

# Editorial – Epidemiological transition, crisis of the Italian health system: ethical and logical economic choices

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Forty years after its establishment, the Italian National Health Service (INHS), based on three foundational principles, universality, equality and equity, is one of the best in the world.

Over the past 30 years, Italian healthcare spending has grown to 2011 and then declined steadily<sup>1</sup>. In 2016, Italian healthcare, both public and private, was around 8.9% of Gross Domestic Product (GDP), while Germany spends 11.1%, France 11.5% and Europe 9.9% (Figure 1)<sup>2</sup>. Although Italy invests less in health than these countries, the results, in terms of guarantee for the citizen and health, are excellent. This also occurred in what concerned life expectancy, at least for those who have been using the INHS for years<sup>3</sup>. The epidemiological transition and the increase in chronic non-communicable diseases (CNCD) imposed changes to make the INHS sustainable, modifying the interventions respect to the transition itself<sup>4</sup>. CNCDs, including obesity, cardiovascular disease, diabetes mellitus, neurodegenerative diseases, chronic respiratory diseases, cancer, are the most frequent causes of prolonged disability and death worldwide<sup>5</sup>. CNCDs are the most important cause of death, which increased worldwide, between 2000 to 2016, from 60.38% to 71.24%, respectively, and in Italy reached 91.4%<sup>6</sup>.

In addition to a high mortality rate, CNCDs are also disabling, as evidenced by the years of life lost. In Europe, about 60% of the Disability Adjusted Life Year (DALY) related to CNCDs, is attributed to seven main risk factors: blood pressure (12.8%), smoking (12.3%), alcohol (10.1%), high cholesterol (8.7%), overweight (7.8%), reduced intake of fruits and vegetables (4.4%), and physical activity (3.5%). The DALY is equal to the sum of the years of life lost due to an untimely death and of those experienced in illness rather than health<sup>5</sup>.

If on one side medical therapies, diet, drugs and surgery can reduce premature mortality and improve life expectancy, on the other it has observed an increase of prolonged disability, leading to serious socio-economic burdens, also related to days off work<sup>7</sup>. In Italy, 2017 data showed that 24 million patients had at least one chronic disease, after 75 years more than 90% are affected.

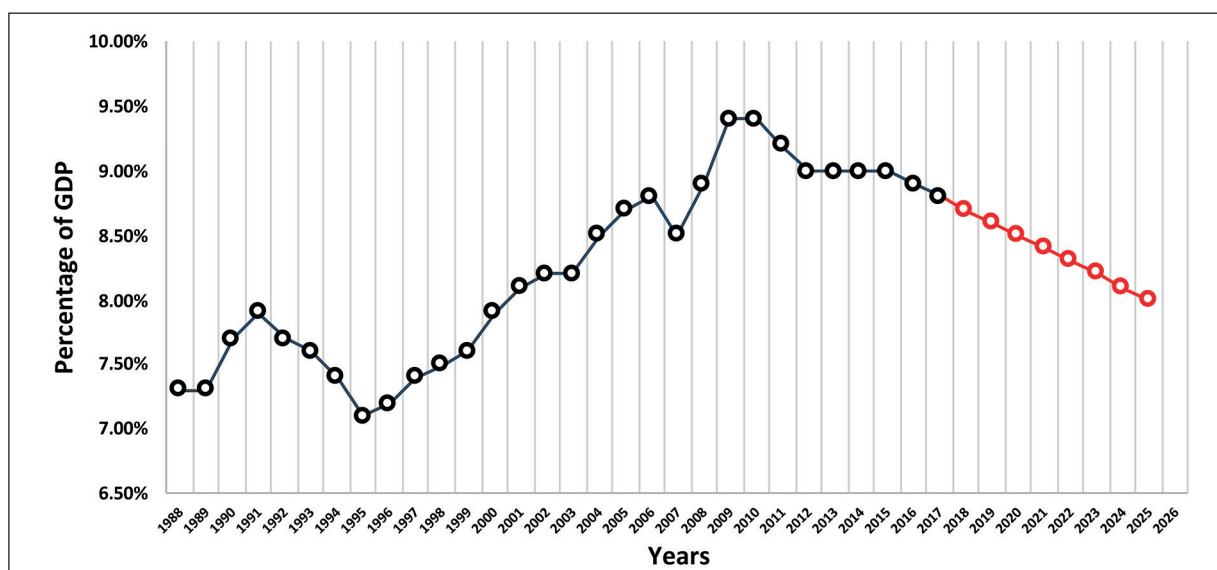
Currently, CNCDs healthcare expenditure is around 67 billion and, in 2050, over 75% of public health resources will be destined to these diseases<sup>8</sup>.

In the USA, health expenditure is disproportionate to the wealth and is about double (\$ 10,224) of other economically comparable countries (\$ 5,280). However, health expenditure in the USA and in comparable countries has gone down in recent years: in the USA from 7.2% in 2000-2005 to 3.6% in 2015-2017; in the other comparable countries from 5.6% in 2000-2005 to 2.5% in 2015-2017<sup>9</sup>.

In Italy, in 2016, the total health expenditure decreased and amounted to almost € 158 billion, divided as follows: 113 for public spending; 45 for private spending, variously distributed, of which almost 40 billion out-of-pocket spending. This amount represents the 23% of the expenditure and the acceptable threshold is 15%. If health spending with own resources exceeds 15%, social equity is no longer guaranteed<sup>10</sup>.

In the USA, from 1970 to 2016, private healthcare expenditure increased from 3.9% to 8.8%, with a similar rate compared to other economically comparable countries<sup>11</sup>.

In Italy, between 2010 and 2016, the per capita public health expenditure decreased (-8.8%). In Germany (+11.4%), in France (+ 6.2%) and in the Netherlands (+2.6%) health expenditure increased. While it decreased in Spain (-3.8%), Portugal (-14.4%) and Greece (-38.3%). In the meantime, the private health costs increased<sup>12</sup>.



**Figure 1.** Italian Healthcare Expenditure of GDP %. GDP: Gross Domestic Product. The red line represents the projection of the GDP in the next 5 years, according to the last triennium.

The assessment of the real impact of private health expenditure on family budgets relates to social regression. This is due to the impact on its own economic resources, depending on age and income, that led to an increase in social inequalities.

In the meantime, the most industrialized health systems are facing a crucial challenge: managing an increased health demand within healthcare and social spending cuts. This occurs in an epidemiological context where the 19.2% of the EU population is aged over 65. In particular, the highest percentage of people over 65 is in Italy (22%), followed by Greece and Germany. Moreover, the projection of population over 80 are expected to be more than double between 2016 and 2080, from 5.4% to 12.7%<sup>13</sup>. Despite the decrease in maternal and child deaths, economic strategies aimed at achieving a great sustainability of the health system have led to an increase in CNCDS deaths<sup>14</sup>.

English public health expenditure fell from 3.8% between 2001 and 2010, to 0.4% between 2010 and 2015. In England, due to the contraction of public health expenditure, the newborn children will have a lower life expectancy and an increase in CNCDS<sup>15</sup>. Another example of how the economic crisis affects the increase in private healthcare expenditure is given by what happened in Greece. There was a reduction in access to public services and the consequences for the citizens' health led to an increase in mortality (+43% between 2008 and 2010). Restrictive health spending measures, below 6%, increased the difficulty of access to care for chronic patients and the mortality rate grown by 24.4% in over 85 years<sup>16,17</sup>.

What happened in Greece is also manifesting in Italy. No less than 86% of deaths and 77% of the disease burden are caused by CNCDS. In 2017, in Italy 92% (about 573,000) of deaths were caused by these diseases<sup>6</sup>. There were 31,000 deaths, more than 2016 and about a thousand less than 2015. In 2015, the number of deaths was higher than those counted from the end of the World War II<sup>18</sup>. Therefore, it seems reasonable to state that the increase of 5.1% is attributable both to the age of the population and to the lower efficiency of the health system (Figure 2).

In 2018, the ratio between health expenditure and produced wealth in the country decreased to 6.5. According to WHO, this represents the limit under which it is no longer possible to guarantee quality and access to care, with a consequent reduction in life expectancy. The forecast for 2019 is 6.4 and for 2020 it will be 6.3. "Major cuts to health care cost lives"<sup>19</sup>.

The only sustainable strategies are saving and efficiency in obtaining resources, to improve needs and reduce funding. Prevention assumes an increasing importance, considering the rise of the epidemiological burden of CNCDS, which are preventable and deferrable.

It is necessary to identify health policy strategies that can lead to immediate economic benefits. In this way, the decision-making centers must consider the ethical and social implications.

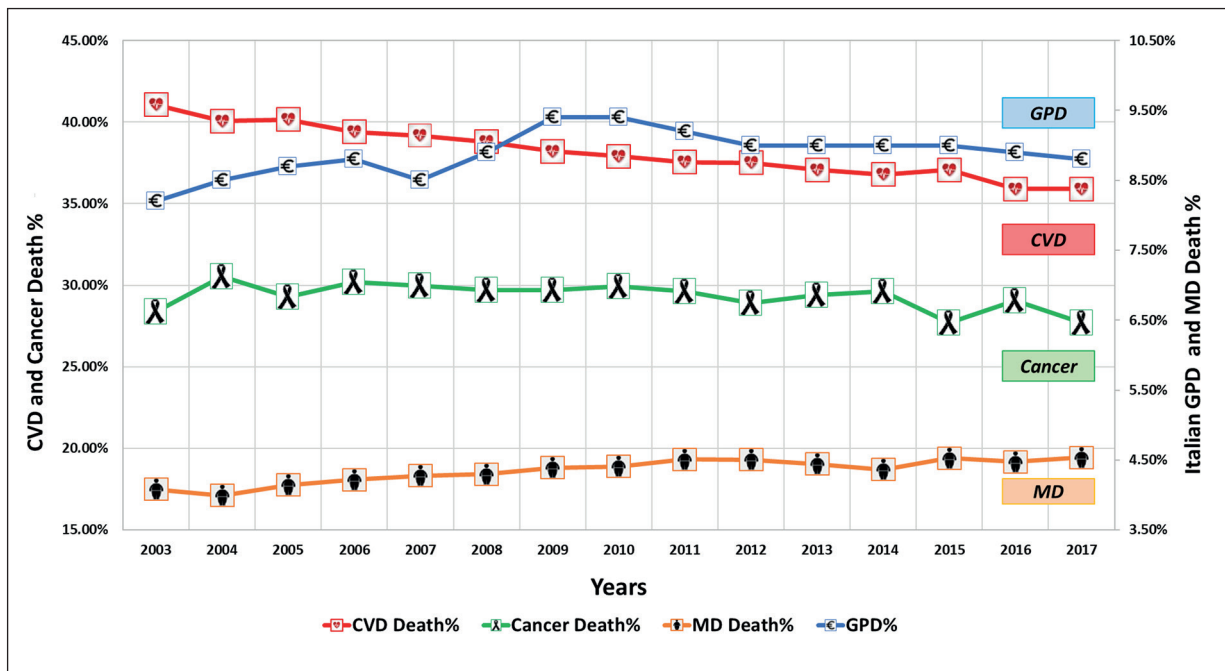
The relationship among the economic crisis, the increase in private healthcare expenditure and the increase in CNCDs cannot be denied. To reach a good level of health care, global responsibility, effective coordination, and performance management, the use of healthcare professionals and university expertise is necessary.

The Harvard Business Review has published a review entitled “How Not to Cut Health Care Costs”. According to the authors, the policies that are most implemented for costs reduction, concern: personnel, operational spaces, equipment and reduction of supplies of goods<sup>20</sup>.

With these economic and political strategies, significant and immediate results can be obtained. The medical staff cuts led to a healthcare failure and created frustrations and discomforts in the sanitary personnel, which feels de-qualified of its functions. If the number of patients is maximized, the time of care is reduced. Consequently, it loses quality of care and costs increase. Therefore, the close relationship of trust between medical doctor and patient fails. This leads to greater clinical and legal risks. It is essential that health expenditure cuts must be shared with health personnel. In fact, the team is rarely involved in decision-making processes aimed to obtain savings. This means loss of opportunity to have a benchmark and a standardization of best medical practices. This optimized process could reduce costs and improve quality of care.

An efficient health care system is reached with CNCDs prevention and monitoring. A strategy must be implemented quickly, to reduce individual risk factors and organize an interdisciplinary system. Therefore, it is necessary to remove the causes, with innovative models that allow all citizens to receive unhindered care. The third principle of the European Medical Ethics states that the doctor, without any discrimination, provides the patient with the most essential and appropriate treatment<sup>21</sup>. This principle can be applied in the own-initiative medicine, to identify chronic pathologies that can benefit from pro-active interventions, based on criteria of frequency, severity, modifiability.

Healthcare expenditure can be limited using the promotion and support to predictive, preventive, personalized and participatory medicine (P4 medicine). It is estimated that a 1% investment in innovation and research leads to saving 3-4%, over the years<sup>22</sup>. Therefore, it is proposed the implementation of an integrated, preventive, diagnostic path based on P4 medicine, and the monitoring of indicators with a computerized medical record and training of the aware user.



**Figure 2.** Cause of death, by non-communicable diseases (% of total) in Italy. CVD: Cardiovascular Disease; GPD: Gross Domestic Product; MD: Metabolism Diseases.

Just think of the possibility of preventing the increase in hospitalization days, complications and costs related to malnutrition in medical and especially surgical patients<sup>23-25</sup>. An example is the systematic adoption of the Enhanced Recovery After Surgery (ERAS) protocol, which provides a standardized, multimodal and multidisciplinary perioperative path. This is applied to elective surgery, based on the best scientific evidence, leading to a reduction in the hospitalization days (2.5 days), a reduction of complications (50%) and, consequently, a reduction of health care costs<sup>26</sup>.

Indicators of the postoperative care appropriateness show that deaths before hospital discharge are fundamentally dependent on the lack of admission to critical care. For example, critical-care-based cardiorespiratory interventions can improve outcomes among high-risk surgical patients. Italy is among the countries with higher risk of hospital death after surgery<sup>27</sup>, with heterogeneous data on the national territory. Although citizens are largely responsible for maintaining their health it is an obligation of the State to take precautions against the risks of illness. This through the development of a protection system, against known threats and new emergencies, and sharing of research results.

For example, more than a billion savings in hypertension and hypercholesterolemia therapies with appropriate choices are estimated. Moreover, it is necessary to be able to identify strategies to reduce the costs of obesity and CNCDs in order to obtain a drastic reduction in total health expenditure and social costs. In fact, obesity is a multifactorial pathology correlated to at least 25 comorbidities, such as diabetes mellitus type II, 16 types of cancer, hypertension, cardiovascular diseases, cerebral vasculopathy, gallbladder lithiasis, arthropathy, ovarian polycytosis, sleep apnea syndrome<sup>28</sup>. Among adult men, the prevalence of obesity is Hispanic, 37.9%, black, 38.0%, white, 34.7%, and Asian, 12.6%. In women, the prevalence of obesity is Hispanic, 46.9%, black, 57.2%, white, 38.2%, and Asian, 12.4%<sup>29</sup>. Annually, total simulated medical costs for obesity averaged over ten years were \$42,800 higher than for normal weight population. For every kilogram more than normal weight, the annual healthcare costs increase by an average of \$ 140. At the same time, secondary costs depend on quality of life, work absenteeism and mortality that lead to lowered employment probability<sup>30</sup>. The human and economic burden of obesity differs between the economic categories of the population and increases with aging. For obese people aged 65 and over, medical costs increase by \$ 112,600 compared to their normal weight peers. Obesity imposes a large economic responsibility not only on health care systems, but also on the individual, on families and nations. Therefore, to save social public resources, health measures to prevent obesity should be defined as priority<sup>31</sup>. In Italy, the INHS pays a much higher costs for obesity complications respect to real care costs for primary obesity treatment, in the absence of any preventive measures<sup>32</sup>. Furthermore, there are also inequalities between Italian regions. The 21% of the over-65s in southern Italy have disabilities against the 11% of those who live in the northern regions. And while in the South the 24% live in a condition of fragility, in the North the 13%<sup>33</sup>. Thus, it is a global health priority curb the rapidly growing of CNCDs risk factors, reducing by 2030 premature deaths by one third<sup>34</sup>. But, above all, we must identify new strategies able to improve global health systems for a sustainable development<sup>35</sup>. Health promotion is a need to guarantee population health status and reduce health costs and is an important strategy to maintain high ethical values and sustainability of the system. There is a drift of the INHS, anchored to the old logic that does not consider the epidemiological transition. By 2025, it is estimated that health expenditure needs will be between 210 and 220 billion<sup>8</sup>, based on these factors: entity of the sub-funding of the health system; evidence of violation of the minimum welfare levels; oncological screening; hospice and long hospitalization; stabilization; new recruits; salary adjustments to European standards; but, above all, the aging of the population.

Without the involvement in the decision-making process of physicians, medical staff and of those doing research and education, this cost cannot be contained.

It is conceptually misleading to consider the INHS a mere sector of the market economy, without considering the health gain. This idea contributes to an increase in health expenditure due to conflicts of interest and undermines the therapeutic alliance between patient and doctor, which has as secondary effect the increase in litigation. Most of all is due to the loss of patients' trust towards who should take care of them. The greatest difficulty is to make policy makers understand the epidemiological transition of health needs related to chronic-degenerative diseases, which today prevail over acute episodes of illness. The patient must be at the center of the health system choices. However, when the interests of the system conflict with those of the patient, there is a risk of favoring the former. This process has spread to medical care with the business organization.



The main interest must be maintenance of health status, rather than advantage business budgets. The diagnosis-related group (DRG) allows controlling healthcare expenditure, with a classification system based on absorption of the resources involved. The DRG enables to choose the most profitable medical services. This leads to a distorted cultural change because of it dissuades the physicians from their mission. To reach top healthcare management positions, the choice of medical services is made on a remunerative basis, instead of effectiveness, fairness and appropriateness. The future of the INHS will depend on the ethics of professionals, on the humanity of services and on the flexibility of the system, respect to the epidemiological transition.

Directors-General refer directly to Council President, according to political affiliation and to loyalty, practicing monocratic power, typical characteristics of the industry.

Health promotion and prevention require close collaboration between local and regional health care decision-makers and health expertise, with a strong implementation of knowledge transfer, from research to application field. Ultimately, the health policy of the coming years will have to face the challenge of keeping health care quality high and the economic system sustainable.

The major difficulty as an obstacle to innovation is represented by the politicians' will and by the choices of regional administrations to curb spending today, without considering the deferred costs. The higher sanitary costs will be determined by the lack of preventive interventions, in favor of financial logics. Those do not consider the professional ethics, the IHNS mission and the logic of adaptation to the epidemiological transition.

The obstinate will of political decision-makers to organize the health system on the logic of immediate economic savings will unload the burden of social costs to subsequent years and future generations.

If the policy fails to understand the epidemiological transition and the saving which results from prevention, in countering new threats, it will be identified as the problem and not as the desirable solution.

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### Conflict of Interest

The Authors declare that they have no conflict of interests.

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