

## Obesity during female midlife

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EDITORIAL



## Obesity during female midlife

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Obesity is an increasing social and health problem that affects developed and developing countries. Its prevalence has nearly tripled since 1975. Current data from the World Health Organization indicate that, in 2016, more than 1.9 billion adults (18 or more years old) were overweight. Of these, over 650 million were obese. Interestingly, 41 million children under the age of 5 and more than 340 million children and adolescents aged 5–19 years were, respectively, overweight or obese in 2016<sup>1</sup>. Rates of obesity have increased significantly in developing countries as a consequence of two distinct phenomena, the first related to a higher carbohydrate/protein consumption ratio observed in areas living under extreme poverty conditions, and the second, occurring in those not extremely poor, related to the adoption of a Western lifestyle (low physical activity and the over-consumption of cheap, energy-dense food). Therefore, the sharp increases in overweight and obesity rates observed in the last 30 years are dependent on several factors, perhaps the most important being attributable to changes in lifestyle.

It has been reported that an increased body mass index is a major risk factor in adults for cardiovascular diseases (mainly heart disease and stroke), diabetes, musculoskeletal disorders such as osteoarthritis and several cancers, including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon<sup>1</sup>.

Of note, a great proportion of those individuals who have contributed to the sharp rise in the prevalence of obesity over the past 30 years appear to have developed obesity as a direct consequence of excessive female weight gain during pregnancy. Indeed, it is well known that individuals can be programed *in utero* and that pregnancy is a window to future health. In this sense, a high pre-gestational body mass index, as well as excessive gestational weight gain, predispose not only to adverse maternal fetal outcomes in the immediate pregnancy, but also lead to a higher rate of obesity, insulin resistance, hypertension, diabetes, dyslipidemia and cardiovascular events in later stages of life of the pregnant and the newborn<sup>2</sup>. Pregnancy is therefore a crucial time for the implementation of recommendations for appropriate gestational weight gain and lifestyle modifications that can have a positive impact on a woman's mid-life health and that of her newborn.

Given this scenario, and knowing that the weight of women tends to increase during midlife<sup>3</sup>, there is a need to

spread knowledge of these issues in order to educate and promote weight reduction and the maintenance of healthy lifestyle habits throughout a woman's lifespan (reproductive and non-reproductive stages). Despite the fact that aging has a negative impact on female weight, whether as a direct or indirect consequence of progressive estrogen decrease, other aspects such as epigenetics need also to be taken into consideration when any educational program is to be implemented, especially in non-developed countries where economics are a limiting factor. In this sense, much effort should be taken to promote exercise, weight reduction and engaging into healthy lifestyles as cost-effective interventions.

After the menopause, the prevalence of the metabolic syndrome (MetS) increases. In addition to weight gain, the most important component of MetS, there is an increase in the rate of other MetS components such as insulin resistance, hypertension and dyslipidemia<sup>4</sup>, which are directly related to increased weight. Obesity predisposes women to a pro-inflammatory status, caused by an abnormal cytokine secretion pattern in the adipose tissue<sup>4</sup>. On the other hand, it has been reported that hot flushes are more prevalent in postmenopausal women with increased body mass index<sup>5</sup>. Interestingly, vasomotor symptoms have been linked to increased cardiovascular risk, perhaps related to a lower level of total plasma antioxidant activity and an increased cardiovascular response to stressful situations, most likely imposed by the aforementioned pro-inflammatory state<sup>6</sup>. In addition, the pro-inflammatory state triggered by obesity may increase the risk of developing cancers, musculoskeletal problems and anxiety and depressive states.

A sedentary lifestyle is an identified factor for obesity and severe menopausal symptoms during female midlife<sup>7</sup>. Physical activity decreases as women age; as adipose tissue increases, muscle mass decreases concomitantly, leading to a condition known as sarcobesity<sup>8</sup>. The progressive decrease in muscle mass leads to the limitation of daily activities, and also an increase in frailty, falling and fractures, and related higher morbidity and mortality and health-related costs<sup>8</sup>.

Decreased physical activity and obesity have also been associated with depressive symptoms in mid-aged women<sup>9</sup>. A recent meta-analysis showed that exercise of low-to-moderate intensity improves depressive symptoms in midlife and older women<sup>10</sup>. Not only does physical activity decrease

adipose tissue, it promotes the generation of new muscle. As a direct consequence of decreasing fat mass, there is a reduction in the abnormal pro-inflammatory status, which can lead indirectly to better neurotransmitter secretion in the central nervous system, and hence improve sleep and mood and promote the sense of well-being and mental health<sup>9,10</sup>.

As women face an inexorable increase in body weight in midlife and beyond, there is a need to promote cost-effective ways, such as education, aimed at weight reduction, which will have a positive impact on female mid-life. These educational programs should aim to promote changes in lifestyle including an increase in physical activity and weight reduction through appropriate and healthy diets. They should commence long before the onset of the menopause, in order to have a preventive impact. It is important that international scientific societies devoted to female health should aid and promote these initiatives in developed and also developing countries. Given its global mandate, the IMS is ideally placed to promote these cost-effective programs aimed at reducing the epidemic of obesity. This can be achieved via its own educational programs but also by working in collaboration with local and regional medical societies, governments and NGOs. The flood gates are already open and, unless we act soon, a pandemic of disease will be upon us. Improvements in lifestyle globally may have a very important role in the well-being of our planet and its occupants over the next decade or more.

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