

## Obesity as a social phenomenon: A narrative review

### Obesità come fenomeno sociale: una revisione narrativa

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#### RIASSUNTO

**INTRODUZIONE:** L'obesità è una delle malattie a maggiore prevalenza al mondo. Visto il forte impatto sociale che possiede, è necessario avere un approccio non esclusivamente clinico, ma il più ampio possibile in modo da permettere un'analisi a vari livelli per meglio comprendere e affrontare le sfide che questa patologia pone in termini di sanità pubblica.

**OBIETTIVI:** analizzare, attraverso le principali evidenze, l'importanza a livello sociale dell'eccesso ponderale nella popolazione e le eventuali azioni volte a mitigare gli eventuali effetti negativi di tale problematica.

**DISEGNO:** revisione narrativa.

**SETTING:** i dati ottenuti dalle fonti incluse nello studio sono stati raggruppati e analizzati in cinque macroaree: disuguaglianze nella salute, società, lavoro, impatto sulla medicina sociale (focalizzata sul modello italiano) e costi sociali.

**RISULTATI:** ogni categoria ha mostrato una correlazione bilaterale con l'obesità, mettendo in evidenza un impatto significativo per la comunità.

**CONCLUSIONI:** per ognuno dei campi investigati, risulta necessario intraprendere diverse azioni a livello istituzionale. Molte raccomandazioni e azioni sono già state intraprese a livello globale, ma da sole non sembrano essere sufficienti. Il lavoro rimarca che, per combattere l'obesità e rallentare questo fenomeno pandemico, l'intera comunità scientifica e le istituzioni devono lavorare unitamente a più livelli per identificare e progettare programmi di contrasto efficaci.

**Parole chiave:** obesità, disuguaglianze di salute, medicina sociale, lavoro, costi sociali, impatto sociale

#### ABSTRACT

**BACKGROUND:** obesity is one of the most prevalent diseases all over the world. Because of its high social impact, the broadest possible approach on several levels – and not limited

#### WHAT IS ALREADY KNOWN

- Obesity is a pandemic issue.
- Impact of obesity is not limited to the health context, but it affects a large number of fields.

#### WHAT THIS STUDY ADDS

- The actual impact of obesity on the social context is underestimated.
- In no field can be found a sufficient level of adjustment to meet the real needs and extent of this issue.
- It is necessary to undertake new, targeted, and effective measures of contrast that take into account the habits of every culture and population.

only to clinical aspect – is needed to better understand and face the challenges obesity poses to public health.

**OBJECTIVES:** to analyse, through the main evidence, the social impact of weight excess in the general population and the actions aimed at mitigating its negative effects.

**DESIGN:** narrative review.

**SETTING:** data obtained from the sources included in the study were gathered and analyzed in five macroareas: Health Inequality, Society, Work, Impact on Social Medicine (focused on the Italian model), and Social Costs.

**RESULTS:** each category showed a bilateral relationship with obesity having a significant impact for the community.

**CONCLUSIONS:** for each field, various actions should be taken at institutional level. Many recommendations and actions have already been taken worldwide, but they alone seem to be not enough. This work points out that, in order to combat obesity and bring about a slowdown of this pandemic, the entire scientific community and institutions must work together to identify and design programmes that are truly effective.

**Keywords:** obesity, health inequality, social medicine, work, social costs, social impact

#### INTRODUCTION

Obesity is a complex and multifactorial disease, in which individual predisposition, cultural background, lifestyle, and socioeconomic and industry backgrounds come into play.

According to the data reported by the World Health Organization (WHO),<sup>1</sup> the worldwide prevalence of obesity has tripled between year 1975 to 2016. Over 1.9 billion adults had excess weight (Body Mass Index – BMI>25),<sup>1</sup> of which 650 million were obese (BMI>30).<sup>2</sup>

Even in the 5-19-year age group, the prevalence of overweight and obesity has increased dramatically from 4% in

1975 to over 18% in 2016.<sup>1</sup> Instead, according to the Member countries of the Organization for Economic Cooperation and Development (OECD), 23% of boys and 21% of girls are obese.<sup>3</sup> In the WHO European Region, overweight and obesity affect almost 60% of adults and nearly one in three children (29% of boys and 27% of girls).<sup>4</sup>

In Italy, the data is alarming as well: 42.4% of adult have excess weight, about 1 in 10 adults is obese (over 6 million citizens, of which 500.000 are severely obese); over 30% and about 25% of children are overweight and obese, respectively.<sup>3,5-7</sup>

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Finally, from an epidemiological point of view, obesity is recognized as one of the main causes of death: every year, one million deaths are due to excess weight and its associated diseases.<sup>3,8,9</sup>

Data about overweight and obesity are now more concerning than ever. The growth of overweight and obesity are unprecedented and, until now, an underestimated public health challenge that can have a health impact similar to cigarette smoking,<sup>3</sup> which has a major impact on society. The aim of the following work is to report the main evidence of weight excess as a social factor.

### MATERIALS AND METHODS

This narrative review presents 5 different social macroareas in which weight excess and obesity play impacting roles for the whole community. As the most pertinent sources are official reports from national and international institutions, such as laws and judgments, not referenced in the common scientific databases, a systematic search was judged not to be a reasonable approach.

The base for the current investigation was achieved by researching the initial keywords – both in English and in Italian – “obesity AND society” and “obesità E società” on common search engines, together with PubMed, WOS, Scopus and authors’ personal databases. Once first pertinent works were detected, a ‘snowballing procedure’ was applied<sup>10</sup> by looking at titles in their reference list, looking, when possible, at titles citing them, and iterating the procedure.

### RESULTS

#### OBESITY AND HEALTH INEQUALITY

Excess weight reflects and accompanies inequalities in health. This report has undergone a reversal over the decades: obesity initially mainly concerned the affluent classes, today obesity mainly affects the most disadvantaged classes,<sup>4,11,12</sup> and are transmitted from parents to children through the habitus. Patterns of dis/advantage are formalized through school systems and qualifications, conventions of body shape, easy access to health care, and in many other ways, all of which perpetuate inequalities.<sup>13</sup> These factors not only determine bad food choices, but also the lack of access to facilities to engage in adequate physical activity.<sup>3,11,14</sup>

Globalization and the recent economic crisis have influenced the lifestyle of socially disadvantaged people, especially women, making it even more difficult to counteract obesogenic influences.<sup>11,12,14,15</sup> In fact, even if men are more affected by excess weight, women suffer more than men from the socioeconomic disadvantage and the lower level of education.<sup>11,14-19</sup>

Other conditions of social hardship, such as housing and geographical surrounding, also play a fundamental role in the development of obesity.<sup>3,11</sup> In Europe, as in Italy, a geographical North-South gap in childhood obesity is ob-

served.<sup>20,21</sup> With regard to education, in Italy the prevalence of obesity among adults who have obtained at most primary school education is 3 times higher than in individuals with a medium-high degree level (15.8% and 5%, respectively), with gender-related positive effects on BMI: increased physical activity in women and reduced dietary intake in men.<sup>3</sup> Weight excess has recently been found to be a problem that also affects low and middle-income countries, such as Mexico, China, Thailand, and many African countries. With the exception for certain areas of Sub-Saharan Africa and Asia, the prevalence in children in Africa under the age of 5 has doubled since 2000 and about 50% of children in Asia under the age of 5 have excess weight.<sup>2,11,13</sup> The globalization of markets seems to be one of the recognized causes.<sup>15</sup> In these countries, overweight and obesity mainly affect households living in an urban environment, resulting in the copresence of overweight individuals and individuals suffering from malnutrition and being underweight.<sup>2</sup>

#### OBESITY AND SOCIETY

International data and scientific literature show that there is a relationship of mutual influence between excess weight and society. To fully understand this relationship, it is necessary to analyse the various levels that society imposes upon an individual. These can be inserted into a macro (global) system and a micro (regional, provincial, district) system:<sup>3,11</sup>

- **International level:** includes globalization of markets and technological and industrial development, which have allowed the worldwide production and distribution of junk food;

- **National and regional levels:** it is the government, the healthcare system, and the policies implemented at the local level that encourage the increasing spread of excess weight. Urbanization and transport policy that do not guarantee daily physical activity, because, for example, they do not guarantee designated areas. The health policy and school education do not make the citizen more aware of the consequences of the lifestyle adopted. Finally, food policy and the related industry negatively influence food marketing, promoting the consumption of junk food, through the aesthetic aspect, the size of portions, and the promotion of special offers with captivating advertising campaigns;

- **Community level:** this level includes public transportation, health and hygiene conditions, the sale of packaged foods, and the presence of green areas;

- **Work, school, and home environment:** at this level, the availability of meals at school cafeteria or in the workplace is considered to allow easier access to healthy foods. Also the presence of sports infrastructures and the availability of long-term technology (TV, smartphone, internet) is considered;

- **Individual:** this level, which includes energy expenditure and nutrition, is strongly influenced by the levels mentioned above.

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These five levels explain why food choices are influenced by factors present in the social context in which the individual resides, such as cultural values, the price of food, foods on the market, and marketing.<sup>3</sup> Also the social networks (family and friends), with the presence of an obese family member or friend, increases the risk of developing a state of excess weight of 30–40% and about 60%, respectively.<sup>22</sup>

The lack of sports infrastructure, inadequate urban planning and lack of free, leisurely time are among the possible causes of a sedentary lifestyle: over 30% of people do not walk for these reasons.<sup>18,19</sup>

The excessive purchase of cheap food and excessive food waste, the over-consumption of natural resources, and an increase in global warming due to the emission of gases produced during preparation.<sup>11</sup>

Finally, obesity can lead to individual social stigmatization particularly in children, who may develop low self-esteem.<sup>3</sup> All the above has repercussions in the adult stage with consequences in life expectancy, socioeconomic status, and lesser probability of finding a partner to create a family, with depression, isolation, marginalization, and aggressive and provocative behaviour.<sup>4</sup>

#### OBESITY AND WORK

With the development of the tertiary sector, more attention has been placed on the workplace as a risk factor for obesity. Indeed, the so-called office work has resulted in a decrease of over 100 calories in daily energy expenditure, resulting in an increase in BMI.<sup>23</sup> Some features of work (energy required/shifts/weekly hours) lead to an imbalance of work-life, resulting in unhealthy eating patterns.<sup>24</sup> For example, higher rates of obesity have been found in workers with shift work<sup>25</sup> and those who work for over 40 hours a week.<sup>24</sup> There was no difference in BMI between being self-employed or dependent.<sup>24</sup> Work-related stress can also contribute to the development of obesity through its effects on behaviour and metabolism due to unhealthy coping mechanisms such as overeating, physical inactivity, and excessive alcohol consumption.<sup>24</sup>

At the job level, BMI is associated with productivity measurements including absenteeism, short-term disability, worker compensation, and productivity. The obese worker has a higher absenteeism rate, requires more claims for benefits, and faces more frequent accidents; all of which results in a higher cost to the company and a reduction in productivity.<sup>3,8,26</sup> On a statistical point of view, a recent Indian study demonstrated a strong relationship between high BMI and absenteeism with Spearman correlation coefficient  $r=0.227$  and a significance value of 0.012.<sup>26</sup> Also, compared to normal weight employees, those with a higher BMI need more days off for illness (5.29 vs 7.43) and for short-term disability (1.94 vs 4.77).<sup>23</sup>

A significant relationship was discovered between obesity and absenteeism;<sup>25</sup> according to Park's 2009 studies, absenteeism is 4 times higher among young, obese people (ages between 18 and 34 years) than peers with normal weight, with an increase in costs per obese worker.<sup>24</sup> Considering only USA, it is estimated that the national economic burden of absenteeism linked to obesity is approximately 4 billion dollars per year.<sup>25</sup>

For companies, obesity is also a cost for presenteeism, that is, reduced productivity at work due to health problems (e.g., reduced working hours or partial work suitability) and disability. In addition, the demand for retirement in obese workers is over 26% compared to normal-weight colleagues, resulting in more frequent reduction in working hours or early abandonment of work in this category.<sup>11</sup> Obese people may be at a greater risk of occupational injuries due to a number of factors, including reduced mobility, physical fatigue, fatigue from probable apnoea, and poor use of personal protective equipment due to discomfort or inability to find the right size.<sup>23</sup> Although the association between obesity and the risk of non-fatal occupational injury is considered modest,<sup>24</sup> according to some studies, obese workers are at a higher risk of work-place accidents than normal-weight employees, with an odds ratio ranging between 1.2 and 1.8.<sup>27</sup> Finally, an indirect association between excess body weight and workplace safety was found: compared to the others, obese employees make claims more frequently, about 11 times more, and require paid time off.

In the workplace, obesity has also an impact on workers themselves. In fact, being obese increases work stress, because of a higher psychological workload and insufficient social support.<sup>24</sup> Obese or overweight workers, especially women, receive on average a lower wage and are often victims of discrimination: for example, they have a 15–20% lower chance of being hired, or are rejected from occupations involving face-to-face interactions with customers.<sup>11</sup> In addition, obese workers receive lower salaries and less frequent promotions, and report less satisfaction with their employment than those with average body weight.<sup>23</sup>

#### OBESITY IN SOCIAL MEDICINE: THE ITALIAN MODEL

In terms of social medicine, in Italy, a person suffering from obesity can be recognized as:

- disabled, if there is a reduction in their ability to work due to obesity;
- disabled, if obesity causes a social disadvantage;
- not self-sufficient, if obesity makes it impossible to perform daily acts of life without permanent care and assistance or if they are permanently unable to walk without the help of an aide.

With regard to the first point, government tables of the percentages of disability place obesity with a BMI between 35 and 40 in the range from 31% to 40%. For subjects

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of working age (between 18 and 65 years), the percentage of civil disability of less than 33% is not considered valid, while between 34% and 74% there is accessibility to be granted gradually increasing benefits (prosthetic aids, inclusion in targeted placement lists, entitlement of special leave, and partial exemption from the ticket for percentages higher than 66%), but of a non-economic direct type (check or pension).<sup>28</sup>

Concerning obese subjects with a BMI>40, a ruling by the Court of Cassation states<sup>29,30</sup> that, in the assessment of disability due to obesity, the medical commission may disengage itself from the ministerial tables and carry out a specific examination case. This allows, if appropriate, an allocation of a higher percentage of disability than that required by law, until reaching 74%, which is the minimum threshold for the entitlement to a monthly allowance.

For the second point, the obese person may be recognized as handicapped if his condition is the cause of learning difficulties, relationships, or job integration due to both physical-motor, such as reduced mobility, and psychological aspects, such as the discomfort in relating to others.

The main benefits for the handicapped individuals and the family members who assist them are provided for by law 104 from 1992<sup>31</sup> and by additional laws that identify complementary measures that are handicap-related, but also to disability and non-self-sufficiency.

In addition to the general safeguards provided by law 104/1992, a worker with a disability due to obesity is entitled to a number of specific protections related to his particular condition: the employer is obligated to take the appropriate measures to guarantee that the disabled worker is able to carry out his functions in the best possible way, which may involve changing his job if necessary or simply by providing an environment that can guarantee the fulfilment of the assigned tasks without running into any kind of obstacle.

Lastly, if, like other disabling conditions, the obese person needs continuous assistance to be able to perform daily acts of life “or if” they are unable to walk without permanent assistance from an aide, they shall be entitled to disability allowance.

### OBESITY AND SOCIAL COSTS

Worldwide, the total economic impact of the obesity is estimated to be 2 trillion dollars or 2.8% of the gross domestic product.<sup>32</sup> Those costs can be divided into direct costs, defined as expenses related to services provided by a healthcare provider (which are 1.5-3.9 times higher for obesities if compared to normal weighted), and indirect costs, related to loss of productivity due to absenteeism, disability, compensation claims, and premature mortality (54-59% of the estimated total cost of obesity).<sup>32</sup> Excess weight results in a significant cost for the Public Health and, therefore, for the community.<sup>3,8</sup> According to the WHO, the impact of ex-

cess weight on the use of health services, and therefore on health costs, is quite considerable: according to the most recent estimates, 6-8% of European expenses and 4% of Italian expenses (of approximately 4.5 billion Euros) is due to obesity, its related diseases, and its complications.<sup>3,6,15</sup> The OECD estimates that the health expenditure of an obese person is about 25% higher than that of a normal weighted individual and that obesity results in an annual cost of 70 billion Euros between health costs and the loss of productivity.<sup>8</sup> Specifically, in Italy, healthcare expenditure is 4% higher in overweight individuals compared to the normal weighted population.

### DISCUSSION

The various discussed sections highlight that obesity has a significant impact for the community, thus requiring various actions to be taken at the institutional level. Many recommendations and actions, promoted by the WHO,<sup>2</sup> have already been taken and include the promotion of a more comprehensive food labelling system to assist in the selection of healthier foods, the adoption of taxation on junk food, and reduced marketing pressures on children.

Regarding labelling, the first country to make the move was the UK with the introduction of the ‘traffic light’ system,<sup>33</sup> criticized for its unclear outcomes and followed by the development of the French ‘Nutri-Score’,<sup>34</sup> a scale of five colours ranging from green to red, each corresponding to the first five letters of the alphabet (A, B, C, D, E) giving an overall assessment of the nutritional characteristics of the final pre-packaged product. In 7 European countries, including Italy, the authorities have explicitly opposed because of its lack of consideration for specific diets, such as the Mediterranean diet, that are considered healthy, but which contain many basic food products that would result in a negative score.<sup>35</sup>

A system of taxation on junk food and alcoholic beverages is present in France, Norway, and Hungary, together with a significant limitation on their advertising. The purchase and consumption of such food has been reduced by 20-40%, a healthier lifestyle was stimulated, and, finally, the percentage of persons with excess weight was reduced.<sup>3</sup> In Italy, although the decline in childhood obesity from 2008 to 2016, the country is not yet out of the rank of the worst countries for childhood obesity. In fact, according to the WHO, 36% of Italian children consume sugary drinks daily, only 34% exercise once a week, and only 20% go to school on foot or by bicycle.<sup>19</sup>

From the point of view of healthcare many actions could be undertaken. Given the resistance to recognize obesity as a disease (40% of parents, especially mothers, do not consider the problem),<sup>7,20</sup>

childhood obesity prevention programmes should be improved at school level.<sup>3</sup> General practitioners and paediatricians should be specifically trained to have effective

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communication and promoting a change in lifestyle.<sup>36,37</sup> A multidisciplinary team is needed, with the implementation of Obesity Units providing access to the most effective therapies and the Obesity Surgery Centres connected to reduce waiting lists.<sup>6</sup>

For the disadvantaged classes, the governments, through economic benefits, must promote access to sports infrastructure, the purchase of healthier food and easier access to psychological support and care. In addition, it may be considered to introduce a one-off tax bonus for subjects who document a reduction in the BMI.<sup>3</sup>

Social networks and smartphone apps are possible tools to fight obesity: the use of apps that can set goals and help to create a path towards a healthier lifestyle in real time, allowing the inclusion of family and friends as support, were found to be effective.<sup>38</sup>

About the work, it is reported<sup>24</sup> to be cost-effective for employers to actively encourage workplace health promotion initiatives, including weight management programmes.

For prospects, the socioecological model should be adopted to identify new approaches and strategies to fight obesity: this model takes into consideration contextual factors such as the community.<sup>22</sup> These approaches should be integrated within the cultural context of each country or region.<sup>15</sup> These programmes should be directed not only at the overweight population who are at risk of developing into a state of obesity, but also to the obese population, to help reduce BMI, and to reduce the risk of developing further complications related to excess weight and to all individual's social network.

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