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Italy's landmark obesity law: the long road from science to policy

Michele O. Carruba[a], Andrea Lenzi[b,c], Pietro Paganini[d], Federico Serra[c],

Enzo Nisoli[a]

[a] Center for Study and Research on Obesity, Department of Medical Biotechnology and Translational Medicine, University of Milan, 20129 Milan, Italy

[b] National Research Council (CNR), 00185 Rome, Italy

[c] Obesity Policy Engagement Network (Open), 00185 Rome, Italy

[d] Fox School of Business, Temple University of Philadelphia, Philadelphia,USA

Short Title: From Adipose Biology to Italy's Landmark Obesity Law

Corresponding Authors:

Michele O. Carruba

michele.carruba@unimi.it

Enzo Nisoli

enzo.nisoli@unimi.it

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Italy's Law no. 149/2025 ("Provisions for the prevention and care of obesity"), with Roberto Pella as first signatory, came into force on 24 October 2025 and represents a historic turning point in how a country can respond to obesity (1). The law formally recognises obesity as a chronic, progressive and relapsing disease and establishes a national framework for prevention, treatment and long-term care (2,3). Italy is, to our knowledge, the first country to enshrine in national legislation a comprehensive, disease-centred framing of obesity within a structured prevention and care mandate (2). Specifically, Article 1 recognises obesity as a chronic disease and a priority for clinical interventions and public health strategies, moving beyond its historical framing as merely a risk factor for cardiometabolic complications (2). The law does not define diagnostic thresholds or clinical staging criteria; rather, it establishes the legal framework for prevention and care pathways that are to be operationalised through clinical guidance (*e.g.*, national guidelines) and service provision within the National Health Service (2,3).

The law makes obesity care an explicit responsibility of the National Health Service. It requires pragmatic, political discussion and decision to specify diagnostic and therapeutic services covered within the Essential Levels of Care guaranteed by the Italian National Health Service (*Livelli Essenziali di Assistenza*), mandates a national prevention programme spanning nutrition education, physical activity and breastfeeding promotion, and establishes a national observatory to monitor trends, support early detection and coordinate follow-up. Schools are placed at the Center of prevention, training in obesity care is required for health professionals, and explicit provisions protect individuals from stigma and discrimination. Key provisions of the law and the main stakeholders involved in implementation are summarised in Table 1. These measures have been recognised at European level as a potential blueprint for other countries (3).

In this Perspective, we briefly retrace the intellectual and institutional trajectory that made Law 149/2025 possible, focusing on the role of the Center for Study and Research on Obesity (CSRO) at the University of Milan and its partners. We argue that this law is not an isolated political act, but the culmination of almost three decades of integrated scientific, clinical, educational and cultural work that gradually reframed obesity in Italy and beyond – from an aesthetic or behavioural issue to a complex chronic disease and a matter of rights (Fig. 1). We then outline some of the challenges that lie ahead for implementation and for the international community.

From adipose tissue biology to a disease model of obesity

When CSRO was founded in 1997 under the leadership of Michele O. Carruba, obesity was still widely perceived, in the public arena and often in clinical settings, as a failure of willpower and a problem of calories in versus calories out. CSRO was conceived from the outset as a multidisciplinary hub, integrating basic science, clinical research, and education around a different premise: obesity is a complex disease rooted in biology, embedded in social and environmental contexts, and requiring structured prevention and care pathways (4).

Over the years, CSRO researchers contributed to a shift in how adipose tissue itself is conceptualised. Their work on nitric oxide (NO)–dependent mitochondrial biogenesis in mammals, including adipose tissue, provided early mechanistic links between nutrient signalling, mitochondrial function and systemic metabolism, with implications for ageing and cardiometabolic risk (5–7). Studies in obese rodents showed that inflammatory mediators such as TNF-α can downregulate endothelial nitric oxide synthase (eNOS) and impair mitochondrial biogenesis in fat and muscle, suggesting that mitochondrial dysfunction is a hallmark of high cardiovascular risk in metabolic syndrome (8,9). Further work demonstrated that interventions such as calorie restriction and branched-chain amino acid supplementation promote mitochondrial biogenesis and support metabolic resilience in multiple tissues (10,11).

Taken together with parallel international research (12,13), these mechanistic insights supported a nosological shift: obesity could be understood not simply as "excess weight", but as a disease of adipose tissue characterised by disturbed mitochondrial function, endocrine signalling and inter-organ communication (9,14,15). The emerging view of adipose tissue as a "polychromatic" organ – comprising white, brown and beige adipocytes with distinct but interrelated roles in energy balance and metabolic health (12) – reinforced the idea that adipose tissue dysfunction underlies much of the morbidity associated with obesity.

On this scientific basis, CSRO and its collaborators helped promote a diagnostic model of clinical obesity that integrates anthropometric measures with symptoms, comorbidities and functional limitations. This model anticipates recent international efforts to define "clinical obesity" not merely by body mass index, but by the presence of adiposity-based chronic disease affecting health and quality of life (16). It is precisely this shift – from weight-centric to disease-centric thinking – that is reflected in the wording of Law 149/2025.

Building bridges: from science to professional standards and policy

Science alone does not change laws. A key step is translating mechanistic insights and clinical models into professional standards and policy narratives. Over the years, CSRO members have contributed to national and European scientific societies and working groups, helping to consolidate a disease-centred approach to obesity care. This trajectory culminated in the publication of recent multisociety national guidelines (2024) on the diagnosis and treatment of obesity, which codified a shared clinical framework and directly preceded the legislative step (17). These guidelines, developed with broad professional consensus, articulated obesity as a chronic, relapsing disease requiring long-term, multidisciplinary care and highlighted gaps in access to services. They also provided a key clinical reference point for Law 149/2025, helping to align legislative recognition with contemporary evidence rather than outdated notions of personal responsibility and aesthetic normality.

A first decisive bridge between obesity science and policy was built in Milan. In 1999, the European Association for the Study of Obesity (EASO) adopted the "Milan Declaration", prepared by CSRO's scientific committee, one of the earliest coordinated European calls to recognise obesity as a disease rather than an aesthetic condition or purely behavioural issue. The Declaration urged policymakers to acknowledge the biological complexity of obesity, its long-term health consequences and the need for structured prevention and care grounded in scientific evidence (18)

This trajectory was reinforced at Expo Milano 2015 ("Feeding the Planet, Energy for Life"), where the Milan Charter was launched as a global commitment linking nutrition, human health, sustainability and social responsibility. CSRO members co-authored the 2015 Milan Declaration, published as an EASO position statement in *Obesity Facts* (18), which explicitly framed obesity as a major non-communicable disease and called for integrated approaches to food systems, urban environments and healthcare.

Subsequently, the Milan Charter on Urban Obesity, endorsed by EASO and published also in *Obesity Facts* (19), brought together local governments, professional societies, civil society organisations and international networks to advocate for integrated strategies spanning prevention, care, urban spaces and social inclusion. This initiative, developed in collaboration with the Health City Institute (HCI), SIO and others, exemplifies a deliberately multidisciplinary approach aimed at overcoming reductionist or ideologically driven narratives and supporting public health policies attentive both to individual needs and to broader socio-economic consequences.

Education, public discourse and the politics of information

Parallel to these institutional efforts, CSRO maintained a strong educational and cultural mission. Since the late 1990s, the Center has trained generations of medical students, residents and health professionals to move beyond simplistic "eat less, move more" prescriptions and to adopt a biopsychosocial, life-course approach to obesity care. Throughout its history, CSRO has not received research funding from pharmaceutical companies. This independence has allowed the Center to develop its scientific, educational and policy initiatives free from commercial influence and with a primary focus on the needs and rights of people living with obesity. It has worked with schools (20), the Italian Ministry of Health, the European Commission, municipalities and patient organisations to disseminate evidence-based messages on nutrition and physical activity (21), with particular emphasis on recovering the Mediterranean diet (22), on the role of portion size in a healthy, balanced diet (23), and on helping citizens navigate complex front-of-pack labelling (FOP) systems. In this context, CSRO researchers contributed to critical analyses of labelling schemes such as Nutri-Score and NutrInform Battery, arguing that robust evidence on long-term behavioural and health impacts is needed before endorsing one system over another (24).

In an era where accurate information is increasingly diluted by misinformation and polarisation, CSRO has acted as an authoritative, science-informed voice. Its public-facing activity – lectures, media engagement,

policy reports – has consistently emphasised that obesity is simultaneously a medical, social, cultural, economic and political issue. By highlighting the global scale of "globesity", the economic burden of untreated obesity and the growing prevalence in children and adolescents, CSRO and its partners helped create the cultural conditions in which a law like 149/2025 could be not only proposed, but widely understood as necessary.

Importantly, recent work has also engaged with the opportunities and risks associated with digital health and social media. Advances in wearable devices, data analytics and emerging applications of artificial intelligence offer new tools for precision nutrition and personalised lifestyle strategies (25). When grounded in robust evidence and embedded in clinical and public health frameworks, these tools can help individuals better understand their own metabolic responses and behaviours, supporting sustainable dietary patterns and balanced lifestyles tailored to the person rather than imposed through one-size-fits-all prescriptions. At the same time, commercially driven simplifications, ideologically rigid currents that reduce obesity to nutrition alone, and the polarising dynamics of social media can fuel anxiety, moralisation of food choices and maladaptive behaviours that undermine long-term health. A central theme in our educational work has therefore been promoting informed autonomy, proportional use of technology and a holistic understanding of health.

Law 149/2025: an inflection point and a test case

Against this backdrop, Law 149/2025 can be seen as an inflection point rather than an endpoint. The law consolidates a rights-based approach to obesity: people living with obesity are recognised as patients with a chronic disease, entitled to evidence-based care, protection from discrimination and inclusion in prevention strategies.

At the same time, the law is a test case. Its success will depend on implementation: ensuring equitable access to services covered under the Essential Levels of Care across regions**,** adequately funding national programmes, embedding obesity training in medical curricula and continuing professional development, and developing metrics to monitor impact on health outcomes, quality of life and equity. The national Observatory will need to interact closely with scientific societies and academic Centers so that surveillance, pathway design and guideline updates remain evidence-based and responsive to emerging knowledge.

From an evaluation standpoint, the law provides an enabling framework rather than a predefined outcomes programme. Nonetheless, robust assessment is feasible and should be prioritised. The establishment of a national Observatory for the Study of Obesity creates an opportunity to define a shared indicator set and to support implementation science across regions (2). Examples of measurable indicators (summarised in Table 1) include: (i) *access and equity* (regional availability of obesity services, waiting times, referral patterns); (ii) *process indicators* of care quality (multidisciplinary assessment, continuity of follow-up, uptake of evidence-based therapies); and (iii) *outcomes* (obesity-related complications, patient-reported outcomes and experience measures, and stigma-related endpoints). Such metrics could be tracked longitudinally to benchmark progress and to reduce regional disparities. As a future direction, accreditation criteria for obesity services (hub-and-spoke networks, minimum competencies and quality standards) could be developed in alignment with national guidelines and periodically audited through the Observatory.

Centers such as CSRO will remain essential in this phase. Building on decades of research on mitochondrial function, adipose tissue biology and cardiometabolic risk, as well as on experience with clinical pathways and public engagement, CSRO is well positioned to contribute to implementation science: evaluating which models of care work best, for whom and under what conditions; assessing the real-world impact of new pharmacological options, including GLP-1-based therapies; and integrating digital tools in ways that empower patients rather than fragment care.

Lessons for the international community

What can other countries learn from the Italian experience? First, scientific advances in adipose tissue biology and metabolism can have far-reaching implications beyond the laboratory – but only if they are translated into coherent disease models, integrated into guidelines and communicated effectively to professionals, policymakers and the public. The long arc from NO-dependent mitochondrial biogenesis to a

chronic disease law illustrates how mechanistic research, when embedded in a broader clinical and social vision, can alter the "epistemic status" of a condition such as obesity.

Second, cities and local coalitions can act as laboratories for policy innovation. Milan's role – from early declarations to the Milan Charter on Urban Obesity – shows that urban settings are ideal spaces to experiment with integrated approaches involving health services, urban planning, schools, workplaces and civil society. National legislation can then scale up and consolidate successful local models.

Third, a rights-based, person-centred narrative is crucial. Recognising obesity as a chronic, relapsing disease is not only a semantic change; it invites systems to design pathways that are longitudinal, multidisciplinary and compassionate, and to protect people living with obesity from stigma and discrimination. This narrative can coexist with strong commitments to prevention and healthy environments; indeed, it makes them more urgent.

Finally, implementation will require sustained collaboration. Law 149/2025 is the product of many hands – patient advocacy groups, medical federations, scientific societies, urban networks and policymakers. Its future will depend on maintaining and expanding these alliances, ensuring that people living with obesity, clinicians, researchers and local communities all have a voice in shaping how the law is translated into practice.

Italy's experience suggests that obesity policy can be evidence-based, person-centred and rights-oriented. The trajectory of the CSRO – from its foundation in 1997 to its contribution to this unique piece of legislation – illustrates how sustained research, clinical excellence and public engagement can, over time, reshape not only clinical practice but the law itself. For countries confronting the global obesity challenge, this may be the most important lesson: that changing the fate of a chronic disease requires changing the stories, the systems and ultimately the statutes that govern it.

Key messages

• Italy's Law 149/2025 formally recognises obesity as a chronic, progressive and relapsing disease and mandates a national framework for prevention and care.
• The law links prevention (schools and communities) with guaranteed access to evaluation and treatment within the Essential Levels of Care guaranteed by the Italian National Health Service (*Livelli Essenziali di Assistenza*), with explicit equity implications.

• Implementation will determine impact: monitoring, workforce training, and measurable indicators are needed to reduce regional disparities and stigma.
• Italy provides a test case for other countries on how sustained science, clinical frameworks and civic coalitions can translate into rights-based obesity policy.

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Conflict of Interest Statement

All other authors declare no COI.

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Author Contributions

E.N. and M.O.C. led the conception and design of the work. E.N. and P.P. wrote the initial draft, and M.O.C., A.L., F.S. revised it critically for important intellectual content. M.O.C., A.L., P.P., F.S., and E.N. gave the final approval of the version to be submitted. E.N. takes responsibility for the integrity of the work as a whole, from inception to the final article.

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Figure Legend

Figure 1. From adipose tissue biology to obesity as a chronic disease: a 30-year trajectory in Milan and Italy.

The upper timeline summarizes major scientific and clinical advances developed over three decades, ranging from early work on nitric oxide–dependent mitochondrial biogenesis and adipose tissue dysfunction, to the concepts of metabolic flexibility, ageing resilience, and the recognition of the adipose organ as a polychromatic and functionally integrated system (white, brown, and beige adipocytes). These advances progressively reframed obesity from a simple excess of body weight to a complex, chronic, and relapsing disease.

The lower timeline highlights key policy, advocacy, and societal initiatives in which Milan-based institutions played a central role, including the Milan Declaration (1999), the Milan Charter and Expo initiatives (2015), urban obesity actions, and public communication efforts. The convergence of biological evidence and clinical models ultimately contributed to the Italian Law no. 149/2025, formally recognizing obesity as a chronic disease and integrating its prevention and care into national health policies.

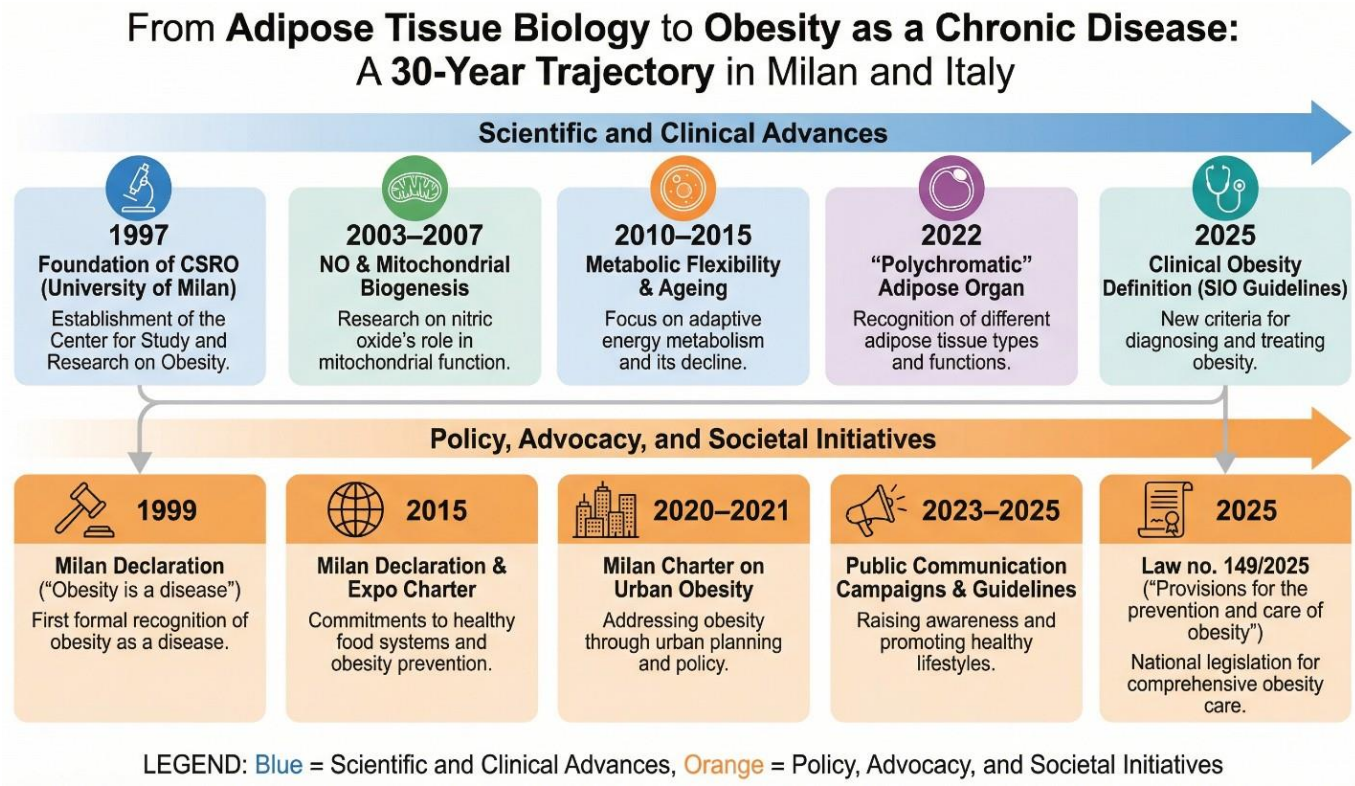

Table 1. Core provisions of Italy's Law 149/2025, implementing stakeholders and potential indicators

Legal/policy domain (Law 149/2025)	What the law establishes	Main implementation stakeholders	Examples of implementation indicators
Disease recognition and policy framing	Recognises obesity as a chronic disease and a national priority for prevention and care; promotes a disease-centred approach beyond obesity as merely a risk factor.	Parliament; Ministry of Health; Regions/National Health Service; scientific societies; patient organisations.	Inclusion of obesity as a chronic disease in national/regional health plans; existence of dedicated care pathways; publication/uptake of evidence-based guidance; institutional anti-stigma commitments.
Guaranteed access within the Essential Levels of Care	Requires that clinical evaluation, diagnostic testing and treatment for obesity be included within the Essential Levels of Care guaranteed by the National Health Service (*Livelli Essenziali di Assistenza*).	Ministry of Health; Regions; NHS providers; specialist obesity services/centres; primary care networks.	Regional availability of obesity services; waiting times for specialist assessment; referral patterns and pathway completion; equity indicators (regional and socioeconomic variation in access).
National prevention programme (life-course)	Establishes a national prevention programme spanning nutrition education, physical activity promotion and breastfeeding support.	Ministry of Health; public health agencies; Regions; municipalities; schools; primary care; community organisations.	Coverage of prevention initiatives (schools/communities); uptake of counselling/lifestyle programmes; local implementation plans; periodic reporting of prevention activities.
School-centred prevention and childhood focus	Places schools at the centre of prevention, supporting early-life strategies and healthier environments, with attention to inclusion and stigma reduction.	Ministry of Education; schools; municipalities; public health services; paediatric care; families; civil society.	Proportion of schools implementing prevention curricula; number of school-based initiatives on food environments and physical activity; staff training delivered; existence/uptake of policies addressing weight-related bullying.
Training and workforce capacity	Calls for training of health professionals to support recognition and management of obesity as a chronic, relapsing disease within structured pathways.	Universities; professional bodies; scientific societies; NHS training providers; specialist centres.	Adoption of training modules in curricula; continuing professional development uptake; number of multidisciplinary teams/services with defined competencies; adherence to evidence-based process standards.
Monitoring, coordination and evaluation (Observatory)	Establishes a national Observatory for the Study of Obesity to monitor trends and support evidence-based prevention and follow-up; enables coordination across regions.	Observatory; Ministry of Health; Regions; academic centres; public health/statistics institutes.	Publication of surveillance reports; adoption of a shared national indicator set; benchmarking across regions; quality improvement cycles; monitoring of longitudinal follow-up continuity.
Anti-stigma provisions and social inclusion	Includes provisions to address stigma and discrimination and to support person-centred care and social inclusion.	Public institutions; healthcare providers; schools; workplaces; media; patient organisations.	Anti-stigma policies/campaigns; patient-reported experience measures (respectful care); inclusion of stigma reduction in professional training; monitoring of stigma-related endpoints (e.g., bullying reports in school settings, where available).
Future direction: accreditation and quality standards	While not explicitly an accreditation law, the framework supports the future development of quality standards for obesity services (e.g., hub-and-spoke networks, minimum competencies).	Ministry of Health; Regions; scientific societies; accreditation bodies; NHS providers; specialist centres.	Definition of accreditation criteria; mapping of hub-and-spoke networks; periodic audit/quality reviews aligned with national guidelines; reduction in regional variability in service availability and care processes.