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Osservasalute Report 2010

Italian Observatory on Healthcare Report 2010

Health status and quality of care of Italian Regions

Italian Observatory on Healthcare Report 2010 - Synthesis

The Italian Observatory on healthcare report (Rapporto Osservasalute-RO) is divided into two parts, the first dealing with population health and needs and the second describing regional health systems and quality of services; it aims to make available objective and scientifically rigorous data to those responsible for decision-making in order to help them taking appropriate, rational and timely actions in favour of target populations' health. The data analyzed in the RO 2010 highlight the continuing consolidation of Italians' health, which is generally good, but underline the progressive increase of macro-areas, regional and gender inequalities.

These differences also emerged as of the regional health systems performance and are the most concerning because, in some regions, the failure or delay in the reorganization of health services according to demand, was not able to adapt its local supply with respect to specific demographic and epidemiological characteristics of the resident populations; this means that conditions of inadequate health care persist or even worsen, with the Southern Regions being in clear disadvantage compared to Central and Northern regions. In some regions, indeed, the resident population demand is adequately met by supply and quality of services provided, while in others, the health services available are inadequate and sometimes unfit to meet the users' demands. This probably depends on the lack of rational planning, organizational and management choices, and on the impact of the economic crisis that hit our Country. The need and, in some cases, the urgency for action by all the institutions of the sector is evident, both nationally and regionally, in order to avoid or at least try to mitigate the widening of the health differential and ensuring all citizens, regardless of place of residence and socio-economic status, adequate and equitable health care. Moreover, a good and wise health planning would ensure citizens not only a better health status, but also a more solid economic and social holding in their own region. The report is structured as follows:

- **96 Core Indicators:** describing the essential aspects of the Italian health and health services in all regions even through the use of charts, graphs and cartograms.
- **11 Boxes:** in which examples of good practices experienced in some regions and possibly ready to be adapted to other regions, are proposed
- **11 Insights:** where some overriding problems are discussed in detail in order to outline possible solutions and that, since the previous edition, have been published on the website: www.osservasalute.it.

FIRST PART - Population health and needs

Population - In order to assess health services demand and to upgrade the local supply with respect to demographic differences, data on the population dynamics have been updated (2008-2009) and analyzed, with sections devoted to migratory components that, over time, may modify the populations genetic and nosological patrimony, to fertility and population structure, with particular reference to the "elderly" (65-74 years) and "frail elderly" (75 years and over) that are the most exposed at risk of serious and disabling diseases and death.

The indicator regarding the proportion of elderly people living in a single family nucleus on the total population of the same age was also reiterated and showed that, in 2008, 27.8% of those over 65 lived alone (+0.7% compared to 2007) and that women are the majority.

At national level we can find an increasing trend of resident population mainly due to the growth of the migration component. The examined indices show the same trends highlighted in the previous years, confirming: the positive net migration thanks to, above all, the attractiveness of the Centre-North; the positivity of net migration with other countries, even if the value is lower than the previous two years (2007-2008), that still sees the Northern and Central regions most affected by the phenomenon; the continuous internal migration across the Country involving more Southern regions (excluding Sardegna and Abruzzo), in particular Campania and Basilicata.

Even this year, a slight recovery for the total fertility rate (TFR) has been found, even though the values are extremely low (1.42 children per woman in 2008) and below the ratio (about 2.1 children per woman) that would ensure the generational replacement. This recovery is partly due to both an increase in fertility of older women (over 30 years) and the proportion of births from foreign mothers (an increase of +1.3 % compared to 2007), particularly in Centre-North regions. Regions that continue to be characterized by a very low TFR are Sardegna and Molise (respectively 1.11 and 1.17 children per woman). The mean age of mothers giving birth is basically stable as the national value in 2008 amounted to 31.1 years (an increase of 0.7 years compared to 2000). Sardegna in particular, presents a value that is one year higher than the one recorded for Italy as a whole, while Sicilia, with a value of 30.3 years, is the region in which, however, the mean age at childbirth is the lowest. The knowledge of these indicators related to fertility allows a more effective organization of health facilities, such as, for example, specialized services for the monitoring of pregnancy and childbirth assistance. As for other demographic features, the main characteristic of our Country is the strong tendency to aging (1 person aged 65 and over every 5 residents and about one person of 75 years and over every 10 residents); the region that has been holding for years the record as the "oldest" Italian region is Liguria, while the youngest is Campania, where population aging is in a less advanced stage. The ratio between the number of men and the number of women, an imbalance in favor of women has been seen so that they enjoy a higher survival. To be highlighted is the presence of foreign residents in between youth and middle age classes.

Survival and mortality by cause - In this chapter we have studied the survival and mortality trends by age and cause in the provinces. Life expectancy at birth was analyzed in order to describe the evolution of survival, and showed that in 2007, women could expect to live an average of 84.0 years while men 78.7 years. The female advantage in terms of survival is therefore maintained, but the gap continues to shrink. Between the years 1998-2000 and 2007, male life expectancy increased by 2.2 years (from 76.5 to 78.7 years), while the female's has risen by 1.5 years (from 82.5 to 84.0). Analyzing the territorial distribution, the best survival among males is registered in the Province of Ravenna (80.2 years), while the worst in the provinces of Naples and Nuoro (both 76.4 years). Also for women the situation is worse into the South of Italy, especially in Naples and Caltanissetta where life expectancy is 81.8 years, while the highest value belongs to the province of Forlì-Cesena (85.3 years). Regarding the evolution of mortality beyond the first year after birth, a general decline with a reduction of 13% in men and 11% in women was observed by comparing the average of the 1999-2001 period with that one of 2006-2007. Moreover, considering the overtime evolution of the overall mortality, it is evident the gradual territorial homogenization among genders. The analysis of mortality by age has recorded, in general, a contraction, for both men and women, to be charged at ages above 55 years. The analysis for large groups of mortality causes (cardiovascular diseases, malignant tumors, violent causes, other causes) shows, in 2006-2007, an overall reduction for both genders. The mortality rate for cardiovascular diseases is significantly reduced in all provinces, but the intensity of this reduction varies territorially. The provinces with the lowest mortality rates are Ogliastra (22.4 per 10,000) and Nuoro (16.8 per 10,000) for men and women respectively, while the highest mortality rates are recorded, respectively, in Catania (38.7 to 10,000) and Naples (29.2 per 10,000). As for malignant tumors, however, the reduction in mortality rates is slight as in many provinces increasing mortality rates are still observed. The province with the highest mortality for both men (43.8 per 10,000) and women (21.5 per 10,000) is Cremona, while Vibo Valentia appears to be the one with the lowest (20.7 and 9,1 per 10,000 for men and women respectively). Analyzing these groups of causes separately by gender, Southern provinces are characterized by a higher female mortality for cardiovascular diseases, while mortality for malignant tumors has a spatial configuration similar for both genders and the disadvantage is for Northern provinces. Finally, a general reduction for mortality rates was found for both violent causes and other causes.

Risk factors, lifestyles and prevention - This chapter evaluates key health risk behaviors and prevention policies.

Smoking habit - In 2008, the proportion of smokers aged 14 and over is 22.2% and is generally stable if compared to the previous year. Large regional differences are not present although Southern regions showed higher values concerning the smoking habit: as for the previous year, Calabria (17.0% vs 20.6%) and Puglia (20.8% vs 22.5%) showed an increase while Liguria showed a reduction (23.2% vs 20.2%). The prevalence of people who have quit smoking showed a slow but steady growth. Smoking cigarette is also more common in between young people and adults, particularly in the range between 25 and 34 years (29.2%), and more common among men (28.6%) than women (16, 3%).

Alcohol consumption - The prevalence of at risk consumers in the range 19-64 years showed, in 2008, a marked gender difference (males 20.8%, women 4.9%). Significant gender differences have also been recorded with regard to the binge drinking (11.7% and 3,3% for men and women respectively). In general, the highest consumption of alcohol is recorded in the Autonomous Province of Bolzano (76%), while the region with the lowest prevalence was Sicilia (57.7%).

Food intake - In order to assess the quality of diet, data on the food consumption by type and temporal trends were analyzed, both in the general population and among young people (3-24 years). In 2008, the proportion of people assuming at least "five or more daily servings of fruits and vegetables" (gold standard for diet) showed a slight but steady growth (5.7%) (+ 0.1 compared to 2007); the role of public catering (canteen) and restaurant industry positively influenced the global dietary habits; among young people, interesting gender differences are emerging, especially in females, who are approaching the less healthy habits of their male coetaneous, in particular for high protein content food and alcoholic beverages.

Overweight and Exercise - Taking into consideration the 2001-2008 period, the percentage of people aged 18 and over overweight or obese increased progressively (33.9% vs 35.5% overweight, 8.5% vs 9,9% obese) and the analyzed data showed a higher prevalence of overweight people in the Southern regions (Basilicata overweight 41.0%, Campania obesity 11.5%). Moreover, the proportion of overweight or obese people is more common among men, increases with age and slightly decreases in the elderly. Gender differences may be due in part to the different behaviours of men and women in relation to the frequency of weight control. The territorial gradient found at general level also emerged analyzing the survey on infant excess weight ("OKkio alla SALUTE" National Essay) that showed a strong interregional variability, with rates that tend to be lower in North and higher in the South of Italy. Finally, being the sedentary lifestyle combined with poor diet responsible for the excessive weight, data concerning physical activity confirmed the North-South gradient. In fact, in the Southern regions, the prevalence of those who reported an ongoing physical activity is much lower than in the North. In general, the proportion of sedentary people, intended as those who do not carry on either any sport or physical activity, is equal to 40.2% and is higher among women.

Vaccination Coverage - The so-called compulsory vaccination (Diphtheria, Tetanus, Polio, Hepatitis B) and pertussis coverage rates are evenly distributed throughout the Country with a national average, in 2009, of approximately 96%; nevertheless there are still some regions (Autonomous Province of Bolzano, Molise, Campania and Calabria) where coverage does not reach the target of 95% provided by the ongoing National Vaccine Plan. To be stressed is the reduced rate of vaccination coverage for hepatitis B registered in Veneto (90.6%) in respect to previous years, probably due to the switch from “compulsory” to “recommended” vaccination introduced in this region since January 2008. The recommended vaccinations coverages (measles, mumps and rubella), however, have not yet reached the optimum value of 95% specified in the National Plan for the elimination of measles and congenital rubella, with the exception of Umbria (95.2 %) and Sardegna (95.5%). In 2009-2010, over 65s immunization coverage remained in line with the previous season despite the recent spread of the pandemic Influenza virus H1N1. No region, except Umbria (77.5%), reached the minimum target rate for immunization coverage in the elderly (75%), on the contrary, compared to the season 2008-2009, in some regions a marked decline has been recorded for this age class, particularly in Friuli Venezia Giulia (49.7% vs 68.1%); only in Sardegna there has been a significant increase (49.6% vs 60.9%). It should be noted, however, a growing trend for coverage in all age groups below 65 years, especially in those aged <5 years (4.6% vs 6.1%). With regard to the pandemic A/H1N1Influenza, a box describing the different phases that characterize the population immunization process was presented. The total vaccination coverage achieved was 4.14%. This low adherence, if compared to expected, is mainly due to a distorted information campaign on the vaccine effectiveness and safety against a disease considered to be mild. In all, since the beginning of the epidemic, 259 deaths were recorded and the most affected Region was Campania.

Cancer Screening - Screening programs are spread free of charge unevenly throughout the territory and a North-South gradient is evident both in distribution (program availability and operation, and in target population compliance. These differences are even more evident when analyzing the actual program recruitment than the availability of the program itself, being the practical and operational phase of the call the most complex. The examined indicators for mammography, cytology and colorectal screenings, regard both the theoretical extension (87%, 75% and 53% respectively), ie the proportion of women living in an area where a screening program is active, and the actual extension (respectively 69%, 63% and 37%), or the proportion of women actually being invited to the screening program. Both the theoretical and the actual extension of all three types of screening are considered to be increased.

Accidents - The monitoring of indicators regarding road, work and home accidents is of outstanding importance, not only considering the relatively high mortality, but also the temporary or permanent invalidity. The phenomenon of road accidents, which has a downward trend, represents a major public health concern for which, both social and economic costs, are enormous. The predominance of males mortality rates compared to the females' has to be highlighted and at regional level, the highest total rate in 2007 was recorded in Emilia-Romagna (1.12 per 10,000). Analyzing *in itinere* accidents at work, the incidence of this type of accidents on the total number of notifications received annually by the National Institute for the Industrial Insurance, has increased overtime.

There are clear regional differences for both the accident rate, whose values are higher in the North (the 2006-2008 average for Emilia-Romagna was 742.35 per 100,000), and the fatal work related accidents that are higher in the South (2006-2008 average for Molise was 3.91 per 100,000). With regard to domestic incidents, the most affected are women, children and the elderly, ie those who spend more time at home. Up to 14 years old, accidents prevail among men, while later in life women are the most involved, both for a greater permanence at home and for a more frequent contact with at injury risk objects, tools and household electrical appliances. Among women, generally the most exposed population group is represented by housewives (24.4 %). No territorial gradient is present.

Physical Environment - In order to characterize the relationship between environment and health, we examined some of the most significant indicators of the population health status, such as the production and management of municipal solid and special waste, the pollution deriving from particulate matter (PM₁₀ and PM_{2.5}) and the availability of drinking water.

As to describe the potential risk in the population resulting from municipal solid waste, we calculated the quantity produced, the volume disposed through controlled garbage dump and/or incineration and the use of separate refuses collection.

In 2008, the production of municipal waste was slightly lower (-0.2%) compared to the previous year, especially in the South (-2.2%) and the Centre (-0.7%), while the North was given a data in contrast (+1.5%).

Concerning the main methods for waste management, the landfill, as part of the total waste production, showed a reduction, passing from 66.7% of 2001 to 44.9% of 2008, nevertheless remained the most spread form of waste management throughout the Country. Lombardia is the region where the lowest level of waste produced is disposed by landfill (8.13%), while Molise (90.30%) is the region that holds the record of waste disposed by landfill as opposed to the total waste produced.

As for the other form of disposal considered, the incineration, the value reached at the national level (12.74%), although growing, is still below the European average (20%). In addition, from 2007 to 2008, a slight increase in the number of incinerators, which rose from 47 to 49 was noted, however, 60% of them appear to be located in the North.

The separate waste collection, in 2008, also recorded an increase of 3.1% in respect to 2007 (27.5% vs 30.6%) and, as in the previous years, the main contribution is given by the Northern regions where the collection system has been

running well for many years. In this context, it has to be remarked that the Autonomous Province of Trento (59.4%), the Autonomous Province of Bolzano (53.8%) and Veneto (52.9%) were able to reach, 1 year in advance, the target of 50% set for 2009.

An important role, both at an economical and environmental level, is played by the so-called special wastes; they can generate a significant environmental impact because of the huge amounts disposed throughout the territory and the quality of the waste itself, that, in different ways, act on the water receptors, on land and on air.

In 2006, the total amount of special waste produced reached 134.7 million tons, 6.9% of which were special hazardous waste. The management of this waste is through recovery and disposal activities.

The analysis of fine particles air pollution showed a strong non homogeneity that did not allow valid regional comparisons because the monitoring stations, despite their increase in number compared to previous years, are insufficient and have an uneven distribution throughout the Country. That said, however, data of 2008, regarding both the daily average concentrations and the average number of days exceeding the particulate matter threshold (PM₁₀), showed a moderate improvement in respect to the previous year for most of the regions and at national level.

Drinking water is one of the most important elements for life and it must: be adequately accessible, have a good quality and be available in adequate quantity. The presented indicator enables to calculate the amount of water actually delivered and consumed by the final user in the various regions. At national level, data regarding the percentage of water supplied on the total water pumped into the local distribution networks, is equal to 67.95%. The regional data show a North-South gradient mainly due to climate and topography reasons, which allow Northern regions to have a greater availability of water resources.

Cardiovascular and cerebrovascular diseases - cardiovascular diseases (ischemic heart diseases and cerebrovascular diseases) represent approximately 24% of overall mortality and affect, either, both rich and poor people. The indicators examined are related to hospitalization and mortality. In general, hospitalization rates for ischemic heart diseases and cerebrovascular diseases, show a marked gender difference and appear to be higher in men. Specifically, ischemic heart disease rates are more than twice in men than in women, while for cerebrovascular diseases the difference is about 39%. In 2008, the highest hospitalization rates for ischemic heart disease were registered, for both genders, in Campania (1410.5 per 100,000 men, 512.5 per 100,000 women), while as for cerebrovascular diseases, the Autonomous Province of Bolzano presented the highest values for both men (757.0 per 100,000) and women (591.4 per 100,000). In addition, both these groups of diseases showed a downward trend between 2007 and 2008. Mortality by ischemic heart disease affects men nearly twice than women and the negative records for 2007 among regions was held by Campania for both men and women (respectively 17.44 and 11.21 per 10,000). The most virtuous regions, however, were Sardegna for men (12.40 per 10,000) and Piemonte for women (6.43 per 10,000). Relevant is the increasing trend by age in both genders. This increase mainly occurs in women, whose mortality rate is approximately 144 times greater in the elderly group - 75 years and over-, than in the younger class -45-54 years, (0.64 vs. 92.56 per 10,000), while in men the increase is smaller (34 times) (3.41 vs 119.10 per 10,000).

Metabolic Disorders - In this chapter, indicators for Non Insulin Dependence diabetes hospital discharges and mortality have been updated.

Data for both types of admissions (ordinary admissions-OA and day hospital-DH), show that Southern Regions and Islands have discharges rates higher than the national average (84.37 per 10,000), while Northern-Central regions have lower values. Considering both the OA and the DH, Puglia is the region with the maximum value, (142.75 per 10,000), while the minimum value is recorded in Veneto (50.32 per 10,000). These values, however, may be affected by quality of primary/secondary care delivered by each single region. Moreover, regarding the distribution by gender, rates are higher in men. In recent years, the mortality rate for Diabetes Mellitus has shown a fluctuating trend and in 2007, rates were slightly higher in men in the South and Islands, and elderly were the most affected.

Infectious diseases - Infectious diseases represent a major public health problem despite the availability of effective preventive and therapeutic approaches for many of them.

This year, indicators to study the evolution of some sexually transmitted and respiratory diseases, tuberculosis and Legionellosis have been used.

Globally, with regard to the trend for Gonorrhoea and Syphilis during the period 2000-2008, a decreased incidence in both 15-24 and 25-64 age groups was found (-7.41% vs -76.81% on a national basis for the 15-24 years age class; -27.54% vs. -69.62% for the age class 25-64 years).

Among respiratory transmitted infections, according to data obtained from the compulsory notifications for 2008, in Class 0-14 years the most common infections were Chickenpox (809 cases per 100,000) and Scarlet fever (201 cases per 100,000) while less common were Measles (22 cases per 100,000), Rubella (21 cases per 100,000) and Mumps (12 cases per 100,000) and lower incidence rates were registered for Pertussis (3 cases per 100,000). As for the distribution of cases in the class 15-24 years, however, Rubella is the most frequent pathology (49 cases per 100,000) followed by Measles (30 cases per 100,000) and Chickenpox (29 cases per 100,000), while all the others have very low rates. In general, Mumps, Scarlet fever and Chickenpox show, with some exceptions, a North-South decreasing incidence gradient, probably due to a greater underreporting of these diseases in some Southern regions and islands. Despite the spread of the vaccine, it has to be stressed the significant increase in the incidence of Measles (0-14 years +55.86%, 15-

24 years +1170.39%) and Rubella (15-24 years +390.82%) from 2000 to 2008. This means that the reached vaccine coverage is insufficient to interrupt the endemic state of these infections.

With regard to Tuberculosis, the overall current national situation is characterized by: a low incidence in the general population; stability in recent years; higher incidence in the Centre-North in respect to the South and the Islands; higher incidence in men than in women. The same situation is evident by analyzing the mortality rate of the disease that shows a double value for men compared to women (respectively, 0.80 and 0.40 per 100,000). The incidence of Legionellosis has increased over time and this trend can be seen in most regions. In 2008 the rate is 19.87 cases per million inhabitants and presents a clear North-South decreasing gradient. In the same year, Molise was the only region not notifying any case. A growing trend is also found for nosocomial legionellosis.

Cancer - In recent decades, the epidemiology of cancer has changed a lot thanks to both the gradual introduction of effective therapeutic measures and the improved diagnostic attention when the disease is at its debut. The incidence values indicate that differences in rates between Northern and Southern regions still exist, but are significantly reduced compared to the past. Also gender differences are present. For men, in the last decade, a reduction in incidence in the North and center, countered by an increase in some regions of the South can be seen. In women, however, rates are estimated to increase in all regions, with a more pronounced growth in some regions of the South. Mortality data have been constantly decreasing in recent years both for men and women. This is more evident in the North and the Center of the Country compared to the South.

Disability - This chapter is focused on the integration of people with disabilities at school and university and the indicator regarding beneficiaries for disability support pensions was updated. The analysis of data for this indicator has shown, in the period examined (2000-2007), an increase in the number of beneficiaries equivalent to 62.40%, while the overall gross amount met a variation rate equal to 27.90%. The analyzed data show high levels of integration for children with disabilities in public schools. This increase, equal to 54% over the academic period 1997/98-2007/08, shows a greater absorption capacity by the school system. The prevalent disability in the school population is the intellectual impairment that is, of course, even the most demanding for schools. As regards the access to school for disabled students, it can be said, in general, that the removal process of architectural barriers in Italian schools is slow. On a regional basis there is a clear North-South gradient with extreme situations in Calabria, where is more likely to find architectural barriers, and in the Autonomous Province of Trento, that, at the contrary present the lowest number of schools under the standards set, especially for physical barriers. Also data on students with disabilities registered at State University show a growing trend. In fact, an average increase rate amounting to 137% has been recorded over a period of 7 academic years (2000/01-2006/07). The highest percentage is found in Sardegna with 15.9 ‰, while the lowest in Piemonte, with 4.9 ‰. A high number of registered students is also noticed in Lazio (8.1 ‰) and Basilicata (9.2 ‰).

Mental health and addictions - The indicators taken into consideration allow to highlight both the epidemiological and the economic burden that the Italian NHS has to sustain in order to deal with the problem of psychiatric disorders and addictions.

Temporal trend (2003-2008) in the hospitalization rate for mental diseases showed a general lower trend in all regions except for men of Umbria and for both genders in Marche, Basilicata and Campania. It must be underlined the situation in Campania, that, in 2008, showed an increase of admissions by almost 40% compared to 2003, but the regional rate is still below the national average. Moreover, examining data by gender and the macro areas, no substantial differences are remarkable. In 2009, the use of antipsychotic drugs has slightly increased at the national level, although in the period 2000-2008, a clear downward trend was found. This increase may be partly justified by the use of antipsychotics for behavioural disorders in elderly patients with dementia, a disease in constant enhancement as a result of increasing life expectancy. The differences observed at interregional level are wide, but difficult to interpret, and are probably due to regional differences in the organization and delivery of psychiatric care and in the different way of prescription. There remains, however, the North-South gradient with some Southern regions (Abruzzo, Calabria, Sicilia, Sardegna) presenting values that are more than double of those of the North. As for antidepressants, instead, there has been a growing national trend in all regions due to various factors such as cultural changes and the increase of social discomfort that can cause illnesses such as anxiety and depression. The highest doses are mainly found in the Centre-North. Such a difference may be partially explained by the different lifestyles and by the different use of psychiatric services. It was also updated the indicator for drug addiction services that shows an increasing trend for all substances. Specifically, heroin is the substance that keeps the record for seeking treatment, and cocaine showed an increase both at national level and in almost all regions. The only exceptions are represented by the Autonomous Province of Bolzano, Friuli Venezia Giulia and Lazio, showing a downward trend, and Marche that constantly showed values below the national average. The regions where higher values were noted are Lombardia (6.88 per 10,000) and Campania (4.99 per 10,000). Finally, as for the use of Cannabinoids, values were stable at national level, but wide were the regional differences.

Maternal and child health - In order to assess the quality of care during pregnancy and childbirth and to analyze the reproductive choices, we selected and examined, according to their specificity, relevance and usefulness,

some indicators, regarding the distribution of births by delivery centre, the use of caesarean section (CS), the Divisions of Neonatal Intensive Care Unit (NICU), the levels of infant and neonatal mortality, the Medically Assisted Procreation (MAP), the spontaneous abortion and the voluntary interruption of pregnancy (VIP;IVG in Italian). The supply network of Delivery Centres varies significantly throughout the territory. The examined data show that more than 9% of births in 2008 took place in birth-centres with an activity volume of less than 500 deliveries per year, i.e. those centres where the volume of activity is not considered satisfactory to ensure an acceptable quality standard for perinatal hospital care. An analysis of the phenomenon, ignoring particular regional realities such as Valle d'Aosta and the autonomous provinces of Trento and Bolzano, shows a clear North-South gradient with the Southern regions having values well above the national average. One of the most alarming data is the proportion of Caesarean Sections (CS), although in 2008 there was a slight decrease (-0.25%) compared to the previous year. A remarkable interregional variability is present and values tend to be lower in the North (Friuli Venezia Giulia 23.64%) and higher in the South (Campania 61.96%). Moreover, it has to be stressed the constant increasing trend of the repeated CS proportion since 2005. The data analysis shows that 125 NICU are present on 551 birth-centres analyzed; 100 of these are located in centres where at least 1,000 deliveries per year take place and 15 in birth-centres with less than 800 deliveries per year. This leads, on one hand to the possibility that life-threatening infants do not receive adequate quality of care and, on the other, to improper use of specialized resources and technology. With regard to key indicators for child health, so infant and neonatal mortality, they are decreasing over time. In fact, the infant mortality rate, from 2004 to 2007, decreased from 3.7 to 3.3 per 1,000 live births, while infant mortality rate decreased from 2.7 to 2.4 per 1,000 live births. Nevertheless, important geographical differences remain and South showed the highest rates. In our Country, 17.7 % of live births come out from pregnancies obtained by the application of in vitro fertilization (IVF) procedures. In 2008, 354 centres have been active in the Country but only 297 have actually carried out IVF techniques on patients, while in the remaining 57, for various reasons, the activity has not been carried out. By examining the distribution of the indicator at regional level, the situation is very heterogeneous with some regions gathering under a Central control in respect to the surrounding local areas. Specifically, this role is taken from Lombardia and Emilia-Romagna in the North, Lazio and Toscana in the centre and from Sicilia and Campania in South of Italy. The demand for IVF, also shows a growing trend, but the accessibility to the techniques is still very low if compared to the one of other European countries. In 2007, the number of abortions presented an important increase equal to 4.1% in respect to the previous year. This increase could be explained, in part, with the average age of pregnancy since the woman advanced age is one of the main risk factors that may influence the occurrence of the phenomenon. Geographical differences have remained fairly constant over time with the South recording lower values. Even this trend can be explained by local differences in mean age at marriage and childbirth, and thereby to spontaneous abortions. Moreover, in general, the majority of spontaneous abortions (90%) occur in the first 12 weeks of gestation. As for the voluntary abortion, between 2006 and 2007, a decline in rates was noted (9.16 vs. 9.09 per 1,000). At regional level, significant differences are found: in Molise, Abruzzo and Puglia rates have decreased (respectively 8, 3%, 7.0% and 6.7%) while Valle d'Aosta (+30.1%), Campania (+10.1%) and the Autonomous Province of Bolzano (+10.7%) registered the highest increases. The decrease in the use of voluntary pregnancy interruption (VPI) has affected all age classes except the class 15-19 years, that showed no changes, and the class of 30-34 years that presented an increase of 1.3%. Finally, it has to be underlined the high use of VPI by foreign women, equal to 32% of all abortions performed in 2007.

Immigrants' Health - The analysis of this topic becomes every year harder and harder because of the difficulty of identifying reliable denominators for the calculation of epidemiological measures. For this reason, it was decided to present only analysis based on the percentage of foreigners in Italy and some specific issues on maternal and child health such as births and infant and child mortality. The examined data show that, on December 2008, the relative weight of the foreign component out of the total number of residents is higher than last year. The incidence of regular foreign presence varies a lot across regions, with higher rates, compared to the national average (6.5%), in Northern and Central regions (Emilia-Romagna, Umbria, Lombardia and Veneto) and lower rates in the South of Italy (Puglia and Sardegna).

The largest communities, for both genders, are represented by Romanians, Albanians and Moroccans. To be underlined is the overtime steady increase of births by foreign citizens either with one or two foreign parents. In particular, the highest proportion refers to births by foreign mothers irrespective to the father's nationality. Regional differences are significant and follow the territorial distribution of foreigners, namely where the foreign presence is more tangible; it is also very high the incidence of births by at least one foreign parent on the total registered at the registry office by birth. Therefore, the regions where the highest incidence of births can be found are those of the North and in particular Emilia-Romagna, Veneto and Lombardia, while in the South the proportion of newborns with at least one foreign parent is not only lower than the national value, but extremely limited. Finally, in 2007, a downward trend regarding the inequalities in infant and neonatal mortality between Italians (3.3 and 2.4 per 1,000) and foreigners (3.9 and 2.6 per 1,000) has been identified. Analyzing geographical differences, South is in disadvantage. It was also presented a Box on post-partum home assistance for immigrant women since the early stages of pregnancy and childbirth represent the most vulnerable health conditions for foreign women coming from areas at high migration pressure. This project, based on the offer of a home visit by a obstetrician at 7-10 days after the delivery, was effective and provided a valuable psychological support, improved the knowledge and the degree of awareness of women towards health choices.

SECOND PART - Regional Healthcare Systems and quality of services

Economic and financial structure - The indicators that have been monitored regard health expenditure as percentage of Gross Domestic Product (GDP), per capita expenditure, spending on Essential Levels of Assistance (ELA, LEA in Italian), health deficit/surplus, and relevance of the fares system in the allocation of the Regional Health Fund.

At national level, the current public health expenditure as percentage of GDP increased, from 5.95% in 2001 to 6.59% in 2007. At regional level, the indicator shows significant differences ranging from a minimum of 4.90% in Lombardia to a maximum of 10.76% of Calabria. It is plain, then, the North-South gradient, with the Southern regions forced to devote higher shares of their GDP to health care compared to the rest of the Country. The indicator concerning per capita public health expenditure shows, at national level, an increase in the period between 2008 and 2009, rising from €1,782 to €1,816 (+1.91%). Even at regional level there is a general increase with the exception of the Autonomous Province of Bolzano (-2.78%) and Lazio (-0.35%). The lowest value was recorded in Sicilia (1,671 €), while the highest in the Autonomous Province of Bolzano (2,170 €). In general, the analyzed data show that Southern regions, with the exception of Molise, provide a lower amount of financial resources in respect to the North (excluding Lombardia and Veneto) and to the national average. In Central regions, however, there is a greater dispersion of per capita values. The partition of costs for ELAs is referred to 2006 and, at national level, is divided as follows: 48.4% of the total costs is intended for primary care, 47.5% is devoted to hospital care, while 4% is addressed to prevention in living and working settings. Comparing regional values with the benchmarks: 5% for collective prevention (Level I), 50% for the primary care (Level II) and 45% for hospital care (Level III), it is clear that almost all regions present lower percentages relatively to the first level of assistance and only Sardegna and Valle d'Aosta are spending, for prevention, a little more than the benchmark value; as for Level II, all regions show a lower percentage, except Emilia-Romagna, which devotes a higher percentage of resources in respect to the benchmark; as for Level III, all regions present higher percentages, except for Emilia-Romagna, which devotes a lower percentage resources in respect to the value used in comparison. In 2009, the Italian National Health System confirmed to be in deficit (54 €per capita) showing a trend of steady decline. Compared to previous years, strong regional differences remain, with a gradient between North and Centre-South, where most of the deficit is concentrated.

With regard to regions undergoing a repayment plan to be held with the Economics and Health Departments, the liability will continue in 2010 as the three years originally planned to balance the management were insufficient. In 2009, only Sicilia (46 €) and Abruzzo (37 €) had a per capita deficit lower the national average, while Lazio and Molise confirmed the highest deficit (respectively €244 and €225 per capita). In addition, a clear worsening of economic and financial situation is recorded in Calabria, also undergoing a repayment plan because of the deficit increase, risen from €33 per capita in 2008 to 111 €in 2009. Altogether, the incidence of costs sustained by local health authorities for the assistance provided to its own residents by other subjects throughout the region, is particularly high in Lombardia (43.3%) and Lazio (41.7%); moreover, except for these regions above, a great inter-regional heterogeneity is present according to the type of assistance and supply.

Institutional and organizational structure - The aim of this chapter is to give an overview of the health supply in each region. Regarding the hospital beds in terms of absolute numbers and rate, between 2001 and 2007, both in public and private accredited structures, a reduction, in line with what established by national legislation, was recorded. This decrease, however, is homogeneous throughout the Country only for the number of beds in public structures (except Molise), while in some regions (Trentino-Alto Adige, Liguria, Umbria, Abruzzo, Molise, Puglia and Sicilia) at the contrary, an increase of the number of beds in private accredited hospitals is present. With regard to public-private mix, however, the analyzed data show that 21% of the beds supply in publicly funded health care is due to private accredited hospitals, and the regional variability is remarkable (range 0% -42%). The analysis of the workforce, represented by the number of physicians and dentists employed by the National Health System, has shown, at national level, a slight (+1.2%), but steady growth between 2005 and 2007. This increase, however, did not affect the proportion per 1,000 inhabitants that has remained stable at 1.80 per 1.000. This means that the increase was in line with the one of the resident population. A definite trend can be observed in different areas of the Country as the Southern regions display a higher percentage variation compared to the national data, those of the Centre (excluding Abruzzo and Marche) show data similar to the national level, while the Northern regions (except Valle d'Aosta, Trentino-Alto Adige and Friuli Venezia Giulia that have data above the national average) show a reverse trend with a negative variation. On the other hand, the analysis of the workforce represented by the number of nurses employed by the NHS highlighted, at national level and between 2005 and 2007, a sharp increase in the number of units both in absolute terms (+4.6%) and in relation to the population per 1,000 inhabitants (+3.2%). Considering the number of units, Friuli Venezia Giulia is the region that recorded the largest increase (10.3%) and Sardegna is the one with the lowest value (0.3%), with regard to the rate, the highest value is recorded in Molise (9.9%) and the lowest value is in Lazio (-1.6). Finally, if we look at the national level, during the period 2006-2007, both the absolute number of units and the rate per 1,000 population decreased.

Service area - This chapter is dedicated to local healthcare, which includes a series of services towards the community and held in an extra-hospital setting; indicators concerning the management of not self-sufficient or fragile patients and the handling of chronic patients were analyzed. In general, the number of patients treated in integrated home care (in Italian, ADI), is constantly growing and presents, in 2008, an increase of 4.3% in respect to the previous year. Specifically, the percentage of ADI provided to the elderly (80.7%) was in line with the percentage of 2007, but slightly reduced in respect to the previous years, while the percentage of ADI provided to patients in terminal state showed an increasing trend and a significant regional variability attributable to the displacement of existing networks for palliative care in different realities. As for the percentage of ADI delivered to the elderly, the highest value is recorded in Liguria (91.9%) and the lowest in Molise (48.05), while as for the percentage of ADI provided to patients in terminal state, the maximum value was recorded in the Autonomous Province of Trento (43.5%) and the minimum value in Friuli Venezia Giulia (2.5%). Within the long-term care, both for the residential nursing homes rate (12.86 per 100,000) and the offer in terms of beds (522 per 100,000), a marked North-South gradient has been seen with South being disadvantaged. In fact, values are particularly high in the Northern regions, especially considering the supply for beds. This regional variability is also found for guests of long-term care nursing homes. All the examined indicators (in children, adults, elderly), therefore, showed a greater recourse at institutionalization in the Northern regions. It should be emphasized, however, that this situation reflects the geographical distribution of the residential supply. Finally, with regard to potentially avoidable hospital discharges for chronic conditions (Diabetes Mellitus, COPD and heart failure), there has been an overall downward trend.

Dental care - In our Country, both preventive and therapeutic health services related to oral health, (which is considered an integral part of the overall health status of individuals) are mainly provided by professionals working in the for profit field.

That is why many citizens whose incomes are not always sufficient to sustain the health care costs, are at disadvantage. In order to highlight this situation, the proportion of population aged 16 and over (9.7%) in need of dental care but with no access to it was calculated. This study showed a clear North-South gradient. The highest value is recorded in Basilicata (16.1%), while the lowest in Valle d'Aosta (3.5%). Data on hospitalization for jaw osteonecrosis due to bisphosphonates were also examined and the regions that in 2008 showed the highest rates were Puglia (13.30 per 100,000), Friuli Venezia Giulia (11.80 per 100,000) and Emilia-Romagna (10.10 per 100,000). The region with the lowest rate was Valle d'Aosta.

Pharmaceutical care - In Italy, drugs consumption is constantly monitored, both analytically and in real time, through a specific information system capable to produce the latest information on consumption and expenditure of each type of drug delivered through the territorial and hospital care. These are the monitored indicators: consumption and territorial drug expenditure, expenditure for direct and on account distribution modalities, use of expired patent drugs, private pharmaceutical spending, ticket expenditure and cost shared by the citizens. An analysis on the total consumption of antibiotics and on some specific classes (quinolones, cephalosporins, amino glycosides) was also carried out. The local pharmaceutical consumption is constantly increasing and in 2009 the increase was equal to 0.2% in respect to 2008 and to 37.4% compared to 2001. With regard to the per capita territorial drug expenditure, an increase of 0.9% compared to 2008 and of 2.66% compared to 2001 was also found. The geographic variability is evident for both the consumption and the expenditure. In addition, with regard to the number of prescriptions per capita, in the period 2008-2009, an increase of 3.3% is recorded and it is homogeneous in all regions; the average cost of the prescription, instead, is decreased.

This year, for the first time, we calculated the drugs expenditure per Direct and Account Distribution (€53.50) that showed, at national level, an increase of 2.7 % compared with 2008 and large differences between regions. The geographical variability is large, with a range including the minimum value of Sicilia (€11.70) and the maximum value of Sardegna (€88.80).

The consumption of expired patent drugs has more than tripled from 2002 to 2009, passing from 14.0% to 45.7%. In parallel, during the same period, the expenditure quota increased from 7.0% to 27.8%. Toscana was the region that presented the greatest increases, both in use (3.0%) and in the expenditure (0.7 %). However, when comparing 2009 data with those of 2008, a slowdown for both parameters was present.

In 2009, unlike the previous years, private spending, remained stable and presented a decrease of 0.1 % compared to 2008. Puglia was the region recording the highest decrease (1.5 %), while the Autonomous Province of Bolzano recorded the biggest increase (1.9%). The North-South gradient is obvious since all the Northern regions showed higher values than the national average (32.3%), while the Southern ones presented lower values.

In general, with regard to the costs shared by citizens over the period examined (2002-2009), each year an increase was noted. The analysis on the antibiotics consumption, which places Italy in second place among European countries, shows wide regional variability with significant differences between the Northern and the Southern regions. In fact, Campania and Puglia, which got the highest values, consume more than twice the Autonomous Province of Bolzano that shows, however, the lowest consumption.

Analyzing data from 2002 to 2009, the increase was equal to 22.2%. This trend is also confirmed by 2009 data, showing an increase in consumption in most regions, with the exception of Friuli Venezia Giulia, Lazio and Calabria that showed slight reductions; Marche and Veneto were on the same level of the previous year. Furthermore, in relation to

antibiotics, we presented a box concerning over-consumption, that, as well as having a significant impact on public and individual health, results in a considerable excess of expenditure and adverse reactions; antibiotics, in fact, are one of the drug categories for which a high number of warnings is recorded.

Finally, in 2009, the total consumption generated by the three considered classes (quinolones, cephalosporins and amino glycosides) represented over 25% of the total antibiotics consumption along the Country; this proportion, though decreasing, is one of the highest in the European Union. The most prescribed class of antibiotics is quinolones, followed by cephalosporins; amino glycosides present a stable condition.

Hospital care - Osservasalute analyzed and compared with the objectives defined by the national plans, a series of indicators regarding: the demand satisfied by the hospital network (the overall hospitalization rate, stratified by age, type of provided activities and medical and surgical DRGs in a ordinary discharge, OD, and Day Hospital, DH, setting), the productive efficiency of care facilities (Average length of stay and Preoperative Average length of stay); clinical and organizational appropriateness (Discharges from surgical wards having a medical DRG, Inappropriate discharges, DH, Day Surgery (DS) and "One Day Surgery access and admissions and Percentage of femur-neck-fracture interventions). Analyzing the hospitalization rate, the emerging picture confirms the downward trend for admissions in both modalities, OD and DH. In 2008, the overall standardized hospitalization rate at national level is equal to 187.3 ‰, 129.1 ‰ of which in ordinary admissions OD and 58.2 ‰ in day hospital arrangements; the maximum is recorded in Campania (231.8 ‰), while the minimum is recorded in Friuli Venezia Giulia (148.5 ‰). In general, regions of the South and Islands show an overall rate higher than both the standard by law (180 ‰) and the national average value, while regions of the Centre-North show a lower rate, with the exception of Liguria, the Autonomous Province of Bolzano and Lazio.

As for the hospitalization rate in DH, it must be stressed the exceeding of the rate standard defined by law (30 ‰) in all regions. The decreasing trend is also confirmed by the indicator on the analysis of discharges for acute and rehabilitation, while an increase is observed for long-term care admissions. Furthermore, regarding the age distribution, hospitalization rates in the "extreme" age groups are relatively high. Among the indicators on the demand satisfied by the hospital network, discharge rates by type of DRG were also examined. Osservasalute showed that, in 2008, medical DRGs represented 59.2% of all admissions and have decreased compared to 2001 (65.0%); at the contrary, surgical DRGs represented 40.8% of all admissions and since 2001 registered an increase (35.0).

Analyzing the indicators on productive efficiency of care facilities, the average length of stay at national level, in 2008, resulted to be 6.8 days and, in recent years, has remained essentially stable. The highest value was recorded in the Autonomous Province of Trento(7.8 days), while the lowest was recorded in Sicilia and Campania (6.3 days). The Preoperative average length of stay, however, showed a very slight decline. In fact, between 2006 and 2008, it decreased from 2.00 days to 1.97 days. Even for this indicator, regional differences are still clear and often unjustified, a sign of inconsistency in the definition of appropriate diagnostic and clinical pathways.

Among the indicators on the organizational appropriateness, data concerning discharges from surgical wards having a medical DRG were analyzed, and, in 2008, amounted to 35.7%. Since 2006 this value has been registering a slight but steady decrease. The analyzed data show a marked regional variability and a clear geographical gradient: all regions of the South and the Islands display values above the national average. With the objective to improve the hospital organizational appropriateness, each region had to promote intervention strategies and actions consistent with its own organizational context of reference. With this intention, we calculated the use of DH for DRG at risk of inappropriateness that, during the period 2006-2008, remained basically stable. Regional variability is wide and uneven. We also calculated the DH and Day Surgery (DS) accesses and DS and One Day Surgery admissions. With regard to the number of accesses, in 2008, at national level, DH accesses were equal to 3.69 and DS accesses to 1.57; as for the regional distribution, variability is greater for DH performances that range from 2.39 average accesses of Puglia to 7.96 of Emilia-Romagna. To be emphasized is the use, sometimes misuse, of DH setting for activities that could be easily made in the outpatient setting. With regard to the admissions, data for 2008 show that the percentage of admissions in DS (46.42%) on the total number of daily admissions is raising in respect to previous years and that at regional level, different schemes are used with hospital care values higher in the Centre-North. Also One Day Surgery discharges, that at national level represent the 16,22% of the RO discharges, show a high variability at regional level. For the first time, this year, we calculated the percentage of interventions for femur fracture performed within 48 hours in patients aged 65 and over. The National mean value for this indicator of clinical and organizational appropriateness is equal to 32.5%, rather low if compared to literature recommendations and the performance recorded in other Western Countries. Finally, in order to understand how the health system is able to effectively meet healthcare needs and demands for hospital care, a box on the citizens' level of satisfaction towards hospital care after a hospitalization was presented; it particularly focused on nursing and medical care and food; another box on the Hospice territorial distribution and operation was proposed.

Transplantation - Italy is at the forefront in Europe not only for levels of donations, but also for the quality of assistance and security and transparency measures. The selected indicators monitored organ donation and procurement, transplantation activities and evaluation of outcomes (heart, liver, kidney, bone marrow).

Regarding the donation activity, the North-South gap is particularly sharp even if some epidemiological reasons could explain this phenomenon. In general, the regional heterogeneity, even though partially linked to socio-cultural aspects,

reflects the organization of withdrawal structures and the capacity of the local coordinator to impact positively on the choice to donate by relatives. In 2009, the highest levels of used donors, were recorded in the Autonomous Province of Trento (36.4 per million population-PMP), followed by Toscana and Friuli Venezia Giulia, respectively, 35.0 and 34.9 PMP. Also for donations, a marked North-South territorial gradient was present with a range that varied from 54% of Calabria to 0.0% of Molise.

The regional gap between the Centre-North and the South continues to be both in the graft activity and in the transplantation centres distribution by type of organ, this generating patients mobility towards the North of the Country. Numerically speaking, Lombardia is the region that is running the largest number of interventions with 700 transplants, and Emilia-Romagna is still the region with the highest percentage of extra-regional transplants (52.1%).

As for the outcomes evaluation, data on patient and graft survival at 1 and 5 years after transplantation were examined. It is important to emphasize that the differences in survival are due to different types and complexity of the transplant. In general, percentage of patient survival at 1 year for heart, liver and kidney transplants, is over 80% (respectively 83.4, 85.7%, 97.0%), while for bone marrow the recorded value is 57.7%.

National Blood Centre - Fundamental is the monitoring of transfusion activities in order to assess the organizational and managerial quality of structures, to define the annual program for the national self-sufficiency of blood and blood products and to allocate funds to the transfusion system at regional level. We monitored indicators on the planning of the red blood cells (GR) self sufficiency and on programming for the self sufficiency of plasma for the production of plasma derivatives.

The national budget, considering both production and consumption for 2008, showed that the blood system has remained quantitatively in equilibrium with a positive balance of approximately 16,800 units, sufficient to compensate any occasional or extraordinary shortage and to set up strategic reserves. For 2009, the plan for GR production has provided an increase of +1.77% in respect to the previous year, while consumption was expected to increase by 1.33%. For 2009, the quantity of plasma to be initiated to the pharmaceutical manufacture, as defined by the heads of regional structures that coordinate transfusion activities, recorded an increase of 3.8% in respect to 2008. The analyzed data show a significant heterogeneity between regions, even though, 2008 results and 2009 forecasts have confirmed a slow but steady recovery trend for production by the Southern regions in respect to the national average.

Geographical differences or social differences in health status and access - Osservasalute shows that, despite appreciable gains in the overall health and population life expectancy, the most important mortality and morbidity indicators show the existence of areas and social positions at disadvantage and inequalities.

The examined indicator on context determinants and individual determinants of need, access and health care, shows that social and geographical differences are growing, making South underprivileged, but also have led to the creation of "islands with a Southern pattern" in some areas of the Centre-North. The explanation of these differences lies in the higher concentration of people with socio-economic disadvantages in the South and in the ways these disadvantages, overtime and in contexts, bound to a greater occurrence of health problems and responsiveness of services to needs.

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Synthesis by *Tiziana Sabetta* and translation by *Roberto Falvo*