Original Research

The need to improve implementation and use of lifestyle surveillance systems for planning prevention activities: an analysis of the Italian Regions

B. Unim, C. De Vito, A. Massimi, E. D'Andrea, A. Rosso, P. Villari[*], C. Marzuillo

Department of Public Health and Infectious Diseases, Sapienza University of Rome, Piazzale Aldo Moro, 5 00185 Rome, Italy

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ABSTRACT

Objectives: To describe the level of use of lifestyle surveillance systems in Italy and to identify predictors of their use by the Italian Regions for planning and monitoring purposes.

Study design: Data were extracted from the 19 Regional Prevention Plans (RPPs) and the health promotion and prevention projects included in them developed by the Italian Regions within the National Prevention Plan 2010—2013.

Methods: The 19 RPPs and the 702 projects were appraised using a tool specifically developed for the purpose. Multiple logistic regression was performed to identify predictors of use of surveillance systems in the 359 projects that could use them.

Results: The analysis of regional epidemiological contexts does not always rely upon surveillance system data and there were too few projects aimed at the maintenance and the development of these systems. Moreover, fewer than half of projects that could have used surveillance systems for planning and evaluation procedures actually did so, despite the potential value of these data. There was a statistically significant association between Regional Health Care Expenditure (RHCE) and the use of surveillance system data for planning and/or evaluation of the projects (OR 7.81, 95% CI 2.86—21.29).

Conclusions: Use of surveillance systems for regional prevention planning in Italy is not optimal due to late implementation, presence of different data collecting systems and RGDP inequalities. There is a pressing need for full implementation of surveillance systems to allow better definition of the priorities and objectives of public health interventions.

* Corresponding author. Tel.: +39 06 49914886; fax: +39 06 49914449.
    E-mail address: paolo.villari@uniroma1.it (P. Villari).

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Introduction

The four main chronic noncommunicable diseases (NCDs) — cardiovascular disease, cancer, chronic obstructive pulmonary disease, diabetes — are the leading causes of morbidity, disability and mortality in the WHO European Region and have a high economic impact.[1] In 2005, up to 86% of all deaths and 77% of disability-adjusted life years lost in Europe were attributable to NCDs,[2] and in 2014 cardiovascular diseases was the leading cause of death, accounting for 46% of all deaths.[3] In Italy, about 65% of all deaths were caused by NCDs in 2012, in particular cardiovascular disease (35.5%), cancer (17.1%), chronic respiratory disease (3.6%) and diabetes (3.5%).[4] In recent decades there has been a progressive increase in life expectancy (84 years for women and 79 for men in 2010), but due to NCDs, which account for over 75% of the global burden of disease, the disability-free life expectancy is much lower and is similar (about 65 years) for both men and women.[5] Given the role of lifestyle in the development of NCDs, the planning, implementation, and evaluation of interventions for their prevention and control rely on timely information about the population's health status and behaviour as well as its knowledge and perceptions of healthy habits.[6] The lifestyle surveillance systems currently operating in Italy [7–10] (see Box 1 for their general characteristics) were implemented at different times, resulting in variable utilization among the Italian Regions.[11–17]

In Italy, the reform of the Fifth Title of the Constitution (Constitutional Law n.3/2001) endows all 21 Italian Regions with the responsibility of organizing and delivering health services, while the Central Government ensures that general objectives and principles of the health care system are met, including definition of the basic benefits package ("livelli essenziali di assistenza").[18] The National Prevention Plan (NPP) is the main policy and planning instrument for prevention in Italy. Issued approximately every 3–5 years, the NPP is the part of the National Health Plan (NHP) committed to the development of health promotion and disease prevention activities.[18,19] The NPP 2010–2012 emphasises surveillance systems, stating that diseases, determinants and health risks should be monitored in all Italian regions through behavioural and lifestyle surveillance systems and data collected as integrated databases; it also recommends that existing surveillance systems should be maintained and strengthened.[20]

In accordance with the Italian institutional framework of health care decentralization, the NPP 2010–2012 (extended to 2013) determined that each Italian Region should develop its own Regional Prevention Plan (RPP), designing projects coherent with the regional epidemiological and organization context. RPPs have two core sections: i) the Strategic Framework Section that deals with the analysis of the regional context, identification of local needs, description of regional health planning and definition of priorities for the RPP 2010–2012; and ii) the Operational Plan Section, in which projects are developed as a consequence of the planning choices set out in the Strategic Framework section.[18,20] The aim of this study was to determine, by analysis of the 19 RPPs, the level of use of lifestyle surveillance systems by the Italian Regions, and to identify predictors of their use for programming and monitoring of the 702 projects developed in the RPPs.

Methods

Sample

A total of 19 RPPs were analysed (Valle d'Aosta Region and the A.P. of Bolzano did not develop their RPPs), encompassing 702 projects. The number of projects per RPP ranged from 18 (Sardegna Region) to 71 (Veneto Region).

Of the 702 projects, 415 could use surveillance systems data for planning and/or evaluation purposes and 359 of these were analysed to predictor of use. Projects of Basilicata, Friuli Venezia-Giulia and A.P. of Trento that could use Passi d'Argento data were excluded, since this surveillance system was not implemented yet in 2010, as well as projects of Lombardia because of the regional decision to use different surveillance systems for monitoring behavioural risk factors.[21]

Data collection

RPPs were appraised using a tool specifically designed by a Scientific Committee appointed by the Italian Ministry of Health. The structure of RPPs and the process followed for the development of the appraisal tool are described elsewhere.[18] In brief, the appraisal tool was composed of two sections: i) descriptive analysis of the RPP, focused mainly on the analysis of the Strategic Framework Section of the RPP; and ii) analysis of the projects included in the Operational Plan Section of the RPP. Two evaluators carried out the analysis of each RPP independently, with discrepancies resolved after discussion.

Data analysis

Data analysis was carried out with two primary objectives: i) to describe the use of the four behavioural and lifestyle surveillance systems in each RPP; ii) to identify possible predictors of their use in the projects included in the RPPs.

Descriptive analysis
In the descriptive analysis, a summary score was constructed to determine the level of surveillance system use in the 19 RPPs taking into account, for each of the four behavioural and lifestyle surveillance systems, the following questions: i) did the RPP use the surveillance system data for planning in the Strategic Framework section? (No = 0; Yes = 1); ii) did the RPP include projects specifically aimed at the development and implementation of the surveillance system? (No = 0; Yes = 1); iii) how many projects used the surveillance system data for planning and/or evaluation purposes? We calculated, for each system, the relative frequency of use in projects able to use the data for planning and/or evaluation (i.e. the ratio of the number of projects that actually used the system to the number of projects that could have used the system). Values were assigned by determining whether the RPP was in the lower (T1 = 0), middle (T2 = 1) or upper tertile (T3 = 2) of the frequency distribution. The final score, obtained by summing

Box 1 – Characteristics of the four surveillance systems recommended by the National Prevention Plan (NPP).	
Surveillance system	Characteristics
Surveillance system on nutrition and physical activity in children attending primary school (OKkio alla SALUTE)	Promoted by the Italian Ministry of Health, this system aims to estimate the prevalence of overweight and obesity among primary school children (aged 6–10) and to examine the associated behavioural factors.
	A biannual cross-sectional survey is carried out using a questionnaire compiled by Directors of the school, parents and children themselves to collect data about overweight, obesity and physical activity of elementary school children.
	It is part of the project "Surveys on behavioural risks in children aged 6–17 years", within the framework of the European program "Gaining Health".
Health behaviour in school-aged children (HBSC)	An international multicentre study carried out in collaboration with the Regional Office of the World Health Organization for Europe. The study is characterized as a network of researchers, universities and government institutions, coordinated by a committee composed of Member State representatives.
	It is a school-based survey with data collected using self-completion questionnaires administered every four years in the classrooms. Survey questions cover a range of health indicators and health-related behaviours as well as the life circumstances of adolescents aged 11, 13 and 15.
	It is part of the project "Surveys on behavioural risks in children aged 6–17 years", within the framework of the European program "Gaining Health".
Progress by local health units towards a healthier Italy (PASSI)	Continuous and systematic collection of data using telephone-administered questionnaires to assess the quality of life and behavioural risk factors of the adult population aged 18–69.
	The areas of investigation are smoking, physical inactivity, overweight, alcohol consumption, low consumption of fruits and vegetables, cardiovascular risk, adherence to cancer screening and the adoption of safety measures for road traffic injury prevention, vaccination coverage for influenza and state of physical and psychological wellbeing, and other aspects of health related quality of life. A random sample is extracted each month from the lists of enrolled residents aged 18–69 in each local health unit (LHU), and stratified by gender and age groups (18–34, 35–49, 50–69 years). The sample size allows annual estimates of the main variables at the LHU level.
	This project of the Ministry of Health and of the Italian Regions was originally launched as an experimental method for monitoring behavioural risk factors and prevention programs of chronic diseases.
Surveillance system in the population over 64 years (PASSI d'Argento)	This system employs telephone or face-to-face administered questionnaires that assess the quality of life and behavioural risk factors of the adult population aged over-64.
	The three areas of investigation are health, safety and the degree of participation in the community. A sample is extracted periodically (every 1–2 years) from the lists of enrolled residents in each participating LHU to select eligible individuals.
	It is a project of the Ministry of Health and of the Italian Regions with the scientific support of the Italian National Institute of Health.

up the single scores, ranged from a minimum value of zero to a maximum value of 16.

Identification of predictors of surveillance system data use in RPP projects

Univariate analysis consisted of a χ^2 test to evaluate the association between surveillance system use by RPP projects that could use surveillance systems and the following variables: i) geographic area (North, Centre, South and Islands); ii) quality of the Strategic Framework section of the RPP. In order to calculate a summary score of the quality of RPP we decided to consider 21 items of the appraisal tool of the Strategic Framework Section of the RPP. To reduce the number of items we performed a principal component analysis (PCA) using the 21 items and retained those components with eigen values greater than 1. A set of ten items

was then identified and a 0–10 summary score was calculated and included in the model as a dichotomous variable (high if above the median, low-medium if below). The detailed methods used to develop the summary quality score are described elsewhere[22]; iii) presence of a formal Recovery Plan in the Region. Recovery Plans are implemented by the Central Government to enable Regions with a structural deficit in their health care budget to establish objectives and strategic actions by which they might restore financial equilibrium and remove determinants of structural imbalance.[22] Recovery Plans were still operating in eight Regions (Abruzzo, Calabria, Campania, Lazio, Molise, Piemonte, Puglia, Sicilia) in 2010; iv) macro area of intervention (Predictive medicine, Universal prevention, Prevention in high-risk groups and Prevention of complications and recurrence of chronic diseases).

The analysis was stratified by Regional Health Care Expenditure (RHCE) as a percentage of the Regional Gross Domestic Product (RGDP) in 2010 and was considered high if above the Italian median value for 2010 (9.37% of GDP).[23]

A multiple logistic regression model was built successively to identify possible predictors of surveillance system data use in RPP projects. The dependent variable "use of a surveillance system" was obtained, assigning to single projects values of 0 or 1 for not using or using, respectively, at least one of the four systems for planning and/or evaluation of projects. The following covariates (see above for details) were tested in the regression model: geographic area, quality of the Strategic Plan section of the RPP, presence of a formal Recovery Plan in the Region, macro area of intervention, RHCE as a percentage of the RGDP. Categorical data with more than two categories were dummy coded and entered individually in the model. Interaction terms were tested using a cut-off significance level of 0.15 and robust standard errors were estimated to adjust for the regional (cluster) effect. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Statistical analysis was performed using STATA statistical software, version 12.0 (Stata Corp. LP, College Station, TX. USA, 2011).

Results

The descriptive analysis of the use of the four surveillance systems, described in Box 1, by the Italian Regions in their RPPs is shown in Table 1. Most Italian Regions used data from PASSI for the description of the epidemiological contexts in the Strategic Framework section of the RPP (17 out of 19, 89.4%), and, to a lesser extent, data from OKkio alla SALUTE (13 out of 19, 68.4%). More than half of the Regions set up specific projects for the development and implementation of PASSI and OKkio alla SALUTE (12 out of 19, 63.2%).

Slightly different results were observed when we analysed the percentages of projects in the Operational Plan section of the RPP that used data from the surveillance systems for planning and/or evaluation, calculated for projects that could use such data (Table 1). In this case, the most frequently used surveillance system was OKkio alla SALUTE (34 out of 67 projects, 50.8%), followed by PASSI (121 out of 297, 40.7%). The maximum percentage of projects (100%) using OKkio alla SALUTE was found in five Regions (Basilicata, Campania, Friuli Venezia Giulia, Molise and Sardegna), whereas four Regions (Lombardia, Piemonte, Sicilia and Umbria) did not use the system in any project. In the case of PASSI, no Region used the system in 100% of projects, and in two Regions (Lombardia and Molise) the system was never used for planning and/or evaluation of projects.

HBSC and PASSI d'Argento were less frequently employed than PASSI and OKkio alla SALUTE: they were used for the analysis of the regional context in less than half of the RPPs (9 out of 19, 47.4%) (Table 1). Only 10 (52.6%) and five (26.3%) Regions ran projects specifically aimed at the development and implementation of PASSI d'Argento and HBSC, respectively. The percentages of projects using the systems was higher for HBSC (31 out of 104, 29.8%) than for PASSI d'Argento (23 out of 130, 17.7%), but it should be borne in mind that PASSI d'Argento was implemented relatively late in Italy. It was first introduced in 2009 in only six Regions (Emilia Romagna, Liguria, Puglia, Sicilia, Toscana, Umbria), and then implemented in an additional nine Regions (Abruzzo, Calabria, Campania, Lazio, Marche, Molise, Piemonte, Sardegna, Veneto) in 2010. Therefore, its use was not possible in the remaining four Regions (Basilicata, Friuli Venezia Giulia, Lombardia and A.P. of Trento), which did not implement PASSI d'Argento.

The summary score shown in Table 1 allows those Italian Regions where surveillance systems are extensively used to be identified. A summary score ≥10 was achieved by six Regions (Liguria, Emilia Romagna, Calabria, Campania, Puglia and Sardegna). By contrast, eight Regions scored ≤7 (Basilicata, Friuli Venezia Giulia, Marche, A.P. Trento, Umbria, Sicilia, Veneto and Lombardia). The low score obtained by the Lombardia Region is due to the regional decision to use different surveillance systems for the monitoring of behavioural risk factors.[21]

To identify possible predictors of the use of surveillance system data for planning and/or evaluation purposes, the 359 RPP projects that could use such data were analysed with respect to several variables (Table 2). RHCE (expressed as a percentage of RGDP) was an important predictor of use, since projects developed by Regions with a higher RHCE employed surveillance system data for planning and evaluation purposes more frequently (48.1% vs. 34.3%, P = 0.008). In all cases where a Recovery Plan was in operation, this negatively affected surveillance system use in the Regions concerned, whereas a negative impact of a lower quality Strategic Framework section was observed only in Regions with low RHCE. Projects developed by Regions of the Centre used surveillance system data more frequently than Regions from the North; by contrast, Regions from the South and Islands were less likely to use surveillance system data than Regions from the North.

The results of the univariate analysis were confirmed, at least in part, by multivariate analysis (Table 3). There was a statistically significant association between RHCE and the use of surveillance system data for planning and/or evaluation of the projects (OR 7.81, 95% CI 2.86–21.29). However, the apparently negative association with the existence of a Recovery Plan in the Region did not reach statistical significance. Projects developed by Regions from the South and Islands were significantly less likely to utilize surveillance system data. No statistically significant interactions were found.

Discussion

In Italy, the use of behavioural and lifestyle surveillance systems is a cause for concern. Strengthening surveillance is one of the four priority areas of the WHO Action plan for implementation of the European Strategy for the Prevention and Control of Noncommunicable Diseases (NCDs) 2012–2016.[1] The establishment of integrated databases, which combine different sources and forms of information to provide a more comprehensive picture of disease burden, is among the primary objectives of the NPP 2010–2012. However, the heterogeneity of regional surveillance systems in Italy makes the construction of integrated databases difficult and complicates

Table 1 – Descriptive analysis of Regional Prevention Plans (RPPs) concerning the use of the four behavioural and lifestyle surveillance systems operating in Italy (OKkio alla SALUTE, HBSC, PASSI, PASSI d'Argento). For each surveillance system, the three columns (Data use in the SE Section, Specific projects, Data use for P/E of projects) refer to the use of the surveillance system data for programming in the Strategic Framework section (Data use in the SF section) to the presence in the RPP of projects specifically aimed at the development and implementation of the surveillance system (Specific projects), and to the percentage of projects that used data of surveillance system for planning and/or evaluation (Data use for P/E of projects), calculated for projects that could use such data and divided into tertiles. Data are expressed in numerical values and a total score is calculated.

Region	OKkio alla SALUTE			HBSC			PASSI			PASSI d'Argento			Total score
	Data use in the SF section	Specific projects	Data use for P/E of projects	Data use in the SF section	Specific projects	Data use for P/E of projects	Data use in the SF section	Specific projects	Data use for P/E of projects	Data use in the SF section	Specific projects	Data use for P/E of projects	
	Yes/No	Yes/No	% (T)	Yes/No	Yes/No	% (T)	Yes/No	Yes/No	% (T)	Yes/No	Yes/No	% (T)	
Abruzzo	1	0	66.7 (1)	0	0	0.0 (0)	1	0	69.2 (2)	0	1	40.0 (2)	8
Basilicata	1	1	100 (2)	0	0	0.0 (0)	1	1	27.3 (1)	0	0	0.0 (0)	7
Calabria	1	0	36.4 (1)	1	0	50.0 (2)	1	1	34.5 (1)	1	1	11.1 (1)	11
Campania	1	1	100 (2)	1	1	0.0 (0)	1	1	18.7 (0)	1	1	9.1 (1)	11
Emilia Romagna	1	1	50.0 (1)	1	1	22.2 (1)	1	1	52.9 (1)	1	1	66.6 (2)	13
FVG[a]	1	0	100 (2)	1	0	0.0 (0)	1	0	63.6 (2)	0	0	0.0 (0)	7
Lazio	0	1	66.7 (1)	0	0	66.6 (2)	1	1	50.0 (1)	0	1	11.1 (1)	9
Liguria	1	1	80.0 (2)	1	0	75.0 (2)	1	1	81.8 (2)	1	1	40.0 (2)	15
Lombardia	0	0	0.0 (0)	1	0	0.0 (0)	0	0	0.0 (0)	0	0	0.0 (0)	1
Marche	1	1	75.0 (1)	0	0	80.0 (2)	1	0	43.7 (1)	0	0	0.0 (0)	7
Molise	0	1	100 (2)	0	1	50.0 (2)	1	0	0.0 (0)	1	0	0.0 (0)	8
A.P. Trento[b]	0	1	33.3 (0)	0	1	22.2 (1)	1	1	50.0 (1)	0	1	0.0 (0)	7
Piemonte	0	1	0.0 (0)	1	1	0.0 (0)	1	1	22.2 (1)	0	1	7.7 (1)	8
Puglia	0	1	80.0 (2)	0	0	25.0 (1)	0	1	60.0 (2)	0	1	28.6 (2)	10
Sardegna	1	0	100 (2)	1	0	33.3 (1)	1	0	72.7 (2)	1	0	22.2 (1)	10
Sicilia	1	0	0.0 (0)	0	0	0.0 (0)	1	1	13.3 (0)	1	1	12.5 (1)	6
Toscana	1	1	50.0 (1)	1	0	40.0 (2)	1	1	5.5 (0)	1	0	0.0 (0)	9
Umbria	1	0	0.0 (0)	0	0	0.0 (0)	1	0	68.7 (2)	1	0	40.0 (2)	7
Veneto	1	1	25.0 (0)	0	0	37.5 (1)	1	1	19.2 (0)	0	0	9.1 (1)	6
Total	13	12	50.8 (1)	9	5	29.8 (0)	17	12	40.7 (1)	9	10	17.7 (0)	

Data use in the SF section – RPP used the surveillance system data for programming in the Strategic Framework section (Yes = 1; No = 0).
Specific projects – RPP contained projects specifically aimed at the development and implementation of the surveillance system (Yes = 1; No = 0).
Data use for P/E of projects – Percentages of projects that used data of the surveillance system for planning and/or evaluation, calculated for projects that could use such data and divided into tertiles. % (T) with T1 = 0, T2 = 1, T3 = 2.
[a] FVG: Friuli Venezia Giulia.
[b] A.P Trento: Autonomous Province of Trento.

Table 2 − Analysis of projects included in the Regional Prevention Plans (RPPs) regarding the use of surveillance systems data for planning and/or evaluation purposes (limited to projects that could use the data for planning and/or evaluation), according to selected variables.

Variables	Regions with low RHCE[a] (as % of RGDP[b])			Regions with high RHCE[a] (as % of RGDP[b])		
	Use of surveillance systems					
	No (%)	Yes (%)	pV	No (%)	Yes (%)	pV
Geographic area						
North	68 (71.6)	27 (28.4)	0.079	6 (21.4)	22 (78.6)	<0.001*
Centre	49 (59.0)	34 (41.0)		−	−	
South and Islands	−	−		88 (57.5)	65 (42.5)	
Quality score of the strategic plan section of the RPP[c]						
Low/medium	94 (71.8)	37 (28.2)	0.005*	94 (51.9)	87 (48.1)	−
High	23 (49.0)	24 (51.0)		−	−	
Recovery plan in the region						
No	76 (61.8)	47 (38.2)	0.098	9 (22.5)	31 (77.5)	<0.001*
Yes	41 (74.5)	14 (25.5)		85 (60.3)	56 (39.7)	
Macro area of intervention						
Predictive medicine	6 (66.7)	3 (33.3)	0.401	4 (40.0)	6 (60.0)	0.625
Universal prevention	65 (63.7)	37 (36.3)		47 (49.5)	48 (50.5)	
Prevention in populations at risk	37 (74.0)	13 (26.0)		36 (58.1)	26 (41.9)	
Tertiary prevention[d]	9 (52.9)	8 (47.1)		7 (50.0)	7 (50.0)	
Total projects	117 (65.7)	61 (34.3)		94 (51.9)	87 (48.1)	0.008*

*pV < 0.05 (Chi-squared test).
[a] RHCE: Regional Health Care Expenditure.
[b] RGDP: Regional Gross Domestic Product.
[c] RPP: Regional Prevention Plan.
[d] Tertiary prevention: prevention of complications and recurrence of diseases.

direct comparisons of health profiles across the country.[24] In fact, despite the recommendations made by the NPP 2010−2012 for the improvement of Regional surveillance systems, the level of use of standardized data on behavioural and lifestyle factors contributing to NCDs, based on the four surveillance systems (OKkio alla SALUTE, HBSC, PASSI, PASSI d'Argento), is unacceptably low in Italy. The analysis of regional epidemiological contexts does not always rely upon surveillance system data and there were too few projects aimed at the maintenance and the development of these systems. In particular, fewer than half of projects that could have used surveillance systems for planning and evaluation procedures actually did so, despite the potential value of these data. OKkio alla Salute and PASSI were the most frequently used systems, since they were already endorsed by the previous Italian NPP (NPP 2005−2007 extended to 2008) and had been widely promoted by the Ministry of Health over years. By contrast, there was only a poor use of HBSC and particularly PASSI d'Argento, which became operative later and was not implemented in four Regions.

The use of surveillance systems is associated with the RHCE expressed as a percentage of the GDP. Growth in public expenditure and health care expenditure (HCE) is a natural consequence of economic growth, both in the long- and short-term.[25,26] However, limiting health care expenditure is now mandatory for health systems in Europe and the USA, both as a consequence of the global economic crisis and also because new medical technologies have often added to overall health care expenditure without delivering cost savings elsewhere.[27,28] Our results suggest that Italian Regions that dedicate fewer resources to health care are less likely to use lifestyle and behavioural surveillance systems. The decision to devote less attention to health surveillance seems unwise, since investing in health promotion and disease prevention is likely to generate health benefits at an affordable cost.[29]

Table 3 − Results of the multiple regression model investigating possible predictors of the use of surveillance systems data for planning and/or evaluation purposes of projects included in the Regional Prevention Plans (RPPs).

	Or (95% CI)
Geographic area	
North (reference)	1.00
Centre	1.96 (0.77−5.02)
South (including Islands)	0.34 (0.12−0.97)
Quality score of the strategic plan section of the RPP[a]	
Low (reference)	1.00
High	0.93 (0.37−2.35)
Recovery plan in the region	
No (reference)	1.00
Yes	0.54 (0.23−1.24)
Macro area of intervention	
Universal prevention (reference)	1.00
Predictive medicine	1.29 (0.42−3.98)
Prevention in high risk groups	0.70 (0.40−1.24)
Prevention of complications and recurrence of chronic diseases	1.07 (0.34−3.34)
Regional health care expenditure as % of RGDP[b]	
Low (reference)	1.00
High	7.81 (2.86−21.29)

[a] RPP: Regional Prevention Plan.
[b] RGDP: Regional Gross Domestic Product.

Growing evidence of the economic benefits of prevention suggests that investment in this area may be central to slowing longer-term health expenditure growth, by increasing value rather than decreasing cost.[30] Furthermore, providing cost-effective health promotion and disease prevention interventions can improve longevity and health.[31,32]

We have previously shown that health promotion and disease prevention projects developed by Italian Regions with a formal Recovery Plan are of lower quality than those without a Recovery Plan.[22] The results of the current analysis are in line with these findings, since the presence of a Recovery Plan reduces, albeit not significantly, the probability that surveillance systems will be used. In general, Recovery Plans are instruments designed to increase efficiency and reduce deficit problems in the future through strategic actions that address the structural determinants of the organizational failures and costs of the Region.[33] Financially distressed Regions have both the largest and weakest management teams (in terms of skills and competences).[34] This, together with a weak health care technostructure and the need to reduce short-term costs, may explain the unsatisfactory use of surveillance system data in these Regions.

Geographic macro areas were shown to be predictors of surveillance systems use, with a lower probability of use in the Southern Regions (including Islands). A possible explanation is that Northern Regions and, to a lesser extent, Central Regions have historically adopted a leadership role in determining and executing health care policies in Italy. The decentralized structure of the Italian National Health System has led to major regional differences in the quality and efficiency of health care services provided across the country. Over a number of years, the health care sector in the Southern Regions has operated at low efficiency levels than its counterparts in the North and Centre, with reduced accessibility (longer waiting lists, limited range of specialized services and limited health technologies) and a lower standard of care (incorrect use of procedures, drugs, therapies and care settings).[35-37] The North–South disparity may not merely be due to the financial resources available to the regional governments, but could also be associated with cultural differences, socio-economic development and technological infrastructures.[38]

The study has three main limitations that should be stressed: i) possible relevant evaluation items were not considered in the assessment tool; ii) the possible subjectivity in the critical appraisal of RPPs; iii) the lack of evaluation of the actual level of implementation of the projects. The first two limitations were kept to a minimum given the robust and strict methodology used for the development of the tool and the appraisal of the projects: the tool was developed by an iterative process in which an authoritative and dedicated committee was involved, and the projects were assessed in double, with discrepancies solved by discussion under the supervision of a coordinating group.[18] Finally, the analysis of the actual level of implementation of the projects was beyond the scope of our evaluation exercise that was financed by the Ministry of Health since it is performed institutionally by the Ministry of Health and its technical agencies.[18]

In conclusion, surveillance systems should be of good quality, reliable, standardized and sustainable. They should be tailored to the needs of individual countries, while being coordinated at the international level through common protocols, indicator definitions, analytical tools and databases that allow for international trend comparison. A general conclusion stemming from this analysis is that use of surveillance systems for regional planning in Italy is not optimal due to late implementation, the presence of different data collecting systems, RGDP inequalities and the existence of Recovery Plans. There is a pressing need for full implementation of surveillance systems to allow better definition of the priorities and objectives of public health interventions.

Author statements

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