

hand, the main ophthalmological conditions are glaucoma, diabetic retinopathy and age-related macular degeneration. Glaucoma is the second cause of blindness worldwide; it is curable but irreversible with an incidence of 2.5-3% amongst the white population over 40. Intraocular pressure is the most important risk factor for the development and progression of glaucoma and represents the only therapeutically manageable variable. In Italy, over 2 million people suffer from diabetic retinopathy: diabetic patients have a 25 times greater likelihood of becoming blind compared to the general population. Age-related macular degeneration (ARMD) is the main cause of loss of visual capacity and blindness in subjects over 65 in the developed world. In the Italian population over 60 ARMD has a prevalence of 62.7%. ARMD risk factors are age, genetic make-up, lifestyle (smoking and diet) and environmental factors (pollution).

Keywords Age-related macular degeneration, amblyopia, congenital cataract, congenital glaucoma, diabetic retinopathy, glaucoma, ophthalmological screening, pre-term retinopathy, retinoblastoma

2.17. Comorbidity

The overall improvement in health, increase in life expectancy and the consequent progressive ageing of the population has brought to light chronic degenerative conditions as a health priority that currently constitutes the most common causes of death, morbidity and loss of quality-adjusted life years and they are often simultaneously present in the same individual, calling for significant changes to the healthcare settings and the management of patients suffering from them.

In Italy, 18% of adults aged 18-69 state that they have at least one diagnosis of chronic degenerative illness between cardio- and cerebrovascular diseases, cancer, chronic respiratory diseases, diabetes, chronic liver disease, cirrhosis and renal insufficiency. 3% of adults (and 33% of the population over 64) state that they simultaneously suffered from at least two of these chronic illnesses; the percentage is higher for men, amongst the less wealthy and educated and amongst the resi-

dents of southern Italy. The conditions most frequently associated with one another are chronic respiratory diseases and cardio- and cerebrovascular diseases or diabetes.

Those suffering from cardiovascular and chronic respiratory diseases and diabetes would draw a significant benefit for their health from giving up alcohol and tobacco, if they were to eat a balanced diet and exercise regularly, even to a moderate extent and compatibly with their conditions; however, the population with comorbidities maintains a high profile for these factors.

The age of onset and frequency of comorbidity of chronic degenerative diseases constitute a good indicator of the efficacy of the prevention and promotion of health; should the strategies for the prevention of these conditions prove to be efficacious, there would be a shift towards an older age of onset and, consequently, of the comorbidity. Population surveillance systems do not make it possible to monitor the comorbidity and promptly detect these hoped-for changes, or to identify the groups of people most in need of care in order to allocate the available resources in an optimum manner.

Keywords Adults, chronic degenerative diseases, comorbidity, elderly, epidemiology

3. Mortality and impairment due to external causes

3.1. Accidents in the workplace

The evolution of the regulatory framework concerning occupational safety and health has made a considerable contribution to the diffusion of a safety-oriented culture, highlighting the role played by information and training, a decisive factor for the consolidation of the constant reduction in the number of occupational accidents and death reported in recent years.

Accident report data for 2012, despite being affected by the unfavourable international economic climate, which led to a reduction in both the number of employed individuals and total number of hours worked, show a drop in the number of occupational accident reports and in the number of deaths in the

workplace compared to the previous year of 9% and 6% respectively.

Although the percentage reduction in accidents amongst female workers was lower, given a mean reduction of 5.1% versus a 10.72% reduction for male workers, the percentages related to fatal accidents were reversed with a 26.74% drop for women and a 2.84% drop for men in 2012.

Of the sectors most at risk of accidents, the construction trade, with 48,319 reports in 2012 and 157 deaths in the workplace, confirmed its position as the sector at greatest risk of accidents, including those with a fatal outcome.

The most significant drop in accidents was in the manufacturing and construction sectors and, to a lesser extent, the transport and trading sectors; overall the accident rate in Italy was in line with or slightly lower than the mean level in Europe.

Keywords Accident, fatal accident, safety protection

3.2. Road accidents

Road accidents are the main cause of death amongst the population aged 15 to 35 years. It is estimated that in developed countries the costs of road accidents are equal to between 1% and 3% of the gross domestic product. A downward trend is observed in Italy, where, in 2012, 3,653 people died in road accidents (–5.4% compared to the previous year and –44.7% compared to ten years earlier). This downward trend is due to multiple factors: long-term prevention programmes and interventions that simultaneously impact more than one risk factor are needed to reduce the number and severity of road accidents.

This is the aim of the World Prevention Plan for Road Safety (PMPSS) – Ten Years of Action for Road Safety 2011-2020 – addressing all members of the United Nations (UN), which provides the guidelines for good practices in the fight against the main accident risk factors. Population awareness campaigns are important for supporting the implementation of regulations, allowing a better knowledge of the risks and fines given for violation. Road accident prevention requires an integrated approach and the involvement of different

institutions. However, public health plays a fundamental role. Italy must accomplish the goal of halving the number of deaths in the EU between 2010 and 2020. A particular urgency is required in the programming of intervention to: a) protect the weakest and most vulnerable users of the road (pedestrians, cyclists and motorcyclists), by making mobility (particularly in urban areas) safer; b) protect children being transported in motor vehicles. The SINIACA-IDB system (NCDC project implemented by the National Institute for Health), makes it possible to estimate that the number of individuals injured in road accidents taken to accident and emergency at approximately 1,013,700 (56% of which are males). Of these, 46.1% of males and 42% of females are between 15 and 34 years of age. Hospital admissions account for about 7% of all admissions to accident and emergency departments; it is therefore estimated that there are approximately 72,000 hospital admissions each year for road accidents in Italy. As far as the use of safety devices is concerned, the systems run by ISS Ulisse (observational study) and PASSI (with approximately 37,000 interviews each year) show a considerable increase in the use of protection and safety devices, with a more modest increase in the use of safety devices for children.

Keywords ISS, Istat, PASSI, Road accidents, SINIACA, ULISSE, UN

3.3. Domestic accidents

Domestic and recreational accidents are a category of accidents characterised by a high number and limited downward trend. As regards mortality, Italian, EU, WHO and UNICEF data indicate that the risk is greatest amongst pre-school age children (<6 years of age). In addition to children, European and Italian data, including Istat data, indicates a greater risk of domestic accidents, amongst adults over 65. Over the past decade, there has been an increase in the monitoring and prevention of this phenomenon and the ISS has implemented two surveillance systems to obtain standard information on cases of domestic accidents reported by hospital services: the accident and emergency department ad-

missions monitoring system (SINIACA-IDB) and the National Information System for the Monitoring of Harmful Exposure and Intoxication (SIN-SEPI), based on Poison Centre reports. The systematic analysis of the data obtained by these systems forms the main information base for directing specific prevention intervention and to evaluate recurrence. In addition, the perception of risk amongst the general public is investigated through the PASSI and PASSI d'Argento scheme, which also provides support for the suggestions made by health professionals for their prevention. Over the next three-year period, prevention actions will aim to impact a number of risk factors: to improve the domestic environment; to train and inform parents and childcare providers, including through professional associations and NHS staff; to promote moderate exercise amongst the elderly to maintain their balance abilities and physical coordination; to control therapeutic prescriptions that can be associated with the risk of falls (e.g. multi-therapies, use of psychotropic or antiarrhythmia medications); to fight alcohol and substance abuse; to improve social services, community services and home help services for the elderly, in particular for those who are alone or who live in isolated places; to improve the emergency-system system for healthcare and the treatment of traumas; to improve the safety of chemical products used in the home associated with the most common moderate/ severe accidents.

Keywords Chemical products used in the home, childcare, children, domestic accidents, elderly, exercise, trauma

3.4. *Suicides*

According to WHO estimates, every year about one million people commit suicide. Amongst OECD countries, Italy has one of the lowest suicide mortality rates. The propensity to suicide is greater amongst the male population, is almost four times that of the female population, and it increases with age. The presence of mental illness and substance abuse are the main risk factors for suicidal intention. The northeast and northwest of Italy are the areas in which suicide mortality rates are

highest, central Italy and the islands oscillate around values close to the national average and the Regions of southern Italy are significantly lower, with the exception of Sardinia, which has particularly high rates, especially amongst men. The geographical variability in suicide rates can be attributed to cultural, environmental and sociodemographic factors. Suicide amongst foreigners is almost twice that of Italians.

The methods most frequently used to commit suicide are hanging, falling from a height, drowning, firearms and drug overdose, particularly amongst women.

In public health terms, in addition to causing the loss of human life, suicide is an action that has heavy repercussions on the subject's family and social circle, with inevitable consequences and social costs. Preventative actions are therefore a priority when tackling suicidal behaviour. The most effective preventative actions include the identification and prompt referral of patients at risk. One important programmatic indication also involves the training of general practitioners (GPs), as well as all other players in the healthcare chain (nursing staff, healthcare professionals, counsellors and social workers, emergency services) and communication experts.

In 2012, the WHO drafted a document providing a regulatory framework to support governments in their definition of national suicide prevention strategies.

Keywords Suicide, suicide prevention, suicide risk

4. *Health in the various stages of life and in some groups of the population*

4.1. *Maternal and newborn health*

In 2013, there was slight increase in the female population living in Italy. This change is due exclusively to the increase in foreign women, who represent 7.6% of all resident women.

The number of women of childbearing age confirmed the downward trend recorded in recent years. The average age of women undergoing medically-assisted procreation (MAP) cycles continued to increase and the data on MAP techniques partly confirmed

the trend observed in previous years, with an increase in the number of couples treated, cycles started and pregnancies obtained. There was a reduction in the number of live births, a significant reduction in the birth of triplets and an increase in the number of pregnancies lost to follow-up.

The absolute number of miscarriages dropped slightly compared to the previous year. The older age of the woman is a factor associated with a higher risk of miscarriage.

The data obtained from the CeDAP database for 2012 confirm excessive medicalisation and overuse of diagnostic services in physiological pregnancies. Excessive use is made of surgical births: 37.5% of births are by caesarean section, with the highest rates recorded in Puglia, Campania and Sicily. The majority of births take place in public medical facilities. 67.9% of births take place in facilities in which there are at least 1,000 births a year. 7.1% of births still take place in facilities that handle less than 500 births a year.

One study conducted by the WHO in 22 countries, including Italy, suggests that 86% of women take medication during pregnancy. The incorrect perception of a cause-effect relationship between the use of medication and teratogenic effects on the foetus persists. In 2012-2013, AIFA, in association with the universities of Ancona, Padua and Siena and the sector's most authoritative experts reviewed the most important international scientific literature on the efficacy and safety of pharmacological treatment in pregnant and breastfeeding women.

Maternal deaths, which are underestimated in Italy as in numerous other developed countries, could be avoided in about 50% of cases, thanks to improvements in healthcare standards.

In 2012, the number of abortions continued to drop (−4.9%), as did the birth rate, which, in 2012, was 8.9 births per 1,000 inhabitants, with a total of 534,186 live births (12,000 fewer than in 2011).

The infantile mortality rate in 2011 was 2.9 babies every 1,000 live births, for those resident in Italy. The birth of newborns with clinical or familial signs of foetal or neonatal illness requiring neonatal admission to the

neonatal intensive care unit must be guaranteed in centres with a NICU, of which there were 136 in Italy in 2012, with a catchment area of fewer than 4,000 live births.

4.2. Paediatric and adolescent health

The right to enjoy the best possible health and to have access to appropriate healthcare is essential in all phases of life, in particular during the developmental age. Infant mortality rates in Italy remain amongst the lowest in the world and the analysis of related data helps to guide further prevention intervention in line with those of the Mother and Child Target Project, echoed by the National Health Plan and National Prevention Plan. In order to provide new parents with the tools required to promote their child's health and a greater awareness of their own resources, the Italian Ministry of Health promoted the national "*Genitori Più*" (Parents Plus) project, which was subsequently incorporated into the national "*Guadagnare Salute*" programme and into the 2010-2012 National Prevention Plan.

As far as the use of medicinal products in children is concerned, AIFA has set up a specific work group to allow the constant updating of prescription guidelines and to promote clinical studies on the paediatric population. In the 0-14 year age group, 77% of children have at least one chronic illness and just 1.4% has two or more chronic illnesses. Both phenomena have seen a reduction compared to previous years. In 2012 there was a further reduction in the paediatric hospital admission rate in subjects under 18.

Cancers were responsible for 31.3% of deaths in children aged 1 to 14.

The diffusion of unwholesome lifestyles amongst children and adolescents represents a considerable challenge for public health, as the predictors of unfavourable future health conditions, given the high prevalence of chronic degenerative illnesses. With this in mind, the Italian Ministry of Health implemented programmes addressing teenagers, such as "*Guadagnare Salute in adolescenza*" (Better Health in Adolescence), and promoted the "HBSC – Health Behaviour in School-aged Children" study.

Lastly, in order to provide a high quality, safe response to the healthcare needs of children and adolescents and favour an appropriate use of resources “Guidelines for the promotion and improvement of the quality, safety and appropriateness of healthcare in the paediatric and adolescent area” are currently being drafted.

4.3. Health of the elderly population

The first section describes the general demographic situation of the Italian population, focussing in particular on the over-64 age group. In this section, detailed consideration is given to two indicators, the ageing index and the structural dependence index, which measure the imbalance between the elderly population and the juvenile population and the social burden on the active population, respectively. The comparison with other European countries puts Italy amongst those with the highest life expectancy in the world and therefore with a very large elderly population, which will continue to grow in the years to come. Consequently, implementation of systems to monitor the elderly population are required, with the dual aim of improving their quality of life, health and active participation in society and at the same time of studying the most efficacious tools for providing the health-related, social and economic support that the demographic challenge requires.

The second section reports the key data obtained from the “PASSI d’Argento” monitoring system, which provides an overview of the weaknesses and behavioural risk factors of the elderly population, with a special attention on the use of medicinal products in the elderly population.

The third and last section examines the burden of chronic diseases amongst the elderly population and highlights the need to intervene with individual and collective prevention measures, also taking into account the influence of social and economic determinants, for an action aimed at reaching the goal Italy shares with the rest of Europe of reducing by at least two years the impairment that characterises the last 10-15 years of our elderly population’s lives, by 2020.

Once again mention is made of the importance of a coordinated, multidisciplinary monitoring system.

Keywords Old-age index, PASSI d’Argento monitoring system, social and economic determinants, structural dependence index

4.4. Immigrant health

The immigrant population residing in Italy in 2013 is estimated to be 4,900,000 (8.2%). Between 2003 and 2009, age-standardised mortality (18-64 years) dropped and was lower than that of the Italian population for all the main causes, except for the external causes of morbidity and mortality (including death related to occupational accidents).

Neonatal and infantile mortality in African and Asian countries is higher than that of the Italian population and is higher than the national average in the south.

The hospitalisation of foreigners coming from countries with high migratory pressure is lower than the Italian population, particularly among men. Exceptions are admissions for parasitic infectious diseases and admission for pregnancy, birth and breast-feeding complications.

In 2012, 15% of new births had two foreign parents and 20% (107,000) had at least one foreign parent. Foreign women have poorer healthcare during pregnancy indicators and greater problems continuing breastfeeding.

In 2011, one third of abortions concerned foreign nationals (34,000); miscarriage rates are 3-4 times higher than those amongst Italian women.

The incidence of cancer according to local register data (Tuscany and Piedmont), show lower values amongst foreigners from high migratory pressure countries than Italians and foreigners from developed countries for almost all cancer types, with the exception of tumours of viral origin (of the liver and cervix).

There are no significant differences in exercise, obesity, diet, smoking and alcohol consumption. Perceived health appears to be better amongst foreigners: 77% give a positive evaluation, compared to 68% of Ital-

ians. However, the perception of suffering an occupational accident is higher amongst foreigners (32% compared to 25% amongst Italians).

Lower coverage levels are observed amongst foreigners for cervical and mammogram screening and for early diagnosis of bowel cancer, primarily for tests outside the organised screening campaigns (PASSI survey).

Special monitoring systems have been introduced in Italy for certain infectious diseases of particular importance, to collect more detailed and timely information than is possible using the routine reporting system.

Lastly, following the extraordinary arrival of migrants from various northern African countries on the coasts of Italy between 2010 and 2011, an epidemiological monitoring system was established to detect any health emergencies early.

Keywords Cancer, health, hospital admission, Immigrants, life styles, mortality, mother and child health, screening

5. Animal health and foodborne illnesses

5.1. *Health status of livestock*

In Italy, EU-cofunded monitoring and eradication schemes are implemented for certain animal diseases that, in addition to having implications on trade and health, also represent a risk to human health. The plans adopted have been successful, particularly in certain areas that, over the years, have achieved the status of disease-free areas. In the specific case of swine vesicular disease (SVD), Calabria and Campania have been declared disease free, although for the latter, thanks to an improvement in the epidemiological situation, in May 2013, an SVD application was submitted the European Commission. In other areas, critical situations persist in the application of national regulations and, particularly for African swine fever, the abrupt involution of the epidemiological situation in 2011, which still persists, confirmed that the use of wild pastures and the agricultural use of authorised pastureland without efficacious controls are the reasons why the illness persists in Sardinia. In 2013, the management

of the high pathogenic bird flu emergency in northern Italy required the immediate implementation of a series of measures intended to deal with the spread of the virus making it possible to swiftly wipe out the disease. There were no significant changes in the trends of transmissible spongiform encephalopathy (TSE) in sheep and goats, compared to previous years. In order to wipe the disease out, it is still essential to make use of genetic selection plans able to increase natural resistance factors. As regards equine infectious anaemia, by means of specific Orders issued by the Italian Ministry of Health the National Surveillance Scheme was extended to 2013. In the case of blue tongue, over the past two years, there has been an increase in cases in sentinel animals and an epidemic of BTV1 serotype in Sardinia with clinical outbreaks in sheep. The new wave of the epidemic made it necessary to implement movement control measures and the start of mass vaccination amongst sensitive populations. Lastly, it is important to note the EU legislation review process that has taken place in the meantime to formulate a single regulatory framework for the animal health sector.

Keywords African swine fever, animal diseases, bird flu, Blue tongue, co-funded plans, Equine infectious anaemia, swine vesicular disease, transmissible spongiform encephalopathies (TSE)

5.2. *Zoonosis*

Zoonosis refers to disease that can be transmitted by animals to humans and vice versa. In the case of brucellosis in cattle, buffalo, sheep and goats, and bovine tuberculosis, eradication plans are implemented in order to achieve and maintain the official status of disease-free farm. The data for 2012 compared to previous years continues to show that the eradication scheme is being conducted satisfactorily in the Regions of northern and central Italy. The reduction trend is also positive in those Regions in which prevalence is still high and that are subject to the Ministerial Order of 9 August 2012. In Italy, the number of reported cases of brucellosis in humans has been dropping since the late 1990s. In the

case of west Nile disease, effective special monitoring has been conducted since 2010, for both human and veterinary cases. Human surveillance is conducted all year round on imported cases and from 15 June to 30 November of each year on autochthonous cases. Veterinary surveillance is carried out in certain geographical areas and in those at risk of spread due to the presence of migratory birds and particular environmental conditions. Passive surveillance on clinical cases of horses suspected of having the disease is carried out nationwide. Trichinellosis occurs when a subject eats raw or inadequately cooked meat or uncured cold meats from domestic or wild pigs, carnivores or horses; however, recent epidemics suggest that the Control Plans for Wild Species implemented by the various regional authorities do not offer any guarantees for the food safety of consumers of products deriving from hunting. The sylvatic rabies control scheme implemented in certain areas of the north east ended in early 2013 following Italy's re-acquisition of rabies-free country status, although a vaccination area has been maintained along the entire Slovenian border to prevent the reintroduction of infected animals from eastern Europe. Together with the other EU member states, Italy is conducting a community surveillance and control plan for salmonellosis in poultry species, with health measures to be adopted in groups of animals that test positive for salmonellae that are of importance to public health during self-testing investigations or following official checks.

Keywords Brucellosis, BSE, eradication schemes, surveillance schemes, rabies, salmonellosis, trichinellosis, tuberculosis, West Nile disease

5.3. Foodborne illnesses

The incidence of foodborne illnesses is rising constantly in all industrial countries and the analysis of human surveillance data shows that they still have a significant impact on the community's health. In Italy, the data on foodborne illness reported between 1998 and

2011 shows that the incidence of the various diseases observed has evolved significantly over time; listeria is the only disease that did not follow the trend, with a slight increase in incidence. In order to reduce the risk of foodborne illnesses in the EU, a number of regulatory measures have been implemented (Directive 99/2003/EC, assimilated in Italy with Legislative Decree 191 of 25 May 2006, EC Regulation 2073/2005). In this context, the Ministry of Health plays an essential role in that it coordinated the activities performed in the country, in order to guarantee an even application of current regulations and, consequently, consumer protection. The experience gained over the past two years during the severe epidemics of foodborne illnesses (hepatitis A, haemolytic uremic syndrome and transnational outbreaks of *Salmonella* Stanley and *Salmonella* Strathcona) was decisive in starting the process of improving the system and in particular in reaching the following considerations:

- it is necessary to improve coordination and alerting, response and communication capacities within the NHS and between local, national and international levels (ECDC, EFSA, WHO, OIE), in order to improve the rapidity and ability to respond to emergencies;
- it is necessary to sustain the availability of molecular characterisation techniques for foodborne pathogens and laboratories able to apply them on a routine basis, in order to favour the harmonisation of methods and the sharing of surveillance data analysis;
- it is necessary to have, in the human public health sector, more detailed and swifter information on outbreaks, concerning the severity of the disease, the annual trend for each type of pathogen involved, the age groups worst affected and the food involved, in order to be able to identify the factors favouring the occurrence of these conditions more easily.

Keywords Foodborne illnesses, haemolytic uremic syndrome, hepatitis A, listeria

The determinants of health

1. Environment

1.1. Outdoor air

The importance of the impact of air pollution on health is documented in numerous studies carried out in several countries. The 2011 study by Haenninen and Knoll about the environmental burden of disease (EBoD) is particularly meaningful and is the result of collaborative efforts among researchers from six countries and WHO which have provided an accurate estimate of disability-adjusted life-years (DALY) by analysing nine environmental pollutants, their effect on health and their dissemination in the six countries. It was determined that the highest burden of disease was the one associated with $PM_{2.5}$ for which it was estimated, for all six countries, that 6,000-10,000 years of healthy life were lost per every one million inhabitants (in Italy, 9,000).

Further estimates on the medical impact of fine dust were formulated by the International Agency for the Research on Cancer (IARC) which, based on available scientific evidence, has classified outdoor air pollution and fine particle materials, transporting a significant number of highly toxic micropollutants (e.g. heavy metals, PAHs, dioxins, etc), as human carcinogens (Group 1).

The quality of air is monitored within the Italian territory by several sets of stations located in urban, industrial and rural areas that measure the amount of PM_{10} , $PM_{2.5}$, O_3 , NO_2 , benzene, SO_2 and of the micropollutants contained in PM_{10} . These monitoring activities have demonstrated that the critical issues inherent to air quality are primarily associated with PM_{10} , $PM_{2.5}$, NO_2 and O_3 and impact for the most part the Northern Italian Regions where the high anthropisation of the territory and the unfavourable meteorological conditions further increase, respectively, the primary and secondary components as well as the accumulation of pollutants in the atmosphere. Although air pollution has been showing, for some pollutants, a downward trend over the years, the associated health risks remain significant especially in the urban

areas. In 2010, several urban areas drafted an air quality programme that would allow them to comply with the limits set forth by the applicable regulations through measures aimed at containing street traffic, maximising the efficiency of energy production systems, reducing emissions from industrial plants and the nitrogenous waste water load from livestock farms.

Keywords Anthropisation/urban areas, DALY (Disability-Adjusted Life Years), EBoD (Environmental Burden of Disease), outdoor air pollution

1.2. Indoor air

Indoor air quality (IAQ) is a major public health issue. Several chronic diseases are associated with different aspects of IAQ. The vulnerable groups of the population, in particular children and the chronically ill, are the most exposed to IAQ. In light of the foregoing and despite the numerous initiatives promoted by the Ministry of Health (State-Regional Agreements, Technical guidelines, etc), Italy does not yet have a comprehensive regulatory framework that addresses, through an integrated approach, the requirements for IAQ in terms of energy and constructions. At this stage, it is necessary to promote further interventions in order to ensure that private and public buildings are compliant with health/hygiene, safety and liveability provisions. As regards the housing sector in Italy, great disparities still exist based on social-economic class and the nationality of the resident population. This phenomenon is widespread both in medium-small size urban areas that are characterised by a greater obsolescence of the buildings, and in metropolitan areas which face the most challenging health and social problems as well as the most obvious socio-economic inequalities; the main hardship situations are found primarily in the peripheral areas where the problem of unauthorised building is proliferating and the number of inhabitants, especially immigrants, residing in precarious buildings in poor conditions,

continues to increase. Another problem deserving special attention is the influence of the current climate changes on IAQ. Data that was processed by Istat in 2011 about the home installation of air conditioning systems show that the percentage of Italian families declaring to own an air conditioning system has increased. As demonstrated by scientific evidence, if these systems are inadequately managed or installed, they could be a dangerous source of indoor risk factors (e.g. contamination by *Legionella* bacteria). In this context, it is essential to develop the necessary programmatic and operational integration of the system for the promotion of health with the system for environmental protection, as well as to strengthen the role played by the Prevention Departments of the local health authorities, also in compliance with Legislative Decree n. 229/1999.

Keywords IAQ, indoor air, indoor air quality, indoor environment, indoor pollution

1.3. Water

In the two year period of 2012-2013, there has been a definite improvement in efficiency, monitoring and information regarding water services, but critical issues remain as regards many infrastructures concerning network losses and purification services.

Monitoring activities on water quality for human use show a general compliance with regulatory provisions (Legislative Decree 31/2001, as amended), with only a small number of non-compliant situations. Natural contamination issues in aquifers from arsenic, boron and fluorine were resolved by means of a third derogation which in some areas of the Lazio Region did not give the expected results and consequently, based on specific risk analyses, some strict restrictions in the use of water were applied. Instances of substantiated non-compliance, with respect to territory and duration, were in reference to key parameters, disinfection by-products or anthropogenic pollutants including trichloroethylene and tetrachloroethylene, nitrates and pesticides. In line with the European data, critical issues about the quality of water supply and the efficiency of services in Italy concerned in a much

greater percentage the small water supply systems serving fewer than 5,000 inhabitants.

Various measures were directed to safety and education regarding devices for the treatment of drinking water at home and in public places following the issuing of Ministerial Decree n. 25/2012.

Particular attention was given to the risk of emerging parameters, including cyanobacteria and cyanotoxins, as well as to education about the risks of migration of lead from home networks.

In the two years in question, a commitment at a national and European levels as regards the redefinition and strengthening of the prevention strategies applied to the drinking water sector, in compliance with the water safety plan, as well as the works carried out for the revision of the regulations applicable to swimming facilities and products and materials in contact with drinking water, have continued.

Keywords Aqueducts, contamination, quality, water

1.4. Radiation

Radon is the main source of environmental exposure to ionising radiations and represents a significant risk factor for lung cancer; in order to minimise its onset, the Ministry of Health has assigned to ISS the coordination of a National Radon Plan, formulated in 2002 through the NCDC Project “Launch of the National Radon Plan for reducing the risk of lung cancer in Italy” and concluded in 2010, as well as the “National Radon Plan for reducing the risk of lung cancer in Italy: phase two” project, from 2012 to 2014. Several Regions have also implemented measures for addressing the radon problem, generally in line with the guidelines of the National Plan and often in direct cooperation with ISS. To be noted is also the issue of medical exposure to radiations considering that in the industrialised countries, in the last ten years, there has been a significant increase in the prescription of diagnostic exams with ionising radiations which involve a risk in developing cancer and/or causing genetic damage. As regards non-ionising radiations, the ex-

posure to ultraviolet (UV) radiations is the most important environmental risk factor for malignant skin melanoma with a higher risk in children and adolescents. UV radiations, regulated by Ministerial Decree n. 110 of 12 May 2011, are classified as human carcinogens, alone or as components of solar radiations or when released from artificial tanning devices. Sources of major concern for the population in general are power frequency magnetic fields and radio frequency electromagnetic fields, sometimes with an unjustified over-alarming emphasis despite the lack of any conclusive evidence of risk. In order to provide accurate information, in 2012 the Ministry of Health published on its web site some specific information about research findings and the responsible use of cell phones, which was subsequently updated and expanded in October 2013.

Keywords Electromagnetic fields, ionising radiations, non-ionising radiations (NIR), radon, UV radiations

1.5. Noise

Currently, noise poses a concern for health risks. Contrary to other environmental pollutants, the exposure to environmental noise is on the rise. In order to plan targeted preventive measures and minimise the risks to the population from exposure to noise, it is essential to pay close attention to the new sources of environmental noise produced by technological innovations that are seeking to develop new solutions for energy production (wind mill blades) and improvements in the means of communication (high-speed railways, transports and airports). Technical-scientific reports recommend, as a cautionary measure, a distance of at least 10-15 times the height of a wind turbine which can reach 100 m in height. International scientific reports (e.g. the international biannual conference “Wind Turbine Noise”) describe “annoyances” during the day and disturbance of sleep at night as the main effects of the acoustic noise emitted by aerogenerators. Noise and the vibrations are the only pollutants directly emitted by an electric train; railway noise increases with speed. The regulations EN ISO

3095 and 3381, written by the WG03 “Railway Noise”, which concern, respectively, the measurement of external and internal noise during the type-testing of new rolling stock, do not set specific limits but provide only the procedure to be adopted for the enactment of regulations; the limits are set by EU Directives (e.g. the Technical Specification of interoperability of high speed rolling material) or by national laws. The National Civil Aviation Authority is required to establish a Commission presided over by the Director of the local airport authority and composed of representatives from the Region, the Province and the Municipalities involved, of ARPA (Italian national prevention and environment agency) and ENAV (National Flight Assistance Agency), of the air carriers and the airport management company. The Commission is responsible for defining anti-noise procedures and for the approval of acoustic zoning based on the extension of the airport surroundings, the extension of the three airport noise bands and of the residential areas comprised in these noise bands, as well as the territorial density of the houses in each noise band.

1.6. Waste

The cycle for the production, treatment and/or disposal of waste in Italy, in the two year period covered by this report, reflects in a specific way the economic crisis that has been impacting the country for many years.

On the one hand, the quantity of urban waste produced domestically in the last few years has declined due to the continuing contraction of consumer spending; on the other, landfills remain the primary management system for waste disposal with 42.1% of urban waste being landfilled versus only 12.1% of special waste undergoing treatment and recovery.

In 2010 the Ministry of Health launched two NCDC projects, both of them now completed, aiming at providing a scientific basis for the decision-making processes, within the public health sector, regarding the development of a range of policies for waste management and for improving communication with the communities involved and the public in general.

The purpose of the SESPIR project (“Epidemiological surveillance on the health of the population residing around waste processing plants”) was to provide operating methodologies and tools for monitoring the impact on public health resulting from urban solid waste management. The study was carried out in the Regions of Piedmont, Emilia Romagna, Lazio, Campania and Sicily and the results were published on the web pages (www.arpa.emr.it/sespir and channel “*Rifiuti e Salute*” of the portal www.scienzainrete.it). The project “Health and waste: research, public health and communication” addressed the problem of illegal or uncontrolled disposal of hazardous waste. The scenario emerging from studies previously carried out by ISS supports the hypothesis of an impact on the health of the populations of the provinces of Naples and Caserta, from illegal landfills and the illegal practice of uncontrolled waste incineration. This hypothesis is supported by the initial results of surveys on environmental classifications that were carried out in the proximity of these sites. The results of epidemiology studies in this area, available to date, are on the whole consistent with the results of studies carried out in similar contexts in other countries.

Based on this work, it is now possible to make available the survey protocols as regards the estimated exposure of the population residing in proximity to the illegal disposal of hazardous waste and propose protocols resulting from second generation epidemiology studies to be applied to similar contexts.

1.7. Climate

In Europe, and in particular in the Mediterranean area, an increase in frequency, type and intensity of adverse climatic events (thermal anomalies, floods, storms, droughts, etc) is expected with a significant impact on the environment, the health of the population and the socio-economic systems. The ageing of the Italian population and the greater frequency of chronic diseases give rise to the concern that in the next few years in Italy it will be possible that the fraction of the population susceptible to extreme meteorological events will increase. In April 2013, the EU published a European

strategy for the adjustment to climate changes which all member states are called upon to adopt. The primary objective is to reduce the expenses generated by diseases, accidents, disabilities, suffering and deaths related to current and future climate changes. Italy has been one of the first countries in Europe to launch, back in 2004, a National plan for the forecast/prevention of effects on health caused by extreme events such as heat waves. The main components of this Plan, coordinated by the Ministry of Health and by NCDC with the support of Civil Defence are: implementation of city-specific forecast/alarm systems; widespread dissemination of information about the levels of risk; implementation of a rapid system of daily monitoring and surveillance of the effects on health (mortality, hospitalisations, access to emergency care); identification of susceptible people; definition and implementation of operating protocols for emergencies and preventive interventions to be developed at the local level in accordance with the Guidelines issued by the Ministry of Health and finally, the launch of a national information campaign for the general public called “Safe summer”. A recent publication documents a reduction, in the Italian cities and in the most recent years, of short-term heat-related deaths. The model adopted for protection against heat waves can be used for protection from the effects caused by other extreme events (cold, floods) for which, to date, no intervention plans are available for the prevention of negative effects on people’s health.

Keywords Climate, climate change, extreme climate changes, heat waves

1.8. Chemical products

The safety of chemical products is an issue of great complexity that concerns many sectors, such as poisonings and emergencies of various types correlated to extremely worrying substances (carcinogens, mutagens, those toxic to reproduction, persistent, bioaccumulative and sensitizing substances), the prevention of accidents, safety at work, through to the general safety of the products. The management of chemical substances in Italy is part of the wider EU system launched in 2006, with

the Regulation (EC) n. 1907/2006, called the REACH regulation, which established an integrated system of registration, evaluation, authorisation and restriction of chemical substances. The purpose of the REACH regulation is to ensure the protection of human health and the environment, while maintaining competitiveness and reinforcing the spirit of innovation of the European chemical industry. Alongside the REACH regulation, there is Regulation (EC) n. 1272/2008, concerning the classification, labelling and packaging of chemical substances and mixtures.

As regards the detection of incidents that involve human exposure to chemical agents and the associated chemical effects, the National Information System for the Surveillance of Hazardous Exposure and Poisonings (NIS-SHEP) was initiated as early as 2006, based on the cases examined by the Poison Control Centres. Most of the exposure were accidental (94%, 46,311). Around 46% of exposed cases (24,191) involved those under the age of 6 years. The categories of agents most frequently detected included: products for domestic cleaning (32%, 4,387); pesticides (biocides and plant protection agents) [9%, 4,479]; foreign bodies/toys (9%, 4,387); cosmetics/personal care (8%, 4,086). In 41% of cases (20,196), it was found that at least one clinical effect could be associated with the exposure.

Worrying considerations also emerged from the increase in the use of nanomaterials. If, on one hand, the rapid development of nanotechnologies in the last decade has opened new horizons in the application of nanomaterials in various industrial production sectors, on the other, risks may arise for the health of operators, consumers and for the environment; indeed, few reliable data are available concerning the toxicology and ecotoxicology of these, their behaviour during emission and diffusion in the environment, as well as their safe use.

Keywords Physical activity, gaining health, surveillance systems, “OKkio alla SALUTE”, PASSI, determinant factors, empowerment

1.9. Medical-surgical devices

Pursuant to Presidential Decree 392 of 6 October 1998, medical-surgical devices are all

those products with labels reporting one of the following indications: disinfectant, insecticide, insect repellent and rat poison.

The Ministry of Health is the competent authority issuing authorisations to marketing and production.

Said authorisations are issued only after the Minister of Health has positively concluded the required preliminary procedures including technical and administrative assessments. The Ministry of Health is also responsible for the surveillance over the medical-surgical devices after they are marketed.

2. Environment and food

Contaminants are chemical substances that are not intentionally added to food products, but that are present as residue from production, transport and stocking of products or as a consequence of an environmental pollutant related to anthropic activities. Some contaminants, such as dioxins, dioxin-like PCBs, are classified by IARC in group 1 “human carcinogens” and confirm the existence of a cause-effect relationship between exposure and human cancer. Since the main form of intake is through food (for dioxins, 90% of human exposure occurs through diet and about 80% through food of animal-origin), it is understandable how the monitoring of the presence of such substances in food is essential since they may represent a serious risk for public health. Monitoring and surveillance activities promoted and coordinated by the Ministry of Health fall within this context and are carried out in close cooperation with the competent environmental authorities and entities seeking to effectively address all pollution causes. Some examples are: monitoring of live fish products from the Garda Lake (collected in 2012) has found 25% non-compliant samples and has led to the extension of the ministerial regulations of 17 May 2011 “Urgent measures for the management of the risk to human health associated with the consumption of contaminated eels from the Garda Lake”; monitoring of contamination from caesium in mushrooms, berries and wild boars, was carried out after finding caesium in 137 wild boars hunted in Valsesia; extraordinary operating procedures for the prevention and the

management of risk of contamination from aflatoxins in the dairy farm sector and in the production of corn for human and animal use, following extreme climate conditions, were set out after the climate emergency of 2012 and involved the inspection of 2,527 dairy farms, the analysis of 1,013 samples of milk with 41 abnormal outcomes.

Keywords Aflatoxins, caesium, contaminants, dioxins

3. Reclamation Sites of National Interest – SIN

In Italy there are currently 39 reclamation sites of national interest (SIN); they include abandoned industrial areas being reconverted and operating, areas subject to uncontrolled waste disposal and port areas. In the last few years, several studies were carried out in these areas with the objective of understanding the relationship between environmental contamination and the health conditions of local residents pursuant to the objectives set forth by the European Environmental and Health Strategy and to the recommendations from OMS. To this purpose, ISS has carried out, in different areas, assessment studies on exposure and potential health risk to the population: these studies have addressed areas where the use of agricultural products is prevalent, areas with the presence of contaminated sediments and risks associated with the consumption of fish products, and areas characterised by multi exposure from the presence of industrial clusters. In 2011, the Ministry of Health launched a monitoring plan in order to acquire, at a national level, further knowledge about the presence and dissemination of contaminants in food of animal origin in the SINs. The results of these monitoring activities will be essential for a correct evaluation of the resident population's exposure. The studies for assessing the level of exposure represent the base for understanding the causes and the mechanisms that may generate the diseases that have developed in the populations residing in SINs. In order to monitor the health status of these residents, ISS has carried out the Project SENTIERI (National Epidemiology Study of the Territories and Settlements

Exposed to Risk of Pollution). The developments of this project (Sentieri Kids) also aim at creating a permanent central database to monitor the health status of children residing in contaminated areas.

Keywords Assessment of exposure, epidemiology studies, monitoring of food, OMS, SIN

4. Lifestyles

4.1. Physical activity

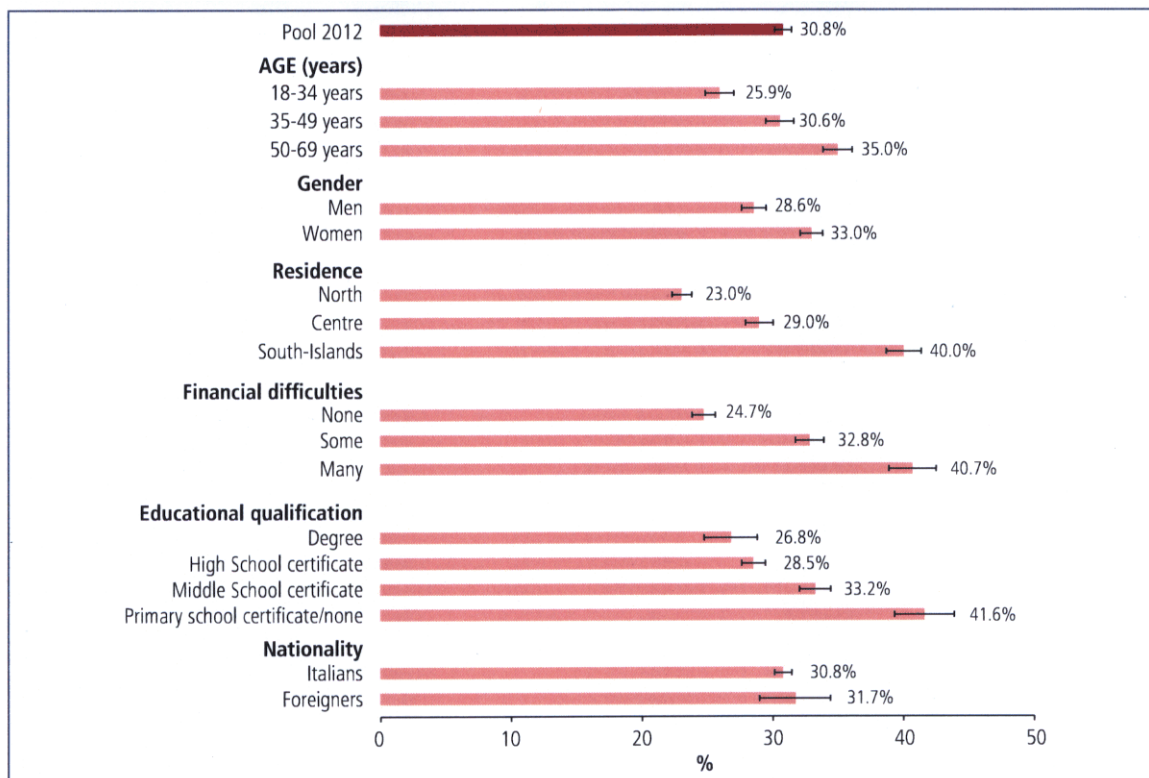
Physical inactivity is one of the main behaviour risk factors of chronic non-communicable diseases, and contributes to increasing the level of obesity in children and adults. On this basis, adults and children should exercise regularly and maintain a proper diet. Both exercise and proper diet contribute to the improvement of the health of each individual and help to maintain correct body weight.

The places where one lives and works (home, school, office, urban area) play a determinant role regarding the opportunity to exercise regularly. However, the environment may encourage or hamper such opportunities. Urban planning, transportation and the safety of public spaces are decisive in determining whether the people are able to integrate physical activities into their daily life.

To increase the participation of the entire population in physical exercise is one of the main health priorities and requires the cooperation of various institutions as well as the involvement of different resources: education, tax policies, environment, transportation, media, industry, local authorities.

Policies and measures aimed at encouraging exercise represent a major investment not only in the prevention of chronic diseases and in the improvement of health and quality of life, but also for its positive effects on economic development in terms of sustainability. Data obtained in 2012 from the surveillance system “OKkio alla SALUTE”, in operation since 2008, showed that 17% of children did not exercise (through a structured sport activity in school or outside the school or as simple as outdoor playing) on the day before the survey and the percentage of sedentary habits remains high.

Figure. Percentage of sedentary people in subgroups of population by sociodemographic characteristics. PASSI data 2012 (n = 36,580).



Source: ISS – PASSI Year 2012.

The 2012 data of the PASSI surveillance system shows that 31% of adults between the ages of 18 to 69 are completely sedentary, that the percentage of sedentary adults increases with age and that it is higher among women, among the less privileged, the less educated and among the residents in the southern Regions of Italy.

In order to increase the habit of exercising and discourage sedentary behaviour, it is indispensable to address the environmental, social and personal contributors to physical inactivity and to adopt sustainable measures through the cooperation among the various sectors, at the national, regional and local levels, in order to achieve a greater impact. According to the principles of “*Guadagnare Salute*” (Better health) and within the “National Plan for the promotion of sport activities”, formulated by the Ministry of Tourism and Sports, on 30 November 2012 a Partnership Agreement was executed by the Ministry of Health and the Department for

regional affairs, tourism and sports, under the Presidency of the Council of Ministers, seeking to develop joint initiatives for the promotion of a more active lifestyle starting from childhood. More specifically, this Agreement aims at spreading the culture of physical and motor activities as a factor for psycho-physical health, for the entire population, with particular attention paid to children and youngsters while raising awareness about the development and preservation of healthy lifestyles.

Integral parts of prevention measures and “empowerment” tools for the promotion of health are educating and informing the population; the campaign carried out by the Ministry of Health for the promotion of sports and exercise addressed the population of all ages encouraging the habit of an active lifestyle.

Keywords “*Guadagnare Salute*”, “*OKkio alla SALUTE*”, determinant factors, empowerment, Exercise, PASSI, surveillance systems

4.2. Smoking habits

The prevention and treatment of tobacco addiction are essential for promoting and protecting public health and are objectives not to be pursued only by the Ministry of Health, but rather by all Government agencies; although economic implications may be taken into account, they cannot prevail over our supreme interest in the protection of health as stated by the Framework Convention on Tobacco Control – FCTC.

According to the Istat data, in 2013, out of 51.9 million inhabitants above the age of 14, there were approximately 10.8 million smokers (20.9%) of whom 6.6 million men (26.4%) and 4.2 million women (15.7%).

In 2013, according to the data from the Customs and Monopoly Agency, the sale of tobacco products declined by 5.4% compared with 2012. In particular the sale of cigarettes declined by 5.7%. The decline in cigarette sales in the last 10 years (2004-2013) stands at 25.1%.

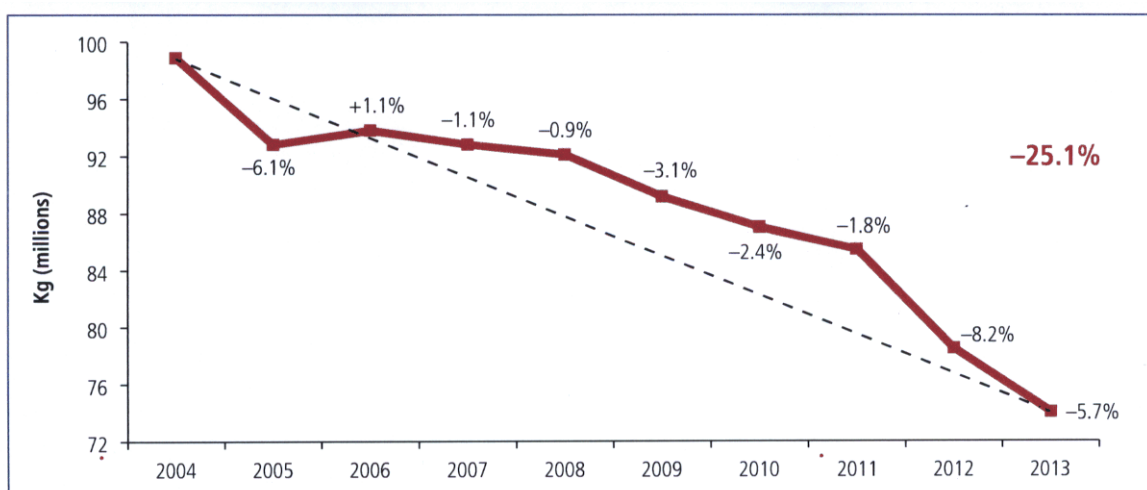
The strategy applied to the control of tobacco addiction is one of the areas addressed by the Programme “*Guadagnare Salute*” and it is based on the principles of “health in all policies”. It focuses on three strategic guiding principles: protect the health of the non-smokers, reduce the numbers of new smokers, support smoking cessation. The Law n. 3/2003, art. 51, which has regulated smoking in all

indoor public and private spaces, represents an effective tool for the protection of public health and to date has shown positive results. Over 10 years, NAS have carried out about 32,000 inspections (5,000 in 2013) that have shown a substantial compliance with regulations, and according to the PASSI data, the positive perception of the population about compliance with the law in public places and in work places is increasing, similarly to the percentage of the population that is imposing a “non-smoking” rule at home. Furthermore, according to the Doxa 2013 survey, the majority of the surveyed population deems it as useful to extend non-smoking rules to some outdoor spaces.

The necessity to maximise the protection of the health of non-smokers, in particular of minors, has led to the prohibition of the sale of cigarettes to minors (under 18 years) and the extension of non-smoking rules to the outdoor areas pertaining to schools. The use of electronic cigarettes is now also prohibited in enclosed spaces and in outdoor areas on school grounds as is the advertisement of re-fills and liquid solutions containing nicotine in places frequented by minors, on television during the time slots from 4:00 pm to 7:00 pm, in the printed media for minors and before movies for minors in movie theatres.

The Ministry of Health/NCDC have promoted projects that have allowed the Regions to try out

Figure. Trend in cigarette sales (Years 2004-2013).



Source: Customs and Monopolies Agency data processed by the Health Ministry – Years 2004-2013.

models consisting of community measures and programmes for the prevention and treatment of tobacco addiction and, within the scope of Regional Plans for prevention, sixteen Regions have planned interventions within different contexts including schools, health services, such as advice centres, birth centres, vaccination services, workplace, while also encouraging the development of paths for the management of patients with smoking-related diseases and for support in overcoming the addiction.

The adoption of an intersectoral and multi-stakeholder approach seeking to create strong alliances not only among institutions but also with companies and production facilities is the key for moving toward the common objective of promoting smoke-free environments, consistent with the provisions of FCTC.

Keywords “*Guadagnare Salute*”, health protection, multisectoral approach, tobacco addiction, WHO Framework Convention on Tobacco Control – FCTC

4.3. Eating habits

The promotion of a proper diet, because of its major impact on the health of people, must be placed at the centre of any strategic health planning. Healthy diet and active lifestyle are essential for the prevention of non-communicable chronic diseases, overweight and obesity, which are reaching epidemic propor-

tions, and it is essential to closely monitor nutritional and lifestyle habits given their direct impact on the health of the population in general and in particular of children.

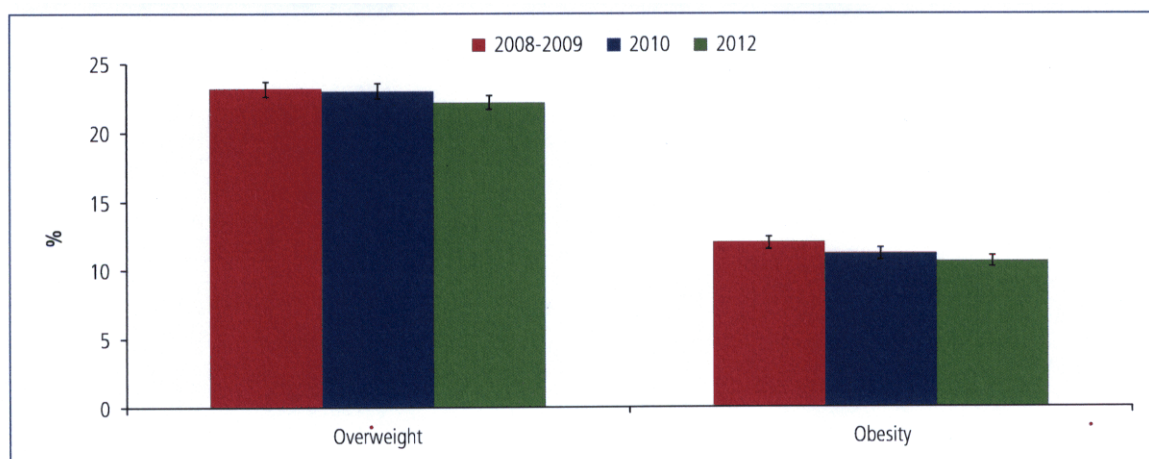
The energy intake and expenditure of an individual are affected by a broad range of behaviours and environmental factors and one of the main reasons for the rapid increase in obesity lies in lifestyle changes that affect some of the currently prevailing consumption patterns.

According to the guidelines of the programme “*Guadagnare Salute: rendere facili le scelte salutari*” (Gaining Health: how to make healthy choices easy) that integrates educational, economic and industrial policies, including those of the agrifood sector, it is possible to affect individual lifestyles and create environmental conditions that would encourage good habits starting from the early years.

The development of surveillance programmes at national and local levels is also at the heart of an effective prevention and health promotion strategy. The third set of data collected by the Surveillance System “*OKkio alla SALUTE*” has shown also in 2012, the persistence in children of 8-9 years of age of incorrect eating habits thus confirming the worrisome levels of obesity in children of this age group, even if a slight decrease was noted in comparison with the previous data.

The 2012 data from the PASSI (Progress of Healthcare facilities promoting health) sur-

Figure. Prevalence of overweight and obesity among children aged 8-9 of the third primary.



Source: OKkio alla SALUTE – 2008-2012.