POLICY BRIEF

Recommendations on care provision at national and regional level

Deliverable 2

WP 6

Spoke 5

Contents

1. INTRODUCTION (Giovanni Lamura and Rebecca Graziosi, INRCA IRCCS)

This deliverable aims to provide a selected set of recommendations concerning the provision of long-term care to frail older people, according to the key aims envisioned by Work-Package 6 (WP6) of Spoke 5 of the Age-It research programme, whose focus is on the future sustainability of elder care in a multidimensional perspective (https://ageit.eu/wp/en/s-p-o-k-e-5/). To this purpose, the policy brief has gathered the key messages emerging from five contributions focussed on different study areas, including investigations that adopt a local (micro) or national (macro) perspective, summarised as follows:

- in **Section 2,** Albertini, Bei and Toth provide a cross-national analysis of policies aimed at supporting the informal care of older people with long-term care needs in the European Union;
- **Section 3** deals with the evaluation of care quality in community-based healthcare delivery, as analysed by Ugolini and Giachello;
- in **Section 4**, Tiso and Verbano address the topic of performance measurement using the lean and safety management methodology as a potentially useful tool for enhancing ambulatory health care in the community;
- Ganugi, Macchioni, Longobardi and Prandini, authors of **Section 5**, investigate the experiences of residential care facilities in central and northern Italy that can become a strategic hub of local healthcare networks;
- last but not least, in **Section 6** Caravaggio, Resce and Spanò analyse health expenditure and the use of the Machine Learning approach to enhance healthcare forecasting at regional level.

The rationale of the structure of this policy brief, including the order of the contributions composing it, lies in the purpose of delivering recommendations for policymakers and care provider organisations at different (i.e. local and national) levels, starting from the bulk of long-term care provision, represented by informal care, which can be considered a typically individual, micro-level activity (Section 2). The focus of contributions moves then to the analysis of meso-level community based care (Sections 3 and 4), touches upon the field of residential care (Section 5), and closes with a contribution adopting a more macro-level perspective, i.e. that analysing trends in health care expenditures at regional level. All contributions generally present an introduction, sections dedicated to the results and policy recommendations, including few bibliographic references, which have been kept to a minimum in order to not overload this document.

2. SUPPORTING INFORMAL CARE OF OLDER PEOPLE WITH LONG-TERM CARE NEEDS: RECENT CROSS-NATIONAL EVIDENCE FROM THE EUROPEAN UNION (Marco Albertini, Eva Bei and Federico Toth, Alma Mater Studiorum University of Bologna)

2.1 Introduction

As populations in Europe age, long-term care (LTC) systems face increasing pressure due to rising care needs. Formal care services are often insufficient to meet the growing demand, leading to an increasing reliance on informal caregivers, typically family members, who provide care to older adults with long-term health conditions. This reliance is particularly evident in Italy, where a significant portion of the older population depends on family support. Despite their crucial role, informal caregivers frequently encounter high levels of physical, emotional, and financial strain. Recognizing these challenges, EU countries have developed diverse policy frameworks to support informal caregivers, yet significant cross-national and regional disparities persist in the type, scope, and comprehensiveness of these policies. While some countries offer more comprehensive care leave policies, financial benefits, and respite care services, others provide limited support, leaving caregivers at risk of burnout (European Commission, 2021). In Italy, the government has recently begun to address these challenges through reforms, including the restructuring of financial support funds. However, many services remain underdeveloped, continuing to burden caregivers significantly. This policy brief reviews recent empirical evidence on caregiver support policies across the EU, focusing on key trends, gaps, and policy recommendations to enhance support for informal caregivers, particularly in the case of Italy.

2.2 Key trends in cross-national policy approaches

2.2.1 Financial support for caregivers

Financial support, often provided through direct caregiver allowances or benefits to care recipients, is one of the most common policy measures across Europe. This support helps offset the economic costs of caregiving, allowing caregivers to balance employment and care responsibilities without severe financial strain. Countries such as Denmark, Finland, Sweden, Belgium and the Netherlands appear to provide more generous financial benefits, including both direct support through caregiver allowances and indirect through care recipient benefits. In these countries, financial aid is complemented by established formal care services, offering caregivers more comprehensive support. In contrast, countries in Southern and Eastern Europe, including Greece, Bulgaria, and Romania, often provide more limited financial support, with many relying on means-tested allowances that are insufficient to cover the full cost of caregiving (Spasova et al., 2018). In Italy, while formal caregivers are provided with economic and pension rights, family caregivers have very few protections. Recent reforms, such as the 2021 budget law that established an economic fund - now replaced by a single fund in the 2024 budget - recognize the social and economic value of family care. Although this support is not

comparable to the benefits offered in Nordic and continental EU countries, it represents a first step toward improving financial assistance for caregivers in Italy.

2.2.2 Work-care reconciliation policies

Balancing work and caregiving responsibilities is one of the primary challenges for informal caregivers. Paid and unpaid care leave policies, along with flexible work arrangements, are essential for enabling caregivers to maintain employment while providing care. Several EU countries, including Sweden, Belgium, Germany, and the Netherlands, offer generous paid leave schemes that allow caregivers to take extended time off work. For example, Belgium's paid care leave includes palliative care options, offering caregivers both time and financial stability during periods of intense caregiving demands. On the other hand, in many Eastern and Southern European countries, formal care leave policies are underdeveloped or not established. These gaps leave many caregivers with no formal mechanism to reconcile work and caregiving duties, increasing their risk of leaving the workforce prematurely. In Italy, several policies have been implemented since the 1990s to support caregivers. Among these are Law 104/92, which allows caregivers to take paid leave from work, and Legislative Decree 151/2001, which provides for a two-year leave for family caregivers of individuals with severe disabilities. Additionally, caregivers who have assisted older individuals with disability for at least six months may be eligible for early retirement. Yet, significant barriers such as poor accessibility, a lack of widespread awareness, and restricted paid leave schemes directed primarily to caregivers caring for individuals with a high level of care dependency, continue to hinder effective support.

2.2.3 Respite care and in-kind services

Respite care services are designed to provide temporary relief for caregivers by offering alternative care options for the older person. This allows caregivers to take breaks from their duties, reducing stress and preventing burnout. In many Nordic and Continental EU countries like Denmark, Finland, Sweden, Belgium, Germany and the Netherlands, respite care is well-integrated into LTC systems. These countries offer a range of services, including day care centers, temporary residential care, in-home support and rehabilitation services. In Southern and Eastern Europe, access to respite care is often limited, with services focusing predominantly on individuals with severe disabilities or high care needs. In Italy, recent efforts to improve respite care have included the 2021 budget law, which allocated resources for the modernization of nursing homes and introduced a caregiver bonus, providing economic support distributed among the regions. However, significant cross-regional disparities persist in the availability and regulation of respite care services, with some southern regions, such as for example Puglia and Sicily, not offering these services at all.

2.2.4 Information, training, and emotional support

Policies that offer relevant information and caregiver training, as well as those offering psychological support, are critical in enhancing the skills of caregivers and addressing the caregiver burden associated with care provision. Training and counseling services can empower caregivers with knowledge, coping

strategies, and peer support networks. Nordic countries stand out for their well-developed systems of psychological and educational support for caregivers. Denmark and Finland, for instance, provide subsidized training programs, psychological counseling, and online resources that help caregivers navigate the complexities of providing care. In many Eastern and Southern European countries (e.g., Greece, Cyprus, Romania, Bulgaria) such services are almost entirely absent or underfunded by small-scale non-governmental (NGOs) and religious organizations, leaving caregivers without the necessary tools to manage the emotional toll of caregiving (Tokovska et al., 2022). Similarly, in Italy, educational initiatives and psychological support are primarily provided by non-profit organizations and cooperatives, which offer training courses and psychological assistance for family caregivers mainly at the regional level. However, access to these resources remains inconsistent, and the lack of formally established measures highlights the need for more comprehensive support systems.

2.3 Challenges and policy gaps for informal caregivers in Europe

Despite progress in some regions, informal caregivers in many European countries remain unsupported or under-supported, especially in Southern and Eastern Europe. Key challenges include:

1.   Fragmentation between formal and informal care systems: In many European countries, including Italy, there is a disconnect between formal health care services and informal care provided by family members or friends. This lack of coordination, particularly evident in countries with limited formal care infrastructure, may result in increased burden on caregivers, as they often lack access to essential resources including financial, emotional support, and in-kind services;

2.   Unequal policy frameworks across regions: Policies to support informal caregivers vary widely not only at the European level but also subnationally. For example, within countries like Italy, there are significant disparities between regions, with northern regions (e.g., Lombardy) generally providing more comprehensive caregiver support compared to southern regions (e.g., Sicily). These disparities exacerbate inequalities in service provision and quality of life for caregivers, depending on where they reside;

3.   Barriers to accessing existing support services: Even when formal support measures exist, many informal caregivers are unable to fully benefit from them. This may be due to lack of awareness, complex application processes, or bureaucratic red tape, which discourages caregivers from utilizing available services;

4.   Limited financial support and recognition: In many EU countries, including Italy, informal caregiving is still largely unpaid or undercompensated, placing caregivers at financial risk, especially if they have to reduce work hours or leave the workforce entirely. Additionally, in cases where financial support is directed solely to the care recipients, this fails to acknowledge the caregiver's role and agency, leaving their contributions invisible and undervalued. This lack of direct financial recognition further exacerbates economic hardship and social exclusion for caregivers;

5. Mental and physical health risks: Informal caregivers face heightened risks of lower well-being, stress, burnout, and health issues due to the physical and emotional demands of caregiving, which are often unaddressed by current policies. Insufficient access to mental health support and respite care further compounds these risks, creating long-term health consequences for caregivers themselves;

6. Lack of tailored training and educational programs: Like Italy, several EU countries do not provide training programs specifically designed for non-professional, informal caregivers. Instead, they often rely on unestablished instruments, such as small-scale interventions by NGOs, which may not be accessible to diverse caregiving populations. This gap in tailored training leaves caregivers without the necessary skills and support, increasing their risk of burnout

2.4 Policy recommendations

To address these challenges, several policy interventions should be adopted to better support informal caregivers:

1. Expand financial support mechanisms: Countries with limited financial support should enhance caregiver allowances and tax credits to mitigate the economic strain on caregivers. Additionally, directing financial support to informal caregivers alongside care recipients is essential, as means-tested benefits alone are often insufficient. Increasing the generosity of these schemes can help reduce poverty and financial hardship among caregivers;

2. Strengthen work-care reconciliation policies: Expanding access to paid care leave and flexible work arrangements is critical for enabling caregivers to remain in the workforce. Countries should look to models from EU countries (e.g., Belgium), which offer extensive paid leave and job protection for caregivers, as examples for policy development;

3. Enhance access to respite care services: Increasing the availability and affordability of respite care services can provide significant relief for caregivers. Public investment in home care, day care but also night care centers, and temporary residential facilities can significantly reduce the burden on informal caregivers while improving the quality of care for older adults;

4. Develop comprehensive training and support services: Providing caregivers with access to education, counseling, and peer support can help them manage the emotional and psychological demands of caregiving. These services should be formally integrated into national LTC systems, with a focus on making them accessible and affordable to all caregivers, regardless of location. Strengthening outreach and simplifying administrative procedures is also crucial to improving access.

2.5 Conclusion

Informal caregivers play an indispensable role in supporting older people with LTC needs across the EU. However, the cross-national and regional variability in policies and the gaps in support services place many caregivers at a disadvantage, particularly in Southern and Eastern Europe. In Italy, although

recent reforms have begun to address some of these challenges, many support services remain underdeveloped, and significant regional disparities persist. Policymakers must prioritize the development of comprehensive, well-funded caregiver support policies that address the multifaceted challenges of care provision. By strengthening financial assistance, expanding leave options, and improving access to respite care but also training and psychological support, EU countries can better support informal caregivers, ensuring the sustainability of LTC systems in the face of demographic change.

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3. THE ASSESSMENT OF CARE QUALITY IN TERRITORIAL HEALTHCARE (Cristina Ugolini and Marta Giachello, Department of Economics, Alma Mater Studiorum University of Bologna)[1]

3.1 Introduction

In the early 1990s, Italy began introducing a results-oriented culture in Public Administration, including healthcare, despite its evaluation challenges. The goal was to create new organizational structures beyond the traditional bureaucratic model, better suited to the evolving epidemiological and social needs. Today, health service evaluation is supported by a broad scientific literature, with multidimensional models and systematic data collection providing various indicators for different perspectives (Nuti, 2008; Fantini, 2018). However, significant efforts are still needed to refine these tools, ensure effective implementation, and maximize their potential.

Although indicator systems have advanced, they primarily focus on hospital-level outcomes, offering only indirect assessments of territorial care quality. This policy brief examines the multidimensional evaluation of quality in territorial care and suggests some strategies for improving data collection and developing new metrics for more comprehensive assessments.

3.2 Findings

The need for tools to support health service governance dates to the National Health Service (NHS) reform with Legislative Decree 502/92. This reform required healthcare organizations to implement mechanisms for generating information to support decision-making, both in setting objectives (programming) and monitoring outcomes (control). Performance measurement became a cornerstone of this reform, shifting NHS governance from focusing on resources to emphasizing results. However, initial efforts were largely unimplemented due to challenges in selecting and calculating appropriate indicators (Bellini et al., 2002). Following Legislative Decree 56/2000, the national legislator established a guaranteed system to ensure that services continued to be provided, even when regions were no longer required to earmark funds for financing Essential Levels of Assistance (LEAs). In 2020, the New Guarantee System (NSG) was introduced to connect LEAs with a comprehensive assessment of care quality.

The NHS is now a system rooted in programming and evaluation. However, for many years, evolving regulations restricted evaluation activities mainly to assessing the performance of general managers, with a focus on procedural and administrative analyses aimed at controlling spending. Even today, budgets and incentive systems across all levels remain predominantly output-driven, with limited focus on organizational appropriateness. However, in recent years, there has been a strategic shift towards

prioritizing the protection of rights, ensuring equity in service delivery, and enhancing population health outcomes.

Regarding the evaluation of territorial care, the NSG has identified 42 indicators specific to community care: 33 for district care, 5 for monitoring and evaluating the PDTAs related to the three main chronic degenerative diseases (COPD, heart failure, diabetes), and 4 context indicators for estimating health needs.

In district care, the core assumption is that accessible territorial services and effective community-based patient management should help prevent hospitalizations. However, current indicators adopt a limited perspective, focusing primarily on the management of the most prevalent chronic diseases (Russo and Greco, 2017), for which the 2016 National Chronic Disease Plan (PNC) requires each region to establish its own monitoring system. The PNC has undergone significant changes since its approval, particularly due to the introduction of the National Recovery and Resilience Plan (PNRR) during the pandemic, which shifted healthcare priorities, and the Ministerial Decree DM 77/2022, which outlines models and standards for the development of territorial care. Despite these updates, many aspects remain largely unimplemented.

For this policy report, we analyzed the indicators used within the new frameworks established by DM 77/2022, which redefined the integrated system of territorial care by setting uniform standards across the country.

While writing this survey, we identified that a critical aspect of quality evaluation lies in accurately assessing a patient's care needs through a multidimensional diagnostic tool. In Italy, access to territorial care is facilitated through the VMD (Multidimensional Assessment), a process introduced in 1992 and whose relevance has been emphasized repeatedly since then. Although the VMD is guaranteed by the NHS, it is regulated independently by each region, leading to significant heterogeneity and regional variation in its application. Different regions have developed solutions of varying complexity, tailored to their specific contexts and care settings. To address this fragmentation, DM 77/2022 underscores the need for "a homogeneous criterion at the national level" concerning the ADI context. Meanwhile, the recent reform of long-term care for older people introduces a major innovation: the implementation of a unified, nationally standardized VMD for this critical care area. However, key technical decisions have been postponed to a future decree.

Beyond the need to establish a standardized criterion for assessing patients' needs, it is also crucial to focus on patients' and caregivers' perspectives, encouraging their involvement in service evaluation.

For over twenty years, regional health systems have used questionnaires and surveys to gauge patient satisfaction with healthcare services. However, these surveys often yield general feedback that is not easily translated into actionable improvements and is frequently not informative enough to drive meaningful change. A key tool for effectively measuring and evaluating outcomes in healthcare is the collection of PROMs (Patient-Reported Outcome Measures) and PREMs (Patient-Reported Experience Measures). These surveys provide direct feedback on patient outcomes, offering insights beyond

clinical results to include well-being and quality of life and serving as a proxy for assessing care processes, helping to identify aspects that align—or fail to align—with the patient's perspective.

Given the complex care needs of an aging population and limited resources, caregivers play a vital role in maintaining patients' abilities and preventing complications. While the EU emphasizes caregivers through policies on active aging, in Italy, caregivers still lack a formal role within the NHS, despite their significant contributions. Reflecting on caregiver roles highlights two themes: their impact on the care recipient's quality of life and the importance of monitoring caregiver stress. Addressing caregivers' needs through support, counseling, and training is essential for maintaining quality, patient-centered care

3.3 Implications and recommendations

Although in Italy the multidimensional assessment of needs is guaranteed by the NHS but independently regulated by the regions, there is an urgent need for a standardized national assessment. Such uniformity should become a structural component of the LEAs, featuring a consistent and shared classification system for evaluating the care needs of patients with disabling conditions. Progress in this direction is evident, particularly for individuals with disability, but this approach needs to be expanded to embrace all care needs. Regardless of the care setting, regional assessment tools must remain as standardized as possible, ensuring uniformity in the measurement and interpretation of collected data.

Evaluating the quality of care in a territorial setting poses unique conceptual and methodological challenges, making it more complex than evaluation in a hospital context. Key issues include the lack of systematically collected electronic data, limited access to family doctors' medical records, the complexity of patient journeys through various settings and providers, and the difficulty of developing quality indicators that are both reliable and suitable for temporal and inter-organizational comparisons.

While the broader issue of performance evaluation at the macro level remains, it is also crucial to consider how, at the micro and meso levels, we can enhance the collection of available data and develop new indicators for assessing the quality of territorial care.

The analysis conducted for this policy brief is based on the OECD's concept of multidimensional quality, which focuses on measuring and evaluating three key dimensions: effectiveness, safety, and patient-centeredness. Our analysis particularly explores care for individuals living with disabling conditions, such as disability or chronic diseases. Recognizing that people have different needs at various stages of life and require different care approaches, we emphasize that the indicators used to monitor the quality of health care must be chosen carefully. The debate over the most effective types of performance indicators is a matter of international concern (Mant, 2001). It is overly simplistic to view structural, process, and outcome measures as competing with one another. However, there are situations where one type of measure may be more valuable or applicable than others.

Structural indicators are the easiest to measure, as they are precise and often systematically collected. However, the connection between structural characteristics and processes or clinical outcomes is typically too indirect to accurately assess their impact on the quality of care. The lack of a scheduled rotation of indicators risks a 'crystallization' of the evaluation tool, leading to a 'tunnel effect' well-known in the economic literature on incentives. Additionally, an overly intrusive role of the state in such micro-level measurements could intensify conflicts between state and regional authorities, especially as the concept of regional 'self-assessment' has been the norm for decades. Furthermore, the current process for updating indicators at the state level remains highly rigid, lacking the flexibility needed to adapt to technological advancements and the evolving scenario of health policies and needs.

Contrary to the recent approach taken by DM 77/22, which has heavily relied on structural indicators, the use of such indicators at the central level should be limited. Instead, individual health organizations should be empowered to develop their structural micro-indicators, enabling them to ensure the delivery of LEAs as defined at the national level while adapting these indicators to the specific organizational models used by companies or regions.

In line with Mission 6 of the PNRR, if we adopt a national perspective focused on protecting citizens' health, developing **outcome indicators** for territorial care presents significant challenges. Outcome indicators are undoubtedly the most relevant, as they directly reflect efforts to improve care quality. However, they often require complex adjustments to account for varying clinical risks, ensuring comparability over time and across regions. Moreover, these indicators can be influenced by other determinants that affect patient health, particularly those that require a longer time frame for measurement.

Regarding the measurement of outcomes, DM 77/2022 assigns the responsibility of adopting the necessary quality standards to the territorial and intermediate structures, without offering further specifications. However, it would be more appropriate for the regions, at the meso level, rather than the service delivery structures at the micro level, to select the most suitable outcome indicators. This approach would ensure the provision of LEAs across their territories and hold the regions directly accountable to their citizens.

Process indicators, by measuring the appropriateness of the care process against defined standards, provide an indirect measure of how adherence to these standards can lead to improved care outcomes. These indicators are widely used at the national, regional, and territorial levels due to their ease of measurement. Their impact often depends on the characteristics of the professionals or structures involved, such as adherence to diagnostic and therapeutic protocols, but they have the advantage of not requiring individual risk adjustments. For this reason, the guaranteed system should increasingly prioritize process measurement at the meso level, while expanding the range of chronic conditions analyzed, rather than focusing solely on those deemed most significant.

Finally, it is essential to incorporate, as a structural component of the LEAs, the systematic measurement of care outcomes and experiences from the perspectives of both patients and their

caregivers. Although this latter aspect remains an exception in most health systems for chronic patients, it is a critical dimension for the multidimensional evaluation of territorial care quality.

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4. SUSTAINABLE IMPROVEMENT IN TERRITORIAL AMBULATORY HEALTH CARE: THE ROLE OF PERFORMANCE MEASUREMENT IN LEAN AND SAFETY MANAGEMENT PROJECTS (Anna Tiso and Chiara Verbano, Department of Management Engineering, University of Padova, Vicenza, Italy)

4.1 Introduction

Demographic changes and ageing population are placing global societies under social, economic, and healthcare pressures, prompting government intervention. Healthcare systems are struggling to ensure the sustainability of health and social care services for a growing number of individuals suffering from chronic diseases and geriatric syndromes, who require complex and coordinated responses from multiple care providers (Busse, 2010). To this end, projects promoting organizational and managerial improvements of healthcare processes demonstrated positive effects on performance and quality of care. Among the approaches adopted, Lean and Safety Management (L&SM) integrates the management of process risks and wastes to enhance not only efficiency and timeliness but also patient safety. However, a key challenge with these interventions is ensuring long-term sustainability of results. Indeed, monitoring and control activities are often neglected, primarily due to the absence of effective performance measurement systems, difficulties in data collection, and a lack of awareness about the importance of process measurement. These gaps are even more pronounced in the territorial healthcare setting (Tiso et al., 2022). This policy brief suggests recommendations to enhance the sustainability of L&SM projects developed in the territorial ambulatory healthcare setting, by implementing a performance measurement system.

4.2 Results

Despite the importance of fostering continuous and sustainable improvement in the long term, improvement projects lack evidence on performance measurement and monitoring activities.

As highlighted by the most adopted problem-solving algorithms (i.e.: PDCA cycle, DMAIC cycle) and by project management principles, process measurement constitutes the starting point for every improvement project. Quantifying the process "current state" through measures and process indicators provides objective evidence about how activities, procedures and practices are performed. In an improvement project, measuring processes facilitates answering the fundamental "what" question, providing a deeper understanding of the object of interest, highlighting also the existing criticalities, thus identifying the need for improvement. Therefore, gaining knowledge about the process is essential to start a L&SM project: which activities are performed, the resources employed, the actors involved, the coordination and organizational mechanisms, the inputs and outputs, the information, resources and patient flows, etc. This information is obtained by identifying and measuring the variables that characterize the process and its components. Data collection and the subsequent data analysis will

provide precise indications about the current performance, highlighting the critical points and the potential improvement areas. Once generated a list of adequate and feasible countermeasures, an implementation plan is designed and carried out. At this point, process measurement is essential also to evaluate the success of a L&SM project, by comparing performance results pre and post project implementation and monitoring them in the long-term to assure improvement sustainability. Indeed, to be beneficial an improvement project should promote, sustain, and maintain its outcomes, not only immediately after its development, but also in a longer perspective. This facilitates the introduced changes to become standard and routinary activities of an organization.

However, the importance of defining a measurement system - composed of measures and indicators, data collection and analysis specific for every project and every context - is still overlooked in L&SM projects, especially when developed outside the hospital boundaries. Indeed, to effectively tackle the challenges posed by socio-demographic changes, healthcare organizations need to foster continuous and integrated long-term care, essential for individuals who face, or are at risk, significant decline in intrinsic capacity and functional ability due to mental or physical illness and disability. Recent research shows that adults aged 60 and over account for a large share of long-term care users. This type of care is delivered over extended periods of time and includes a wide range of personal, social, and medical services, through a care system encompassing health professionals, social workers, formal and informal caregivers (WHO, 2022).

To meet these complex care needs, territorial services play a pivotal role, acting as the first point of contact for patients and ensuring the delivery of continuous, comprehensive, and coordinated patient-centered care. Among these services, territorial ambulatory healthcare (TAH), which includes primary ambulatory care and low complexity secondary care within the territorial setting, serves as a key resource for managing the health needs of older people and of those with chronic conditions. L&SM projects in TAH settings still lack a consolidated adoption of a specific performance measurement system, particularly in the definition of improvement goals and in the results assessment, which is often qualitative rather than quantitative. In fact, defining performance indicators which exhaustively describe the complexity of territorial pathways is challenging, as well as sourcing data about care processes. To overcome these obstacles, performance indicators and measures has been extracted from the current literature about L&SM projects in TAH settings. These measures and indicators have been then associated with quality goals, in terms of efficiency, effectiveness, timeliness, safety, and patient-centeredness (Tiso et al., 2024), as reported in Table 1.

Table 1: Objectives and performance measurement indicators of L&SM projects in TAH settings (a*dapted from Tiso et al., 2024*)

Timeliness (i.e.: decreasing lead time, waiting time, providing timely care)	Efficiency (i.e.: improving process standardization, productivity, layout)	Employee Work-Balance (i.e.: improving employee work experience satisfaction)
• Lead time • Waiting time • Cycle time • Time to care • Total throughput time • Waiting queue length • No. Patient tasks	• Value-added ratio (VAR) • No. Scheduled appointments • No. Nurses • No. or % No-shows • Overall Resource Efficiency (ORE) • No. Patient tasks • No. Unscheduled appointments • % Task occurrence	• % Absenteeism • No. Overtime • Perceptive work experience satisfaction index

Effectiveness (i.e.: disease prevention, diagnosis)	Patient-centeredness (i.e.: improving patient satisfaction)	Safety
• No. or % Prevention activities • No. New diagnoses	• Perceptive patient satisfaction index	• N. Errors

As a result, each quality goal is matched with a proper set of measures and indicators which can be used to:

1. Clearly define the project goal, so that it is specific, measurable, achievable, relevant and time-bounded (SMART) (Drucker, 1954);
2. Understand which type of data and information are needed to measure performance and collect them. Data could be qualitative (interviews, direct observations, or notes) or quantitative (hospital dataset or detection sheets);
3. Measure processes and their performance pre and post project implementation;
4. Assess the project results and success;
5. Monitor and control the improvement reached at the end of the project to sustain the achievements in the long-term;
6. Promote the development of further improvement projects.

4.3 Implications and recommendations

Introducing a performance measurement system in L&SM projects in TAH constitutes an essential practice to guarantee the relevance, the effectiveness and the sustainability of these interventions, which could be vital for the improvement of the healthcare system. Indeed, the adoption of a performance measurement system could contribute to overcome the main limitation attributed to L&SM projects: the difficulty to maintain and sustain the results in the long-term, hindering the achievement of a continuous improvement.

From the healthcare providers' perspective, the availability of a performance measurement system facilitates the development of L&SM initiatives, overcoming the main criticality of defining a SMART project goal and measuring performance. In addition, having tangible and quantitative results fosters the promotion and acceptance of changes within the organization among the healthcare professionals, providing recognition also from the outside.

From the policy perspective, having a set of defined indicators and measures could represent a tool to define regional or national standards to be respected by TAH settings, in relation to specific quality goals, with the final aim of pushing and encouraging improvement initiatives also in the long-term care provided in the territory.

The introduction of a performance measurement system could have benefits also from a social point of view: indeed, it includes indicators and measures regarding care quality dimensions, such as equitability, accessibility, and patient-centeredness, which are often overlooked in L&SM project in

favor of efficiency, timeliness and effectiveness. This could contribute to protect and safeguard frail people, as chronic patients and ageing populations[2].

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[2] For a more detailed description of L&SM indicators and extended references please refer to *Tiso, Pozzan and Verbano, 2024*.

5. LONG-TERM CARE FACILITIES AS A HUB OF LOCAL HEALTHCARE NETWORKS (Giulia Ganugi, Fiorentina Longobardi, Elena Macchioni, Riccardo Prandini, Alma Mater Studiorum University of Bologna, Department of Political and Social Science)[3]

5.1 Introduction

This contribution results from qualitative research that analysed the most innovative experiences of Long-Term care facilities (LTCFs) called "Centri Residenziali Multiservizio" (CRM, in English: Multiservice Residential Centres[4]) in Central and Northern Italy (Piedmont, Lombardy, Veneto, and Emilia-Romagna). The case studies presented here were selected through close collaboration with a group of ten stakeholders composed of national representatives of residential service managers, service users, and their families.

Therefore, the following reflections and recommendations were presented and discussed with those actors who directly organize and provide services[5]. Their common perspective is that new policies should not derive from reforms designed at the national and regional (that is central) level, but rather be informed by the local ongoing innovations, "scaling up" virtuous achieved elements and recontextualizing them in different territories (Sabel and Victor 2024).

The progressive ageing of the population in Italy led to a growing variety and diverse intensity of care needs and more complex chronicity management. In this context, LTCFs emerge as one of the leading sectors in the provision of socio-sanitary health services, with responsibilities ranging from extensive rehabilitation, palliative care, temporary units for people with Alzheimer's, long-term and permanent hospitalizations, relief stays, home interventions, and day centres (Gallo et al. 2022).

LTCFs for older people with LTC needs are "public service concessionaires", managed by non-profit organizations and spread across the entire national territory, with a greater concentration in central and northern Italy (NNA 2021, Fosti & Notarnicola 2021). Based on the autonomous debate emerging among these organisations, the proposal is to develop a model called Multiservice Residential Centre (CRM) shortly. The model consists of residential structures with distinct modules with differentiated levels of care intensity. Each module also integrates home, day, and housing services in connection with

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[4] "Multi-service health centres" (CMR) are defined as such in Legislative Decree no. 29/2024 "Provisions regarding policies in favor of older people", in implementation of the delegation referred to in articles 3, 4 and 5 of law 23/2023" (original title of the law "Disposizioni in materia di politiche in favore delle persone anziane, in attuazione della delega di cui agli articoli 3, 4 e 5 della legge 23/2023").

the network of territorial services (ISS 2022; Gori & Trabucchi 2019; Iurlaro, ed., 2024). These structures operate as integrated service centers, keeping the residence as the central element. The CRM model represents an attempt at coordination between the different supply units, aimed at responding to the needs of a diversified group of older adults over 65, including subjects with LTC needs, people with behavioral disorders, dementia, need for rehabilitation, vegetative states, high health needs or need for protected discharge, within a continuum of care. According to the logic of service specialization, CRMs try to overcome the traditional separation between the social and health sectors, addressing complex issues that raise questions about resource management and regulation. The questions that immediately emerge are: Who pays for this service? How does it fit into the system of associated rights, considering that it may not fall under the LEA[6] but rather under the LEPS[7]?

In this framework, CRMs are configured as innovative territorial facilities that integrate the support and training of the family caregiver, another crucial player in Italian welfare and LTC policies. Support for the caregiver (which can range from the management of the person's residual abilities at home to the management of the end of life, up to the adoption of "cash-for-care" home services) is part of a care chain, in which the residence represents the last possible response in a chronicity management process.

To overcome the residence/domicile dualism, it is essential to assume that long-term care needs and active aging are two complementary aspects of frailty. To ensure the sustainability of the LTC sector, it is necessary to design services, starting with prevention and involving all the actors of care, both formal and informal. This global approach considers the older person and his family through different phases, levels of intensity, and needs for health and care in a community welfare context in which CRMs can be active promoters (Gori & Lamura, 2020).

Therefore, LTC policies should consider CRM a strategic hub for the innovation of welfare and the social and health sector, promoting the care of older people within the community, far from the hospital model. CRMs provide territorial healthcare with reference to managing chronic conditions. A significant example of this process is the progressive closure of numerous long-term care departments in the public hospital sector. The Italian legislative system on LTC is particularly complex, as it is divided into 19 Regions and 2 Autonomous Provinces that can legislate autonomously on the organization of services without unitary regulatory guidelines at the national level. Consequently, residential facilities take on different names and standards – about accreditation, quality, and management – based on the region in which they are located. Regarding LTC policies, which will have an increasingly significant impact in the future, the current fragmentation of institutional identities (RSA, service centres, nursing homes, daily recoveries etc.) needs to allow for efficient and integrated management of the system.

The lack of common standards also hinders progress toward innovation: in the most advanced regions, there are still service centres that operate with obsolete tools, and the lack of regulations in the technological field does not allow a uniform diffusion of digital innovation.

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[6] LEA stands for "Essential Levels of Assistance" and refers to the health benefits and services the SSN must provide to all citizens.

[7] LEPS stands for "Essential Performance Levels" and refers to the benefits and services that must be uniformly ensured throughout Italy to guarantee the civil and social rights of its citizens.

As a consequence of what mentioned above, there are multiple implications in terms of care provision.

Numerous minimum standards need to be promoted at a national level so that the quality of the service increases and becomes sustainable locally. The guarantee of a continuous connection between hospital, territory, and general practitioners depends on the creation of a supply chain that puts community residence at the center, integrated both with the network of formal and informal services, as well as the citizenship, and that offers a prominent level of qualification, also from a technological perspective.

Only strengthening the territorial system can guarantee the protection of frail older people and of their caregiver, responding to frailty with a personalized and diversified care plan that integrates home, semi-residential, and residential services, supported by a network of professional caregivers and family members. This strengthening is possible through simplifying evaluation procedures and the centralization of access to care, in contrast to the regional fragmentation that currently characterizes the system.

Residential facilities for older people are often designed to respond centrally to all the needs of the assisted, with the risk of becoming "total institutions" separated from social and family life, compromising the residents' quality of life. Therefore, the family members and caregivers of the users feel increasingly the need to conceive LTCF as a "residence" and not as a temporary place for guests.

It is crucial that the facilities provide home-based services, are in populated and lively areas, and accommodate people from the same area. Furthermore, each facility should be equipped with spaces that favour meetings between residents, family members, friends, and visitors and include premises accessible to the public, such as bars, restaurants, event rooms, parks, and spaces for recreational and cultural activities, meetings between residents, family members, friends, and visitors, and include premises accessible to the public, such as bars, restaurants, event rooms, parks, and spaces for recreational and cultural activities. It is also essential to promote facilities to support residents' outward moments.

These characteristics are essential to confer dignity to the assisted, recognizing them as residents with rights. Each residential facility, therefore, should have a territorial catchment area of reference and be located in a central and easily accessible position: it should have a community dimension and represent one of the nodes of Primary Care concerning the social health district to which it belongs. It should also collaborate constructively with the local COT[8] and the PUA[9], particularly regarding the entry of new residents and the management of new needs.

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[8] The "Centrale Operativa Territoriale" (COT) is a new organizational model of the local healthcare system instituted by the sector reform of the PNRR and Ministerial Decree 77/22. According to this, several COTs fulfill a connecting role between the various services and the health professionals they promote in the area. They aim to collect and structure information relating to patients' acceptance, discharge, and transfer, playing a coordination role among the various stakeholders.

[9] The "Punto Unico di Accesso" (PUA), as defined in Ministerial Decree 77/2022, is a designated place within local health system that facilitates access to services for individuals with LTC needs.

In this context, it would be appropriate to encourage the involvement of citizens in LTC policies, for example, through aggregation in associations or Third Sector organizations together with volunteers, to enhance the experiential knowledge of users and promote an approach of co-construction of LTC policies. Indeed, an adequate policy should include creating tools, services, and platforms to coordinate initiatives and support local realities, focusing on common and transversal themes. Even less structured forms of participation, such as seminars or debates, could be equally valid.

It is also essential to promote the active participation of family members in care, providing them with adequate training and tools to understand the technical aspects of the care process and to promote effective collaboration with the professional team. The PAI[10] system needs to be more robust, better structured, and more collaborative. Regulatory reform is needed to foster greater integration between operators and family members, with the introduction of digital tools that allow family members to actively contribute to monitoring residents' physical, cognitive, and behavioural conditions. Furthermore, the introduction of parameters to measure respect for the dignity and individuality of the resident could represent a valuable tool for accrediting residential facilities.

Finally, the lack of common standards and the fragmentation in the distribution of regional health spending contribute to a crisis of underfunding services, with obvious repercussions on the care's quality processes. An emblematic example of this situation is the "minutes" model, which often hinders the valorisation of staff and weighs on workloads, generating stress and frustration. Moreover, the quality of the service is further compromised by the shortage of health and nursing staff, with the concrete risk of a professional exodus fuelled by demographic and socioeconomic factors. The wage inequalities between the public and private sectors, highlighted by the substantial public funding of the PNRR following the pandemic and the failure to review national collective agreements (CCNL), have favoured the massive movement of staff from the private to the public sector. Finally, migration policies need to be sufficiently oriented to meet the demand for qualified personnel, with the consequence that Italy receives only a limited number of OSS operators from abroad, well below the national need.

5.2 Policy Recommendations

5.2.1 Planning and sustainability of Long-Term Care services: proposals for an Integrated and Accessible Welfare System

Planning is a crucial element of welfare systems. In the LTC sector, it is essential to recognize and enhance the role of territorial private social actors as nodes for strengthening the care chain. In this context, it is necessary to overcome the dichotomy between home care and residential care, focusing instead on CRMs that, at the centre of an integrated network, respond comprehensively to the needs of fragile people, respecting their desires and needs.

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[10] In the Italian healthcare system, the Individualized Care Plan (Piano Assistenziale Individualizzato – PAI) serves as a comprehensive document that gathers and presents information from a multidisciplinary perspective about individuals in need of care. It is designed to formulate and implement a project aimed at promoting the highest attainable levels of health and well-being for the patient.

It is necessary to invest in integrated residential, semi-residential, and home services, starting from RSA facilities, which are already adequate in terms of organization but are called upon to respond to a growing demand for new services. In this direction, it is desirable to implement the changes provided for by Legislative Decree 29/2024 ("Provisions on policies in favour of older people"), which provides for the homogenization of the names of services on the territory, favouring the rebalancing of the LTC offer between the different Italian Regions. The valorisation of local experiments (open RSAs, service centres, etc.) can serve as a basis for formulating guidelines at the State-Regions Conference to implement the legislation starting from the most advanced experiences at the local level.

In this context, defining a clear identity for residential services is crucial. They must be effective CRMs, including home, semi-residential, rehabilitation, residential, and other hubs, with specific qualitative and professional requirements and standards. Furthermore, the diversification of the offer - which includes autonomous subjects and those with LTC needs, residential and day care centres, intermediate care, and open RSAs - requires the possibility of sharing staff between the diverse services, with full respect to workers' rights.

The qualification of services[11] must also include integrating digital technologies in assistance, with the introduction of tools such as telemedicine, electronic health records, and electronic folders. To this end, it is necessary to establish, in collaboration with AGID (Agency for Digital Italy), minimum technological standards, with particular attention to the certified interoperability of systems, to stimulate innovation in the sector.

5.2.2 Management sustainability of social and health services

The management sustainability of social and health services, especially residential ones, is one of the main challenges for the Italian welfare system. To guarantee the right to LTC social and health services in the LEA (Essential Levels of Assistance), the recognition of adequate public funding, which is correlated to inflation, employment contracts, and the cost of energy and materials, is essential. In particular, the following actions are proposed:

• Annual adjustment of the healthcare quota based on planned inflation.

• Adjustment of contractual increases for healthcare personnel.

• Freedom for managers to define the social quota.

• Increase in the regional allocation of authorized and accredited beds.

• Creation of a supply chain contract, with compensatory modulation of the budget at the end of the year, which guarantees greater flexibility in managing the diverse services.

• Promotion of consortia for purchases between small residential facilities to obtain economies of scale and attention to energy savings during the renovation or construction of new facilities.

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[11] D.lgs.29/2024 - Art. 31 c.7,8 «... d) the endowment by the facility of technological solutions aimed at guaranteeing the safety of the care work and of the persons accommodated, including ... video surveillance systems ... as well as assistive technology solutions aimed at favouring the provision of telemedicine, television, teleconsultation and telemonitoring healthcare services ...».

5.2.3 Sustainability of social and healthcare services for families

The progressive impoverishment of families with patients with LTC needs limits their ability to provide care. To address this challenge, it is necessary to strengthen the current INPS (National Social Security Institute) benefit, adjust and increase the amount of the accompanying allowance, and possibly introduce a graduated system. Resources for this measure could be redirected from the private insurance corporate welfare system, which often diverts contributions from the Public Health Service.

5.2.4 Staff Qualification and Renewal of the CCNL (National Collective Labour Agreement)

The lack of staff represents a significant obstacle for the LTC sector. The renewal of the CCNL is essential, particularly for professional care figures. Migration policies should be oriented to facilitate the entry of social-health professionals from other countries, with particular attention to the recognition of professional qualifications. At the same time, long-term planning must include the adoption of strategies for the adjustment of personnel policies. Among the main recommendations are the following:

• Adoption of technologies to reduce the workload of staff.

• Awareness campaigns to promote the social-health profession.

• Create innovative training paths[12] for social-health workers through regional OSS courses that combine training and work in the public and private sectors.

• Incentives for the return of early retired nurses and those who emigrated, as well as for entry into nursing degree courses, with discounts on university fees and paid internships.

• Enhancement of operators through multi-professional teamwork, which also involves administrators, caregivers, and volunteers in defining and updating the Industrial Plans.

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[12] D.lgs.29/2024 - Art. 38 c.1 «... and in order to contribute to the definition of training courses suitable for the performance of professional activities in the field of the care and assistance of older people with LTC needs in the services of the territory, at home, in integrated semi-residential centres and in residential centres, ..., adopt ... guidelines for the definition of homogeneous modalities for the implementation of training courses, to which the regions may refer, within the sphere of their autonomy, for the achievement of uniform training standards throughout the national territory, aimed at improving, also through graduation on the basis of needs, and rendering homogeneous the training offer for the care professions...».

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6. THE DETERMINANTS OF HEALTH EXPENDITURE: A MACHINE LEARNING APPROACH (Nicola Caravaggio, Giuliano Resce, and Idola Francesca Spanò, Department of Economics, University of Molise, Campobasso, Italy)[13]

6.1 Introduction

Forecasting healthcare expenditure is important for informing decision-making and shaping policies, financial strategies and resource administration within the healthcare sector. Accurate predictions play an integral role in National Health Systems (NHS) by aiding fund allocation at regional levels, ensuring equitable access to healthcare services regardless of geographical location. Significant research has focused on identifying determinants of healthcare expenditure in various economies, employing standard econometric models starting from the Seventies. However, traditional statistical and econometric tools, though widely used for estimation and prediction, may not suit policy targeting.

Recent debates in economic literature suggest that predictive inference holds more significance than retrospective correlations or causal inference for policy challenges like allocating public expenditure based on healthcare needs (Kleinberg, Ludwig, Mullainathan, & Obermeyer, 2015). Consequently, Machine Learning (ML) techniques have gained traction in addressing predictive policy problems, showcasing potential in poverty targeting and assessing public program effectiveness (Varian, 2016).

Within health-related topics, ML implementations have been tailored to forecast emergency department occupancy and waiting times or COVID-19 fatalities. Our work fits into this line of research, introducing a ML model to predict healthcare spending and offering a tool to allocate national health funds according to regional needs (Caravaggio & Resce, 2023). This study leverages administrative data provided by the National Institute of Statistics (Istat, 2023) through the Health for All (HFA) tool to predict per capita healthcare expenditure. This source represents a database of indicators on the Italian healthcare system and on population health. Currently, the database contains 4,000 indicators disaggregated at the regional level and this is the stratification level at which we conducted our analysis.

Through a detailed review of the literature on the determinants of health expenditure, we identified four groups of factors (*income-related, population aging, technological progress, other determinants*) and finally selected 36 variables for our study, which covers the period from 1994 to 2019.

It's worth noting that Italy is among the Western countries that have significantly reduced healthcare expenditure by reorganizing its hospital system. Moreover, Italian regions present a large heterogeneity in per capita health expenditure, partly due to the persistent socioeconomic dualism between the Northern and Southern regions of the country. In addition, over the last twenty years, the country has experienced a considerable decentralization of the health sector, the impact of which can be effectively analyzed through the evolution of per capita health expenditure in the different geographical areas.

6.2 Main results

We implement four ML algorithms (Elastic Net, Random Forest, Gradient Boosting Machines, and Support Vector) and a multivariate regression for comparison. The Gradient Boosting Machine has been identified as the best predictive algorithm. Among the most predictive features identified are time, technological progress in health care (embodied by the number of magnetic resonance tomographs, among the most advanced and expensive equipment), household size, public expenditure share, GDP per capita, and the proportion of the population aged 75 and above. By relying on a partial dependence plot (PDP), we observe a strictly positive relationship between the time component and total healthcare expenditure, meaning that over time the expenditure has grown, expeditiously in the early years, slower around 2005, and becoming flat after 2010. In line with the literature that identifies technological progress as a key factor in healthcare expenditure, a positive relationship emerges with the number of magnetic resonance tomographs per 1.000 inhabitants. The average family size exerts a negative effect on health expenditure, in accordance with previous studies showing that, as family size increases, resources are distributed more sparingly. As expected, we observe a positive role of GDP per capita, in line with the general literature and specific Italian studies. Finally, the share of the population aged 75 or over depicts a positive relationship with total healthcare expenditure. This result is consistent with the reference literature which identifies the older population—as a share of the total population—as a key driver of healthcare expenditure.

We further tested the predictive performance of our models by training them on data over the period 1994–2018 and testing over 2019 data. Again, our model was able to effectively predict healthcare spending, with GBM identified as the best algorithm. The final part of the study concentrates on assessing healthcare needs at the municipal level. While we aimed to replicate the regional analysis, we encountered limitations in accessing detailed information on technological progress at this level. The variables included in the municipal analysis reflect the demographic, geographic, and socioeconomic characteristics of Italian municipalities. This analysis was conducted for the year 2019 and involved 25 variables for each municipality. Consistent with the previous analysis, the Gradient Boosting Machine emerged as the most predictive algorithm.

Figure 1: *Municipalities Health Needs* (2019)
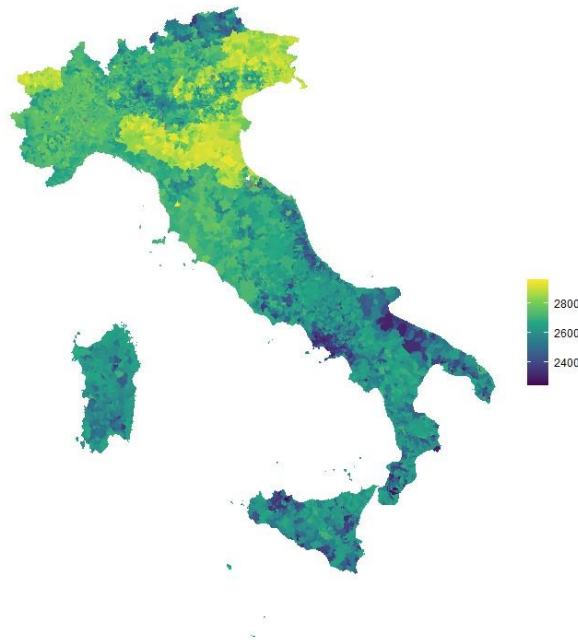
Municipal predictions in Figure 1 show a strong heterogeneity, that can be useful in planning the supply of health services and related services such as transport. For example, it emerges that the need in internal areas is much higher than the need in urban centers. As an additional step, we have estimated a projection of health spending needs for 2050 in the Italian Regions based on demographic projections. On this indicator, results show a differentiated picture. Preliminary findings indicate that certain regions, particularly Calabria and Campania, could face a healthcare demand by 2050 that is over 30% higher than current levels, solely due to population aging.

6.3 Implications

The findings of this study have significant implications for healthcare policy and resource allocation in Italy. By employing advanced Machine Learning models, specifically Gradient Boosting Machines, policymakers can achieve more accurate forecasts of regional healthcare expenditure compared to traditional econometric methods. This enhanced predictive capability enables a more efficient and equitable distribution of national health funds, aligning resources with the specific needs of each region.

The identification of key determinants—such as technological progress, GDP per capita, average household size, and the proportion of the older population—provides valuable insights for targeted policy interventions. For instance, recognizing the impact of an aging population on healthcare costs underscores the urgency for strategies that address the needs of older adults, including preventive care and chronic disease management.

Moreover, the revealed regional disparities highlight the necessity to reassess current funding mechanisms. Given the heterogeneity in healthcare needs and economic conditions across regions,

relying solely on regional resources may not be sustainable or just. Policymakers must consider whether the existing institutional and financial structures can support the increasing demands, especially in the context of a shrinking working-age population that funds the healthcare system.

Implementing the study's insights can lead to a more resilient and responsive healthcare system, better equipped to manage future challenges posed by demographic shifts and technological advancements.

6.4 Recommendations

In light of the evidence illustrate above, it is possible to formulate the following set of recommendations:

1. Integrate Machine Learning into Healthcare Forecasting:

   - The Italian National Health System (NHS) can incorporate Machine Learning models into their forecasting processes to enhance the accuracy of healthcare expenditure predictions;

   - Invest in training programs for policymakers and healthcare analysts to develop skills in ML and data analytics, ensuring effective implementation and interpretation of these models;

   - Establish partnerships with academic institutions and tech companies specializing in ML to continuously improve predictive models and stay updated with technological advancements;

2. Enhance Data Collection and Accessibility:

   - Improve the collection of high-quality, detailed data at regional and municipal levels, including demographic, socioeconomic, and technological variables that significantly impact healthcare costs;

   - Develop centralized databases that facilitate the sharing and integration of data across regions, ensuring that ML models have access to comprehensive and up-to-date information;

   - Implement protocols for the frequent updating of data to reflect current trends and changes, enhancing the responsiveness of predictive models;

3. Address Regional Disparities in Healthcare Funding:

   - Use insights from ML models to adjust the distribution of national health funds, ensuring that regions with higher projected healthcare needs receive adequate resources;

   - Reevaluate funding mechanisms that rely heavily on regional resources, considering a more centralized approach to reduce disparities caused by socioeconomic dualism between Northern and Southern regions;

   - Develop region-specific strategies that address unique healthcare challenges, such as higher aging populations or lower GDP per capita, to improve overall health outcomes;

4. Prepare for Demographic Changes:

- Formulate long-term strategies to manage the increasing healthcare demands of an aging population, including expanding geriatric services and investing in preventive care;
- Invest in training healthcare professionals specialized in elder care and chronic disease management to meet future service demands;
- Encourage initiatives that support healthy aging at the community level, reducing the burden on healthcare facilities;

5. Reassess Funding Structures:

- Investigate sustainable financing options to support rising healthcare costs, such as public-private partnerships or innovative taxation policies that do not overburden the working-age population;
- Implement measures to reduce wasteful spending, such as optimizing administrative processes and adopting best practices in healthcare management.

By implementing these recommendations, Italy can significantly enhance the effectiveness of its healthcare system, ensuring that resources are allocated efficiently and equitably in light of the aging population. Embracing Machine Learning for expenditure forecasting will empower policymakers to make informed decisions that address both current challenges and future demands. This proactive approach will ultimately lead to improved health outcomes across all regions, fostering a more resilient and responsive healthcare system capable of adapting to demographic shifts and technological advancements.

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7. CONCLUSIONS (Giovanni Lamura and Rebecca Graziosi, INRCA IRCCS)

The recommendations delivered in this policy brief can be considered as a contribution to the ongoing international debate on how to enhance the social, economic and environmental sustainability of elder care provision (EC-SPC, 2021). Population ageing represents a crucial phenomenon in our country, which is characterised by deep inequalities in the availability of services and supports, especially from a geographical point of view (Arlotti, 2024). Hence, the necessity to provide recommendations is not limited to the national level, but can and should include also the regional and, wherever available data allow it, the municipal dimension.

On this background, the first contribution by Albertini and colleagues in Section 2 includes recommendations on how to best support financially informal caregiving, bolster policies concerning work-care reconciliation, improve respite care services and access to training, support and counselling. These policy measures are proposed in light of the increasing importance of informal caregivers assisting older people with long-term care needs. The contribution stresses that in Europe informal caregiving does not receive sufficient support, with the exception of some virtuous countries. Just to mention some of the challenges identified in this part of the policy brief, European countries still struggle to coordinate formal and informal care, while the latter is scarcely recognized – also in its risks for caregivers' mental and physical health – and insufficiently funded.

Ugolini's and Giachello's contribution in Section 3 discusses data collection and new indicators to improve the evaluation of territorial care, signalling the necessity to develop a standardised assessment at a national level. The authors underline that assessing the care quality in a territorial context can be more difficult than in hospital environments, especially when the focus of the analysis is the care of people with disability or chronic conditions, like often is the case with older adults. Therefore, it is important to ensure a proper data collection data at the meso and micro levels and the selection of adequate indicators.

In Section 4 Tiso and Verbano suggest employing a performance measurement system in Lean and Safety Management projects in the context of territorial ambulatory healthcare. As discussed, the methodology proposed here consents to reduce the limitations that may be associated with this area, improving the quality of care and fostering transformations within the organizational context. The authors highlight the complexity of territorial services and the difficulty to observe it through performance indicators. The contribution provides measures and indicators drawn from currently available literature in order to face the limitations identified there.

Ganugi and colleagues in Section 5 discuss the findings of a qualitative study on residential care facilities in Central and Northern Italy. They propose to adopt the model of a Multiservice Residential Center, conceived as a strategic hub for an integrated service network and means of innovation, in order to support the care of older people and assist those with chronic illnesses within the community.

Considering the Italian context, this contribution highlights the need to assure the quality of services through minimum standards at a national level and the simplification of the assessment processes. Moreover, a participatory approach may enable long-term care policies to be built conjunctly with civil society's actors like associations, volunteers and citizens, including the involvement of families to ameliorate the collaboration with care staff. Among the recommendations, a series of actions are proposed with the aim of ensuring the sustainability of social and health services, including the need to increase resources for underfunded services, and measures to tackle staff shortages.

Last but not least, the contribution by Caravaggio and colleagues in Section 6 on healthcare spending forecasts formulate recommendations emerging from a study employing an innovative approach based on Machine Learning models, aiming at improving resources allocation, reinforcing effectiveness of healthcare provision and informing policymakers' decision-making processes. The integration of Machine Learning into healthcare forecasting can foster data collection and accessibility to variables impacting healthcare spending, help better face regional disparities in financial resources, improve planning considering future demographic transformations, and rethink funding structures to ensure an overall increase in system sustainability.

The recommendations presented here recognize the challenge of an ageing society and address the growing necessity to reorganize our care systems to better tackle the impact of this phenomenon. This has been a longstanding worry also at the European level (European Commission and the Social Protection Committee, 2014), which has prompted recent, more systematic efforts like for instance the European Care Strategy (European Commission, 2022) to improve the response to the growing demand for LTC, shortages in the care workforce and of informal caregivers, and their repercussions, together with the increasing care demand, on the quality of services provided and on government expenditure. While these recommendations certainly cannot address all facets that these developments imply, they do provide well focused suggestions on how to better deal with most of them, and will hopefully find attentive listeners among policymakers and other key stakeholders engaged in the long-term care of frail older people.

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