions in many countries, with major health consequences, including cancer, cardiovascular diseases, and diabetes,” says IARC Director Dr Christopher Wild. “Preventing obesity at all stages of life is one of the greatest public health challenges of the 21st century. This report provides a valuable foundation for the policy-making community. The scientific evidence presented will help shape the best responses across health and other sectors to tackle the obesity crisis at both the national and the global level.”

### For more information, please contact

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The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer and the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish to have your name removed from our press release emailing list, please write to [com@iarc.fr](mailto:com@iarc.fr).