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Conference proceedings

ECONOMICS SECTION

Session Title

AIES and European Commission's Competence Centre on Microeconomic Evaluation (CC-ME) Joint Session on Policy Evaluation and Counterfactual Analysis in the Healthcare Sector

Content of the session

The European Commission's Competence Centre on Microeconomic Evaluation (CC-ME) was founded on May 19, 2016 to support the evaluation function in the European Commission. CC-ME is part of Unit JRC.S3 "Science for Modelling, Monitoring and Evaluations". Our group work on evaluations of current or past health policies and empirical analyses which shed light on important health policy issues.

Title

Online health information seeking behavior, healthcare access and health status during exceptional times

Author

Cinzia Di Novi, Matija Kovacic, Cristina Elisa Orso

Abstract

Online health information seeking behavior is becoming increasingly common and its trend accelerated as a result of the COVID-19 pandemic when individuals strongly relied on the Internet to stay informed being exposed to a wider array of health information. Despite e-HISB has become a global trend, only a few empirical investigations on how it may affect healthcare access and individuals' health exist. In this paper, we tried to fill this gap. To assess both the potential merits and shortcomings of seeking health information online and how doing so may affect individuals' healthcare access and health status, we used data collected in the second SHARE Corona Survey supplemented with data from the previous 8th wave of SHARE. We constructed a joint model of e-HISB, healthcare access and individuals' health status that considers an individual's unobserved characteristics that are likely to be correlated with health information seeking, individuals' health status and healthcare utilization.

Title

Do drinking occasion characteristics differ across individuals using different moderation strategies? A social practice approach

Author

Karen Schelleman-Offermans, Alessandro Sasso, Matt Field, Mónica Hernández Alava, Petra Meier, John Holmes

Abstract

Background: Limiting alcohol consumption can be challenging in cultures in which alcohol use is highly embedded in its social contexts. Recently, it has been shown that individuals may use different strategies to moderate alcohol over time (based on pre-commitment, self control, or a combinations of strategies) which are linked to different levels of alcohol consumption.

Aim: Drawing from social practice theory, we attempt to further understand the link between moderation strategies and alcohol consumption by: (i) investigating whether drinking occasion characteristics differ between people trying to moderate their drinking and those who are not; (ii) investigating whether drinking occasion characteristics vary across drinking moderation strategies.

Method: We use a large British cross-sectional survey collected by the market research company Kantar. A retrospective diary report measured detailed information on all drinking occasions characteristics in the previous week and how participants attempted to moderate alcohol use. Given the multi-level structure of the data, we use random-intercept models to test for the difference in the probability of reporting each occasion characteristic across individuals using different moderation strategies that resulted from Sasso et al. (2022).

Findings: Occasion characteristics of drinkers attempting to moderate drinking do not differ substantially from those not attempting to. Drinking occasion characteristics do show heterogeneity – mainly in respect to the social context, beverage type, and other accompanied activities - among drinkers who adopt different moderation strategies. People using self control strategies (i.e., reducing the average consumption per occasion) consume alcohol more often in

a sociable context and they more often routinize their drinking practice with simultaneously consuming a meal, as compared to people using other types of strategies.

Title

Does the time spent in retirement improve health? An IV-Poisson assessment on the incidence of cardiovascular diseases

Author

Dario Fontana, Chiara Ardito, Angelo d'Errico, Roberto Leombruni and Elena Strippoli

Abstract

Life expectancy has been on the rise since the beginning of the XX century due to medical progress and improvement of living standards. However, the combination of longevity gains, lower fertility, and a tendency toward early retirement during the '80s and '90s has caused serious financial pressures on welfare systems (Gruber and Wise, 2007). Therefore, reforms of pension systems have been put at the core of political agenda in most European countries during the nineties, and interventions have started restricting or eliminating possibilities for early labour-market exit and increasing the age at which people become eligible for normal and early pension claiming. Normal pension age is now set at 67 years in most European countries and further increases are expected, especially in the countries that have introduced automatic adjustment mechanisms linking eligibility pension age to changes in life expectancy, meaning that retirement age in these countries will soon grow well beyond age 67 (OECD, 2019).

In this context of major transformations, it is of concern that the increase in retirement age may protract the exposure to adverse working conditions, in particular to workplace physical and psychosocial hazards, which may deteriorate health or push more vulnerable workers out of the labour market via other social welfare programmes (i.e., long term sick leaves, disability pensions, unemployment). Literature assessing the labour market effects of pension reforms has pointed out how relevant and unevenly distributed are program substitution and spillover effects onto other welfare programs (Hanel and Riphahn, 2012; Ardito 2020; Soosaar et al., 2021). Since the desired outcome of such reforms is indeed not only a reduction in pensions'

expenditures, but also the rise in the participation rates at older ages and the extension of working life, the target of having a healthy and productive workforce is fundamental.

The existing evidence on the relationship between retirement and health has so far provided mixed results, as recently shown by meta-analyses that have been conducted on the effect of retirement on depressive disorders (Odone et al. 2021), cardiovascular health (Xue et al., 2020) and in general on health (Filomena and Picchio, 2021), investigating a broad set of indicators.

The inconsistencies may be attributable to differences in research design, as well as in the definition of the exposure and the outcome variables. Prominently, previous studies on the topic are largely constrained by methodological issues associated with the endogeneity of retirement with respect to health, including the potential reverse causality mechanism. In fact, health problems before retirement may influence both the likelihood to retire and the risk of health outcomes after retirement, with the consequence of an underestimation of the true association between retirement and post-retirement health (Han, 2021). Although several recent studies on the topic adopt identification strategies that aim to account for endogeneity bias at least partially, findings from these studies also remain rather equivocal (Fisher et al., 2016; Nishimura et al., 2018, Filomena and Picchio 2021). In the most recent meta-analysis, Filomena and Picchio (2021) show that the majority of the studies included (59%) found no statistically significant effect, while 28% found that retirement improved health and the remaining 13% found that retirement was harmful for health. These studies however employ different health outcomes (mental health, physical health, health care utilization, mortality, cognitive abilities, etc.) which could be problematic, since retirement may differently interfere with different health dimensions. For example, quite well-established is the positive effect of retirement on subjective well-being and mental health (Charles 2004; van der Heide et al., 2013; Johnston and Lee, 2009; Belloni et al. 2016; Kolodziej and García-Gómez 2019), supported also by a meta-analysis exclusively focusing on depression (Odone et al. 2021). In contrast, cognitive abilities are generally found to be negatively affected by retirement, after which deterioration of cognitive abilities seems to accelerate (Bonsang 2012; Mazzonna and Peracchi 2012, 2017; Celidoni et al. 2017). Finally, it appears still equivocal what the effect of retirement on mortality and morbidity is, even restricting the attention only to studies adopting

an explicit causal design, as both null (Hernaes et al., 2013; Hagen, 2018; Bozio et al., 2021), beneficial (Ardito et al. 2020; Hallberg et al., 2015), and detrimental effects (Kuhn et al., 2020; Benchke 2012) have been reported. An additional source of inconsistency may be linked to retirement characteristics, as involuntary retirement has shown a more negative impact on subsequent health than voluntary retirement (Dave et al., 2008; Van Solinge et al., 2007). Last, an important source of heterogeneity of the results in the literature may be due to country differences in national legislation on retirement, which may differ in statutory pension age, access to early retirement and several other characteristics potentially influencing workers' decision to retire, such as amount of pension contribution required to retire, replacement rate of the pension income, and possibility of accessing other welfare programs, including disability pension, unemployment, long-term sick leaves (Hasselhorn and Apt, 2015).

This paper investigates the causal effects of retirement on cardiovascular health, exploiting the variability in retirement timing existing between cohorts, induced by pension reforms that raised normal and early pension age. For this purpose, we have analyzed the case of Italy, exploiting a longitudinal dataset with record linkage to official administrative hospitalization records and death registries, with a rich set of information on baseline socio-economic conditions, health, and behavioral risk factors. Endogeneity of retirement is considered by adopting an instrumental variable approach, embedded into a Poisson GMM model. The health outcomes that we have considered in this paper are cardiovascular diseases (CVD), which represent the first cause of death and hospitalization in Italy (after childbirth), as well as worldwide (WHO, 2020). Moreover, CVD are among the most relevant health outcomes to be ascertained in relation to retirement and to reforms aimed at postponing it. In fact, physically and psychologically demanding working conditions, acting through behavioral and pathophysiological processes underlying CVD disease, have been widely recognized to be associated to development and increased risk of CVD (Marmot et al. 1997; Brunner 1997; Brunner et al. 2006; Perk et a. 2012; Holtermann et al., 2021).

Our paper contributes to the body of knowledge on this topic by exploring the effects of retirement on CVD, as the available evidence on this relationship appears still inconclusive (Xue et al. 2019), despite the fact that CVD being among the diseases causing highest burden on the

health care and welfare system. We add to previous literature also in terms of methods, by adopting an IV-Poisson empirical strategy which allows us to combine the strengths of methods used conventionally in different disciplines. While economic papers generally tend to address their empirical efforts to solve endogeneity issues related to retirement choice by using counterfactual quasi-experimental methods, they often disregard the intrinsic nature of the dependent variable, i.e. dichotomous or time-to-event, or its strong age and time profile, by adopting linear models. On the other hand, epidemiological studies, despite using duration models which are more appropriate to model occurrence of diseases and can take into account simultaneously both aging over time and increasing time spent in retirement, they tend to disregard the issue of endogeneity. We take the best from and combine these two approaches by using an IV-Poisson GMM regression model. This allowed us to model the risk of developing CVD over time comparing individuals with different time spent in retirement, considering also their aging over time within an instrumental variable setting that exploits only differences in the retirement behavior induced by exogenous changes in pension regulations. Eventually, we investigate potential effects of retirement on health beyond the mean. In particular, effect modifications were assessed by education, physical health and occupational social class at baseline.

We find that, on average, retirement has a positive effect on CVD incidence among both men and women. The analysis reveals that gains from retirement are broadly equally distributed across socio-economic strata, even though it emerges weak statistical evidence suggesting that the protective effect on time spent in retirement might be higher for those in manual occupations and with lower education, especially for women.

Title

To Stay or to Go: A Comparison of Informal and Formal Care Options for Elderly with Long-Term Care Needs

Author

H.M. Hernández-Pizarro, G. López-Casanova, C. Nicodemo, M. Serrano-Alarcón

Abstract

This paper examines the healthcare outcomes of formal and informal care for elderly individuals who require assistance with daily living activities. The study uses administrative data from 2009 to 2014 to compare the effectiveness of different care options in terms of hospitalization rates. The findings reveal that individuals with similar long-term care needs have similar hospitalization rates, regardless of the care option they choose. Yet, three years after receiving care institutional care reduces the probability of hospitalization with respect to home-based care. This effect is driven by emergency hospitalization, as no significant difference are found in scheduled hospitalization across care options. The study emphasizes the importance of balancing the need for formal care with the benefits and challenges of informal care, recognizing that care-based at home is an integral part of the care landscape for older adults. The insights provided by this research can inform policy and decision-making in healthcare, improving quality of life and reducing unnecessary use of healthcare resources.

Session Title

How genome and exposome data can open new frontiers for health econometrics

Content of the session

Health inequality begins at conception and develops over the life cycle through shocks, exposures, parenting choices, and own behaviors. Over the past two decades, the life-course approach (Ben-Shlomo and Kuh 2002) and the exposome concept (Wild 2005) have been established as pivotal paradigms for comprehending human health and the progression of diseases. These frameworks underscore the significance of early life exposures and the cumulative impact of these exposures on health throughout an individual's lifespan (Ben-Shlomo and Kuh 2002; Dagnelie, De Luca, and Maystadt 2018). Both paradigms aim to resolve the long-standing "Nature vs. Nurture" debate by acknowledging the intricate interplay between genetic factors and environmental influences in shaping individual traits and behaviors (Robinson, 2004).

The health status of an individual is shaped by a combination of genetic predispositions (nature) and exposure to modifiable factors (nurture). These factors include the natural and physical environment (such as air pollution and access to healthcare services), risky behaviors (like excessive alcohol consumption, smoking, and physical inactivity), personal characteristics (such as occupation and income levels), and social factors (like isolation and loss of loved ones). Aging, therefore, is influenced not only by biological changes but also by the cumulative effects of external risks encountered throughout a person's life (Fontana et al. 2014; Bertozzi, Tosti, and Fontana 2017). Moreover, exogenous environmental shocks can influence gene expression in the general population but even in genetically identical twins (Chakravarti and Little, 2003). These factors significantly contribute to the health disparities observed among older adults, often reflecting the accumulation of disadvantages.

Despite this, most of the healthcare expenditure and research is primarily focused on treating diseases post-onset and identifying new pharmaceutical targets, with minimal investment in prevention across the scientific, medical, or educational sectors. A critical shift towards a healthcare system that encompasses personalized and preventive care is necessary. This shift could help mitigate societal inequalities and achieve financially sustainable universal

healthcare coverage. Given the ongoing demographic and health transformations, it is crucial to proactively develop comprehensive solutions encompassing prevention, treatment, education, and health promotion.

By exploring the interactions between specific exposures at different time points and their impact on an individual's health outcomes, researchers can formulate more effective prevention and intervention strategies. To maximize the potential of these approaches for improving public health, it is crucial to encourage multidisciplinary collaborations. An integrated framework that amalgamates data on genetic susceptibility, environmental exposures throughout life, and health outcomes will enable researchers to identify critical periods of vulnerability and gain a deeper understanding of exposomic effects (Miller and Jones 2014). This could involve investigating how lifetime environmental exposures intersect with specific developmental phases or time points identified by the life-course approach.

This session will introduce the concepts of the genome, epigenome, and exposome, elucidate their interconnections, and discuss their implications for economists and policymakers in devising policy-relevant interventions for sustainable healthcare systems. We will present cutting-edge quantitative techniques used to examine complex relationships between environmental factors, individual behavior, and health outcomes throughout a person's life. Incorporating these methods into policy analysis enhances our understanding of the intricate relationships within healthcare systems, enabling stakeholders to implement policies that lead to long-term improvements in population health, better resource allocation, and evidence-based interventions.

Ttile

The Economics and Econometrics of Gene-Environment Interplay

Author

Pietro Biroli, Titus J. Galama, Stephanie von Hinke, Hans van Kippersluis, Cornelius A. Rietveld, Kevin Thom

Title

Gene-Environment Effects on Female Fertility

Author

Elisabetta De Cao, Nicola Barban and Marco Francesconi

Title

Unboxing the ‘life-course’ model black box: the role of genetics, epigenetics and exposomics

Author

Vincenzo Atella, Andrea Piano Mortari

Title

Fossil-Fuel Traffic Abatement and NO2 Urban Pollution: What Covid-19 Lockdown Predicts about the Benefits of the EU Zero Emission Vehicles Resolution

Author

Daniele Bondonio, Paolo Chirico, Massimiliano Piacenza, Simone Robbiano

Abstract

It is common knowledge that human health and ecosystems are harmed by air pollution. According to the European Environment Agency, a considerable amount of Europe's population does not live in a healthy environment but, on the contrary, in urban areas where air quality regulations are often violated. In particular, over the past decades several European regions have surpassed one or more of their emission limits for major air pollutants, i.e. ozone (O3), nitrogen dioxide (NO2), and particulate matter (PM) pollution, leading to major health concerns. Indeed, air pollution endangers public health in both the short and long term, including eye, nose, and throat discomfort, as well as upper respiratory diseases such as bronchitis and pneumonia; long-term health consequences may include chronic respiratory illness, lung cancer, heart disease, and even brain, nerve, liver, or kidney damage. These undesired effects caused by air pollution can necessitate costly medical treatments, resulting in high health-care expenditures, reduced productivity at work, and social welfare implications, costing millions of euro each year.

In this paper we investigate what may be the predicted impact of the "Fit For 55" resolution, particularly the zero-emission mobility objectives, in terms of benefits on nitrogen dioxide, (NO2) urban air pollution on one of the largest most polluted region of Europe. This is the Po-river valley in Northern Italy, which encompasses some of the most industrialized and densely-populated regions of Europe, with a total population of about 14.8 million residents, an average density of 252 inhabitants per square kilometre, and a systemic lack of sustained ventilation due to its specific orographic features (the area is almost entirely surrounded by mountain ranges) that contribute to high levels of air-pollution (Coker et al. 2020).

Our causal-inference analysis on the NO2 impact of Italian Covid-19 lockdown, is implemented by means of a novel intertemporal statistical matching (SM) approach developed with propensity score (PS) and Malhalanobis distance (MAHD) specifications.

The main empirical findings from our analysis show that the Covid-19 lockdown policy resulted in a significant drop in daily average NO2 levels, between -50.9% and -55.4%, from a baseline average value of about 25.5 μg/m3. These results are robust to a number of sensitivity analyses and provide empirical support to the prediction that a significant reduction in local NO2 pollution is indeed likely to be achieved in areas with low air-quality standards from future policies aimed at reducing fossil-fuel vehicular traffic, such as the EU 2035 zero emission resolution.

Title

The impact of digital technology on hospital efficiency and performance: Current research knowledge

Author

Adriana Castelli, Giorgia Marini

Abstract

Background. The COVID-19 pandemic has seen a massive acceleration of the digitization of healthcare delivery across the whole spectrum of care delivery. However, the digitalization of healthcare delivery is not a new objective in many health systems. In fact, many health systems have increasingly considered the digitalisation of healthcare delivery as a mean to remain (financially) sustainable and achieve and deliver high(er) quality care.

Aim and objective. The aim of the paper is to investigate the role played by the adoption of digital technologies on hospital sector efficiency/productivity, as well as wider performance measures, while the objectives are: (1) to define and explain what is commonly understood as digital technology in healthcare; (2) to review the literature on the impact of digital technology on hospital sector efficiency, productivity, and in addition performance and cost minimisation.

Methodology. We developed a search strategy on EconLit & MEDLINE from 2015 to 2023 with input from an Information Scientist from the Centre of Reviews and Dissemination (University of York). We compiled a list of terms and Medical Subject Headings (MeSH) synonyms and grouped them under the following key concepts of interest: Digital technologies AND (Efficiency OR Productivity OR Performance OR Cost Minimisation) AND Hospital OR Secondary Care. In particular, we followed two search strategies: a narrow search strategy focussing only on the terms 'efficiency' and 'productivity' and a wide strategy, including also the terms 'performance' and 'cost minimisation', in addition to the first two terms. We choose the narrow strategy for MEDLINE (reviews only) and end up with 380 hits and the wider search strategy for EconLit and end up with 180 hits. We then screened titles and abstracts for relevance after removing duplicates. Studies were included if both reviewers reached a consensus. Any disagreements were discussed by the two reviewers first and then a consensus was reached. Full texts of publications were then retrieved and read independently by the same

two reviewers. Additionally, we screened the references of included studies and relevant reviews for other potential articles. We followed the following inclusion criteria for studies/reviews: hospital sector only; mentioning cost curbing/minimisation/elimination of waste/efficiency improvement/productivity in either the title and/or abstract; mentioning digital technology/EHR/EMR/eHealth/Telehealth/Telemedicine/AI/Internet of Health Things (IoHT)/etc in either the title and/or abstract. While as exclusion criteria for studies/reviews we adopt the following: Disease specific digital technologies; Studies focussing on the economic evaluation of digital technologies and/or other terms mentioned above; Cost-effectiveness studies of studies of digital technologies and/or other terms mentioned above; Health Technology Assessment studies. The final set of articles included for full text review: 16 articles (EconLit) and 36 articles (MEDLINE). We have developed a spreadsheet to summarize the key points of the included articles for review. The spreadsheet includes the paper's title, authors, journal, year of publication, as well as other relevant information to describe the main points of each paper.

Main (preliminary) results. Articles reviewed so far do not find short-term effects on any of the postulated benefits of DT adoption in health care: when initial costs on DT adoption are very high, then ROI is medium/long term and variable; results in terms of patient outcomes (not focus on our review) are heterogeneous. The non-clearcut effects may be due to the following issues: Patient safety, i.e. risk that errors may be introduced (Bronsoler A. et al., 2021); Patient privacy - e.g. when privacy laws are restrictive and interoperability benefits are undermined, hospitals have less incentive to adopt EHR (Bronsoler A. et al., 2021); Fragmentation - different systems run by competing healthcare firms (Bronsoler A. et al., 2021); Steep learning curve and Resistance to change and management - the barriers to increases in productivity from EMR use due to the administrative burdens of transitioning from paper to electronic records, physicians' resistance to change and imperfections in EMR design (Butler, R. J. and W. G. Johnson, 2016); Digitization (process of converting analogue information to a digital format) vs. digitalization (process of converting analogue processes to digital format); Lack of competition (very few EHR vendors) raises prices and thereby slows adoption

of EHR, limiting interoperability between different EHR systems ("information blocking") and thus reducing benefits of adoption because of reduced connectivity (Bronsoler A. et al., 2021).

Title

Willingness to pay for remote monitoring and patient self-measurement in the context of gestational hypertensive disorders

Author

Marie-Lien Gerits, Samantha Bielen, Dorien Lanssens

Abstract

Background: Gestational hypertensive disorders (GHD) persist as a prominent factor in the occurrence of maternal and fetal morbidity worldwide. Therefore, women at risk of GHD require more intensive pregnancy follow-up compared to low risk pregnancies. However, despite this follow-up, healthcare providers still cannot monitor the pregnant woman's blood pressure when she is at home which is necessary to perform timely interventions to reduce the risk of serious complications. Remote monitoring (RM) of pregnant women at risk of GHD can solve this problem and there is evidence that it has important health-related advantages. An alternative to RM is patient self-measurement (PSM) meaning that women have to review their blood pressure themselves at home. Besides health-related advantages, RM and PSM could also generate other advantages (e.g. reduced travel time) that are important to be considered. This is possible by assessing the maximum willingness to pay (WTP) of women at risk of GHD for RM and PSM. To the best of our knowledge, no WTP study for RM or PSM of pregnant women (at risk of GHD) has yet been published. Furthermore, most WTP studies in healthcare involve participants who lack experience with the goods or services they are asked to value. As a result, their WTP does not reflect their informed preferences. In contrast, our study involved both patients with and without experience with the technologies they were asked to value. There is an ongoing discussion about the impact of experience on WTP, but the results are mixed.

Objectives: Our study aimed to estimate patients' WTP for RM and PSM for pregnant women at risk of GHD and to contribute to the ongoing discussion about the impact of experience on WTP.

Methodology: This WTP study is part of the Pregnancy Remote Monitoring (PREMOM) II study, a randomized controlled trial (RCT) conducted in five Flemish hospitals with two treatment groups (RM and PSM) and a control group (conventional care). Women allocated to the PSM or

RM group were asked to measure their blood pressure twice daily and register their body weight in an application once weekly. RM group data were sent automatically to the midwife for review. In contrast, women in the PSM group reviewed their blood pressure values themselves based on a manual with actions to take (e.g. calling the midwife) in case of deviating values. Both interventions started at inclusion (11-14 weeks of gestation) and ended six weeks after delivery. All participating women were asked to complete a contingent valuation (CV) survey between 11 and 20 weeks of gestation (baseline) and at six weeks postpartum (follow-up). In this survey, they were asked about their WTP for a RM and PSM program by combining a payment card with an open-ended question. Whereas the control group lacks experience with RM and PSM at both measurement points, the treatment groups have a short-term exposure to the assigned intervention at the time of the baseline survey and a long-term exposure at the follow-up measurement. To estimate the impact of experience on the WTP for RM and PSM, we ran linear probability models separately for each measurement point. When assessing the impact of experience on the WTP for RM (PSM), women who have experienced RM (PSM) had an exact experience, while women who have experienced PSM (RM) were considered to have a partial experience.

Main results: In total 199 women at risk of GHD completed our CV survey at both measurement points (response rate: 27.60%). They were, on average, willing to pay € 118 for RM at the baseline and € 122 at the follow-up measurement. For PSM, this was respectively € 77 and € 83. In comparison with a similar study assessing hypertensive patients' WTP for hypertension management equipment, the WTP amounts of our study were fairly high. A possible explanation is the existence of parental altruism. This study also contributed to the discussion about the impact of experience on WTP, by revealing that women with an exact or partial experience with RM exhibited a significantly higher WTP for this technology six weeks postpartum compared to the control group (5% s.l.). However, no such effect was found when women were between 11 and 20 weeks of gestation and had only a short-term exposure to RM. Moreover, we did not find an impact of experience with PSM on the corresponding WTP. Our findings suggest (1) that experience has only an impact on WTP after an experience with a technology that has lasted long enough to become familiar with it, and (2) that experience only affects the WTP for

technologies for which it is difficult to imagine the potential benefits without experiencing it, such as RM.

Title

The Unintended Effects of Medicaid Aging Waivers on Informal Caregiving

Author

Emma Zai, Yinan Liu

Abstract

As the population of the United States ages, the demand for long-term care (LTC) services will undoubtedly continue to rise.1 More than 50 percent of adults aged 65 and above are projected to need LTC at some point towards the end of their life (Kemper et al., 2005; Brown and Finkelstein, 2008; Houser et al., 2012; Favreault and Dey, 2015; Johnson, 2017; Mommaerts and Truskinovsky, 2020). Unfortunately, market-based formal care options are costly, making them unaffordable for many older adults (Mommaerts, 2018; Hado and Komisar, 2019), especially those with low income or those without private LTC insurance (Cohen, 2014; Johnson, 2016; Costa-Font et al., 2019). Hence, many older Americans rely on Medicaid to pay for LTC.

As the demand for LTC grows and nursing home care becomes more costly, policymakers face mounting pressure to control public spending on LTC. One policy option that state governments have implemented to address this challenge is the Medicaid Aging Waiver (MAW) programs, which provide exclusively Home- or Community-Based Services (HCBS). These programs provide states with funding to subsidize professional providers who offer in-home formal care, including help with daily activities such as bathing or eating, as well as round-the-clock nursing services.

Given the importance of informal caregiving, any policy that could change the patterns of informal caregiving merits further examination. In particular, we focus on near-elderly caregivers, who comprise 57 percent of all caregivers of older adults in 2020. On the one hand, MAWs subsidize professional providers who offer in-home formal care to eligible older populations, making in-home care relatively more affordable than informal care. On the other hand, the reduction in the relative cost of in-home care under MAWs creates a preference shift towards aging at home, leading to a possible increase in the demand for informal care. To shed light on the impact of MAWs on informal caregiving, we first develop a theory, following

Mommaerts and Truskinovsky (2020), to illustrate how families respond to MAW programs by introducing the Constant Elasticity of Substitution (CES) function to capture the possible complementary or substitutable relationship between informal care and formal home-based care, which can vary across families. We then use plausibly exogenous variation in state-level MAW expenditures in the 1998-2014 period to empirically estimate the effect of MAW programs on informal care and test our heterogeneous hypotheses derived from our theory.

Specifically, we first provide a theoretical framework for exploring how MAW programs might affect the use of informal care by considering the optimization problem among families. We next employ a two-way fixed effects strategy to identify the causal effects of MAW programs on informal caregiving, and empirically demonstrate the presence of heterogeneous effects for different types of families. By utilizing state-level variations in MAWs expenditures and restricted Health and Retirement Study (HRS) data, we find that overall, an increase in MAW expenditures is associated with an increase in informal caregiving. Specifically, a 10 percent increase in annual MAW expenditures (approximately $17 million) is associated with a 0.1 percentage point increase in the likelihood of an adult child becoming an informal caregiver, representing a 0.3 percent effect relative to the sample mean of 0.36. Additionally, our findings suggest a shift in the type of care provided, as an increase in MAW expenditures is associated with a 0.15 percentage point (0.4 percent) increase in the probability of providing errands assistance, but has no impact on the likelihood of providing personal care. These results suggest that, while the MAW does encourage adult children to help their parents, the help they provided is primarily in the form of less intensive tasks that may have lower implicit costs, and that are not directly subsidized by MAWs. Although MAW programs have overall positive effects, further investigation into the impacts on different types of families reveals heterogeneous results. Specifically, we firstly examine whether varying degree of reliance on institutional care results in different responses. Secondly, we explore the heterogeneous impacts of MAW programs on a subset of families who would otherwise only choose home-based care. Thirdly, we provide evidence of a shift in living arrangements whereby families rely increasingly more on home-based care. These findings are consistent with previous studies on HCBS programs,

which have shown their effectiveness in enabling families to avoid institutionalization (Amaral, 2010).

Title

Wage Expectations and Access to Healthcare Occupations: Evidence from an Information Experiment

Author

Juliana Bernhofer, Alessandro Fedele, Mirco Tonin

Abstract

We analyze how financial incentives affect performance on the admission tests for medical and healthcare schools, a crucial step for aspiring healthcare professionals. To this end, we conducted a randomized information experiment with Italian applicants. We first elicited applicants' expectations about the starting wage of the healthcare job for which they intend to study. We then informed the treatment group about the true starting wages, while providing no information to the control group. Finally, we collected the test scores obtained by applicants. Correcting wage expectations enhances the test scores when expectations are lower than the true wage level, while negative but nonsignificant effects occur when expectations are higher. The treatment does not induce negative selection in terms of cognitive skills and altruism.

Title

Social interactions, loneliness and collective health: A new angle on an old debate

Author

Matija Kovacic and Elizabeth Casabianca

Abstract

Loneliness is increasingly being recognized as an important economic and public health issue. This paper investigates the relationship between historically rooted norms that drive individuals to conform to predefined behavioral standards and contemporary perceptions of social interactions and attitudes towards loneliness. Using a sub-population of second-generation immigrants, we identify an intergenerationally transmitted component of culture that reflects the importance of restrained discipline and rules characterizing highly intensive pre-industrial agricultural systems. We show that this cultural dimension influences perceptions of the quality of social relationships and significantly affects the likelihood of experiencing loneliness. The identified trait is then used to instrument loneliness in a two-stage model for health. We find that loneliness directly affects body mass index and some specific mental health issues. We argue, however, that loneliness may influence other health outcomes indirectly due to its economically significant effect on the increased body mass index. The results are robust to a battery of sensitivity checks. Our findings add to a growing body of research on the importance of attitudes in predicting significant economic and health outcomes, opening up a new channel via which deeply-rooted geographical, cultural, and individual characteristics may influence comparative economic development processes.

Title

Mental Health and Gender Stereotypes: Experimental Evidence

Author

Paola Bertoli, Veronica Grembi

Abstract

Mental disorders have become a global public health concern to the extent that the WHO's Global Burden of Disease identifies mental illness as the most burdensome disease category in terms of total disability-adjusted years for adults younger than 45, and depression is one of the most taxing conditions (WHO, 2008; Layard, 2017). Still, mental health disorders remain often unaddressed due to both an underestimation of the problem and widespread inequalities in access to care (e.g., psychologists are mainly private specialists and GPs are often unprepared to provide proper support). An important role in correctly identify and quantify the phenomenon of mental illness may be played by personal and societal stigma which may refrain individuals from openly share their problems and look for help. In this perspective, gender stereotypes may be a relevant driver since they impose societal expectations on the role individuals have to play in society based on their own gender with several potential consequences. First, deviating in terms of behaviors and/or expectations from the what dictated by gender stereotypes may be cause of deep distress and, consequently, of poor mental health (i.e., Stevenson and Wolfers, 2009, Herbst, 2011). Second, individuals can resort less frequently to professional help to conform to the idea supported by gender stereotypes leading to a lower than needed access to care and/or a delayed access to care (i.e., (Deane and Chamberlain, 1994, Komiya et al., 2000; Mahalik et al., 2003, Vogel andWester, 2003, Lindinger-Sternart, 2015). Finally, not conforming to the expectations set by gender stereotypes may be cause of stigma as far as mental health is concerned (Link et al. 2001). Hence, the present study investigates how gender stereotypes may affect the propensity to reveal one's own actual mental status. To this end, we designed an online experiment to directly manipulate the salience of individual stereotypes through the display of one of 3 sets of images: stereotype activating images (i.e., Stereotypes condition), control images (i.e., Neutral condition) and counter-stereotype activating images (i.e., Counter-stereotypes condition). As shown in Figure

1, the stereotype activating images portray two fictional characters – a man and a woman – engaged in a stereotypical activity in a home context (i.e., bathroom, living room and kitchen) as in the case of an hypothetical bathroom where a woman puts on makeup in the mirror while a man changes a light bulb. Differently, the counter-stereotype activating images depict the same exact situations but reversing the activities between the man and the woman (Figure 3). As a result, the one changing the light bulb in the bathroom is the woman while the man combs his hair in the mirror. Finally, neutral images just show the exact same hypothetical home rooms as in the other two sets of images but without any person in them (Figure 2).1 The three treatment conditions and related images were included in an online survey2. Participants were randomly assigned to one of the three treatment conditions and the images were introduced within the framework of an attention check. Specifically, the online questionnaire includes a first part collecting the basic socio-demographic and health information of participants (e.g., sex, age, province of residence, marital status) followed by a second part focusing on working and financial conditions (e.g., employment status, sector of employment) and a part containing questions aimed at measuring the implicit gender stereotypes of participants. Then, participants were presented with a task to check their level of attention: they had to look for 10 seconds at three images each of which was followed by a 3-item multiple choice question. Once the images were over, participants were asked to complete with one single word both the following statements: (i) Carlo is really a good ..; (ii) Carla is really a good . . . with Carlo being a male name and Carla a female name.3. Finally, the survey ends with questions on the mental health status of participants. To assess the mental conditions of participants, we rely on two validated measures: the 4-item Perceived Stress Scale (PSS-4) and the 8-item Patient Health Questionnaire depression scale (PHQ-8). For both indexes, increasing values indicate higher level of perceived stress and depression respectively. The online survey was administered to two separate sample of participants in Italy. First, during June 2022, the survey was administered through email invitations by Demetra opinioni.net srl, a market survey company, to 2,612 participants representative of the working age (up to 65) Italian population by gender and age groups (younger than 35, 35-55, older than 55). Second, between June and August 2022, the same online survey was administered through Qualtrics to the enrollees to two

professional orders: engineers and architects. These professions were chosen because they imply overlapping competences but they differ substantially in terms of gender composition. Overall, the final sample includes 10,252 engineers and 2,454 architects. Overall, we observe an effect only on the general population with women being more prone to reveal their mental health status when exposed to the gender stereotypical images, while the same effect is displayed by men when exposed to the gender counter-stereotypical images.

Title

Inequalities in the access to specialists: evidence from Italy

Author

Elenka Brenna, Maria Daniela Giammanco

Abstract

Background and Objective. In Italy, the access to either general practitioner (GPs) or specialist shows a heterogeneous distribution, which is often related to socioeconomic factors. Specifically, richest and better educated individuals present higher access to specialists and lower access to GPs if compared to people in lower socioeconomic conditions. This evidence suggests that specialists' visits price (either full or in the form of a co-payment) may represent a deterrent in the access to this level of care. Geographical differences in the supply of medical care may also impact on this heterogeneous pattern. The paper analyzes the determinants of the access to specialists, adopting as main regressor the presence of voluntary health insurance (VHI) and controlling for the distribution of doctors at regional level.

Data and Methods. We use data from the European Health Interview Survey, year 2019, a complete dataset providing over 45,000 individual observations on healthcare access, health status, demographic and socioeconomic variables from the Italian population. This source is still rather unused in applied research on these topics and may add evidence to existing literature. Data is modelled through a trivariate recursive probit, in order to account for possible endogeneity between visiting a specialist and the presence of VHI.

Principal Findings. Findings show a positive impact of health insurance on the probability of accessing specialist care at least once in the four weeks preceding the interview, after controlling for specialists' distribution. This result suggests that price is a deterrent for medical care and consequently raises equity issues for people in low socioeconomic conditions, who may find it onerous to pay a price, even in the form of copayment. Having accessed the GP in the last four weeks is positively related to the probability of accessing the specialist; this suggests a possible gatekeeping role for GPs. The probabilities of accessing either GPs and specialists are positively related to the concentration, at the regional level, of each respective category of physician, indicating that a more homogeneous distribution of medical personnel

across Italy would help avoiding inequalities. The likelihood of holding a VHI is driven by socioeconomic factors and not by healthcare need. In fact, being rich and highly educated increases the probability of the outcome of interest with strong significance; on the contrary, a lower educational level, being unemployed, retired, student, homemaker, or having a discontinuous working activity, are all characteristics that show a negative and strongly significant effect. Having limitation, chronic conditions, being under pharmaceutical treatment, having experienced a painful event, though positively affect the access to both GP and specialist, do not impact on the probability of holding a VHI.

Conclusions and Policy Implications. Findings show that an integrative coverage is determinant in accessing specialist care at least once during the four weeks preceding the interview. This result suggests that price of access may represent a deterrent in seeking specialist advise, and raises equity concerns on the full coverage granted by the Italian NHS. Considering that health insurance distribution follows a pro-rich design, rather than a health need pattern, people with scarce financial resources may find it onerous to contact a specialist, because a payment is always required, whether full or in the form of copayment. In Italy, private specialist care entails no waiting times and the option for choosing the specialist, whilst the public path requires high indirect costs in terms of time spent to get the GP's prescription, long waiting lists – with possible negative effects on patients' health - no choice of specialists, plus the copayment price. VHI warrants a privileged track for specialist care, abating the indirect costs embedded in the NHS track. Patients in low socioeconomic conditions without an integrative coverage may suffer from unmet healthcare needs, with negative consequences on their health and higher future social costs. All these issues rise equity questions in the presence of a Beveridgian healthcare system.

Title

Lifespan inequalities among the over 50 in Italy and their distributional implications: evidence from administrative data.

Author

Simone Ghislandi, Benedetta Scotti

Abstract

In this study we provide novel evidence about lifespan inequalities in the Italian adult and elderly population, and about their policy implications for the pension system. For this purpose, we leverage a compendium of administrative data from the Italian Social Security Institute. Our analysis delivers three sets of findings. First, we document sizeable inequalities in residual longevity at retirement by former occupation, especially among men. We estimate that male retirees with a background in specific low-risk occupational categories enjoy an advantage of about 4-5 years in life expectancy at 65 compared to those with a background in specific high risk categories. Second, we highlight some worrisome trends in the evolution of lifespan inequalities among the over 50 in Italy. Although mortality delay (increasing average age at death) and mortality compression (declining lifespan variability) are observed across all socio economic strata, our analysis suggests that these improvements have not been equally shared. Indeed, we find that mortality improvements were reaped mostly at the top of the lifetime income distribution, notably in the case of men. Finally, we show that the distributional implications of unequal lifespans for the pension system are tangible. In particular, we document that the erosion in the profitability of pension contributions implied by heterogeneous longevity is stronger for male retirees at the bottom of the lifetime income distribution, and that such dynamics have become more pronounced over time. Overall, our study confirms the relevance of policy measures aimed at increasing flexibility in retirement for vulnerable categories of workers to alleviate the regressive effects of lifespan inequalities.

Title

Do higher quality hospitals deliver more appropriate care? Evidence from caesarean sections in England

Author

Angelica Guzzon

Abstract

Background: Caesarean sections are one of the most widely used indicators of the level of appropriateness of care, as they are one of the most commonly performed medical procedures. In England one birth out of three is a caesarean section. Caesarean section rates are increasing worldwide – including in England – and this growth goes beyond what can be attributed to increases in clinical and risk factors (such as maternal age or obesity). A purported explanation is changes in medical practice. One of the expressions of medical practice is the quality of care in hospitals, given the key role played by hospitals in shaping the health of the communities they serve.

Objectives: We investigate whether hospitals that exhibit higher quality perform less caesarean sections; caesarean section rates are used as an indicator of care appropriateness and to track opportunistic behaviour from healthcare providers. We also explore whether there is a differential impact between elective (i.e. scheduled) and emergency (i.e. non-scheduled) caesarean sections.

Data: We use publicly available monthly aggregate data for NHS Hospital Trusts in England – combining different administrative data sources, primarily NHS and ONS – to build a hospital-level panel for a total of 2,597 observations. The panel covers the period from July 2016 to March 2019. The dependent variables are elective and emergency caesarean section rates. The main independent variable is hospital quality, measured by emergency readmission rates and hospital-acquired infection rates.

Methodology: To investigate the link between hospital quality and caesarean section rates we exploit panel regression models with individual heterogeneity at the hospital level (including FE, RE, and within between estimation). We control for hospital characteristics, hospital workforce, socio-economic conditions, and risk factors. We also propose an alternative

approach to attribute Local Authority-level data to hospitals: we do not consider proximity of a Local Authority to a hospital like most studies do, but we take into consideration actual hospital catchment populations as tracked by the NHS. A heterogeneity analysis is performed with respect to deprivation (as measured by the Index of Multiple Deprivation) and to maternity ward size.

Main results: We find that higher quality hospitals have lower elective caesarean section rates: where the emergency readmission rate is 1 p.p. lower we have a -0.003 p.p. reduction of the elective caesarean section rate, while a 1 p.p. decrease of the hospital-acquired infection rate is linked to a -0.0002 p.p reduction of the elective caesarean section rate. The effect on emergency caesarean section rates is instead non-significant. The heterogeneity analysis indicates that hospital quality plays a role especially in more deprived areas, whereas the size of the maternity ward plays no role.

Conclusion: Our analysis provides support to the idea that higher quality hospitals deliver more appropriate care. Policy-makers should promote long-term policies aimed at improving quality of care, while future work should focus on disentangling the mechanisms through which hospital quality affects appropriateness of care indicators – maternal outcomes in particular.

Title

Does implementing strengths-based approaches improve adult social care outcomes?

Author

Paolo Candio, Francesco Salustri

Abstract

Background and aim. Improvements in the provision of adult social care have been advocated worldwide. Moving away from traditional care management approaches focused on a deficit model, more holistic and multidisciplinary approaches such as strengths-based models have increasingly gained traction among policy makers. However, the evidence base for the effectiveness of these management models is currently scarce, hence uncertainty remains about their ability for benefiting care recipients in practice. Contributing to this literature, this study aimed to estimate the causal effect that implementing strengths-based approaches had on satisfaction with care and social support among adult social care recipients in England, following implementation of the Care Act 2014.

Methods. A quasi-experimental study was conducted using a clustered, controlled pre-post design. Local authority level adult social care survey and financial expenditure data were linked. Post-stratification weights were constructed using an inverse probability method and a raking procedure to control for selection bias. Five-year changes in care satisfaction and social support outcomes from before to after the implementation of the policy in 2014 were compared using a synthetic control method, controlling for local authority characteristics, population socio-demographics, and changes in per-capita adult social care spending over time.

Discussion. The implementation of a strengths-based approach showed to have largely heterogeneous effects on adult social care outcomes across geographical areas and type of local authority. Findings from this study will have the potential for informing future policy decisions in adult social care at a local and country level in England and beyond. d changes in per-capita adult social care spending over time.

Title

Immigrant Informal Care and Elders' Health Conditions

Author

L. Capretti, J. Kopinska, R. D. Mariani, F. C. Rosati

Abstract

Background. The ageing population is closely linked to the growing need for both formal and informal care. As the ratio of individuals over 50 to those between 20 and 49 is projected to exceed one in the future, the demand for care is expected to rise (Acemoglu and Restrepo, 2017). While existing literature has primarily focused on the contributions of spouses and children as informal caregivers, non-medically specialized services available in the market can also fulfill this role. One fundamental aspect is that of immigrant supply of services to the households (Mariani and Rosati, 2022). In Italy, many immigrants provide domestic services that substitute or complements the care provided by family members for the elders. Surprisingly, relatively little attention has been paid to these issues at times of dramatic population ageing. The aim of this paper is to assess whether the increase in the supply of domestic services due to the inflow of low-skilled immigrants has contributed to the health status of the natives trough the provision of non-specialized informal care. Specifically, we focus on the role of informal care in preventing hospitalization and reducing the length of hospital stays.

Objectives. We assume that informal care is provided within a unitary family and produced according to a production function that has as inputs both the time of the offspring and the services bought on the market (non-specialized helpers). We illustrate the possible effects of the supply of informal care by migrants on hospitalization rates of the population aged 65 and above. The results of the study will, therefore, unveil the potential role of informal care in reforming the care system, whose limitations in terms of efficacy, sustainability and costs have become evident in light of the challenges faced during the recent pandemic.

Data and methods. We rely on the Hospital Discharge Data (SDO) from the Italian Ministry of Health, which provides information on the universe of hospitalizations in public and publicly funded private hospitals from 2004 to 2016. Italy's universal public healthcare system provides

equitable access to care without significant barriers and no cost differentials for the patients. The dataset includes socio-demographic information (age, gender, nationality, place of birth and residence, and hospitalization), clinical data (diagnoses, procedures, discharges), and hospitalization details (type and specialty). Hospital discharge records report information on the primary diagnosis leading to the hospitalization, along with up to five secondary diagnoses. We focus on hospitalizations delivered to patients aged 65 and above, distinguishing between 15 major diagnostic groups based on the International Statistical Classification of Diseases and Related Health Problems v.9 (ICD-9) codes. We construct province -level annual hospitalization rates and lengths for 103 provinces for the years 2004-2015. We additionally employ administrative data on the number of immigrants and other characteristics of the population collected by ISTAT. The main explanatory variable is the number of immigrants of age between 15 and 64, while among the controls we include per capita income, the share of widows and widowers in our target population as well as province- and time fixed effects. In order to overcome the issues of bias due to omitted variables as well as due to a non-random assignment of migrants across provinces, we use an instrumental variable approach with a shift-share instrument à la Card (2001) based on the shares of immigrants observed in 1991. We exploit the well-known fact that immigrants of the same origin tend to cluster and that ethnic networks are likely to attract newcomers. As robustness check we also run a Poisson specification, considering as outcome the total number of hospitalizations.

Main results. As expected, the model shows that immigration has a significant impact on hospitalizations for most illnesses (as mental diseases and traumas), reducing their average number. Results show a small but significant reduction also of the length of stay in hospital, confirming our initial hypothesis that the availability of home support provided by immigrants can anticipate elders' returning home.

Title

The Illness Trap: Impact of Disability Benefits on the Willingness to Receive HCV Treatment

Author

Marta Giachello, Lucia Leporatti, Rosella Levaggi, Marcello Montefiori

Abstract

Background. Hepatitis C Virus (HCV) eradication is now possible owing to new direct-acting antivirals (DAAs) discovered in 2014. The World Health Organization aims to eradicate HCV by 2030, boosting national screening programs to identify undiagnosed cases. However, several patients diagnosed with HCV chose not to undergo drug therapy despite adverse consequences for personal health and relevant costs to the national health system. This phenomenon entails a paradox. The economic literature postulates that health is essential for patients, who should do anything to restore it. However, this assumption does not seem to hold when patients offered free treatment prefer to live with an invalidating chronic disease instead of being treated. We argue that the fundamental explanation for this paradox may be the invalidating nature of the ailment, coupled with the illness-related benefits of the welfare state. Most social security systems in Western countries use disability payments as an income supplement. However, these benefits may create an "illness trap:" to obtain a monthly allowance, patients refuse to receive treatment and improve their health.

Objective. The aim of the study is to analyze the effect of disability benefits on the choice of uptake HCV treatment. We test whether a generous system of disability benefits may reduce the likelihood of patients accepting treatment.

Methods. The analysis focuses on patients over 15 years old affected by HCV between 2013 and 2020 in an Italian region. We implement a recursive bivariate Probit model.

Results. We find that entitlement to disability benefits may lead to an "illness trap" by disincentivizing the choice of receiving treatment. In this scenario, patients may prefer to stay ill as they are afraid to lose illness-related economic benefits. This effect is more substantial in low-income and older patients. These results suggest the need for healthcare policies to address this distorting effect when designing benefit programs, granting financial sustainability to sick people in need.

Title

The Cost of Inaction of Gender-Based Violence in Italy

Author

Elena Pizzo, Emma Scandolo, Gabriella Conti, Flavia Bustreo

Abstract

Background: Gender based violence is a major public health problem in Italy, with significant consequences for individual victims and society. The number of sexual violence cases reported to the authorities experienced an increase over the last few years. The last comprehensive study on the cost of violence against women (Badalassi et al., Intervita, 2013) is almost ten years old, and is mostly based on data from an ISTAT survey carried out in 2006; hence, there is a need to compute updated estimates of the costs of this phenomenon.

Objectives: In this paper we provide comprehensive updated estimates of the economic costs of gender-based violence in Italy, in relation to several short-, medium- and long term outcomes, ranging from physical and mental health problems to labor market outcomes and welfare use.

Methods: We combine novel regression analysis of rich data from the ISTAT "Indagine sulla sicurezza delle donne: La violenza contro le donne dentro e fuori la famiglia" (2014) and the "Violence against women: an EU-wide survey" (2012) from the European Union Agency for Fundamental Rights with secondary evidence to produce an incidence-based estimate of the lifetime costs of gender-based violence (both direct and indirect costs) from a societal perspective. We also conduct an extensive sensitivity analysis to test the robustness of the results – something which has not been carried out in previous work.

Main results: Our estimates provide the first comprehensive benchmark to quantify the cost of gender-based violence in Italy and suggests more coordination is needed between health (GPs), social services and law enforcement to improve surveillance of GBV and so reduce a substantial economic burden.

Title

Neighbour Cohesion, Social Relations and Loneliness in Times of COVID-19: evidence from England.

Author

Caterina Sturaro

Abstract

This paper provides evidence on the link between pre-pandemic social interactions and the impact of COVID-19, and of the restrictions implemented by the governments to limit its spread among the population, on the sentiment of loneliness. By exploiting individual-level data from the U.K. Household Longitudinal Study (U.K.HLS), Understanding Society, two research questions are investigated. First, is neighbourhood social cohesion a protective factor for loneliness? Second, how do certain characteristics of people's social networks impact loneliness? We model the association between social and relational variables and loneliness throughout the COVID-19 pandemic using linear and probit model specifications. Our findings, by documenting the protective role of social cohesion and social relations against loneliness, suggest the importance to foster and maintain social connections, even during times of pandemics.

Title

Effects of Allied Health Professionals in Primary Care on Patient Outcomes

Author

Catia Nicodemo, Chris Salisbury, Stavros Petrou

Abstract

Background: In 2019, the English government implemented the Additional Roles Reimbursement Scheme (ARRS) as a crucial component of their manifesto pledge to enhance the availability of general practice. The primary objective of this scheme is to facilitate the recruitment of 26,000 extra personnel into general practice.

Aim: The study aimed to analyse the probability of ARRS having a role in primary care and its effects on prescription and satisfaction, controlling for patients and practice characteristics.

Design and Setting: The study was a cross-sectional analysis of data from the General Workforce Minum Database from primary care practices from 2017 until 2022. The study included data from more than 6000 primary care practices.

Methods: A linear regression analysis was conducted to determine the association between ARRS and primary care, and the effects on prescription rates and patient satisfaction, controlling for patient and practice characteristics.

Results: The results showed that ARSS roles tend to be present in large practices, with fewer FTE GPs per patient, and with more overseas GPs. That the use of ARRS was significantly associated with lower prescription rates (β = −x, p < x) and higher patient satisfaction (β = x, p < x), after controlling for patient and practice characteristics.

Conclusion: The study suggests that ARRS has the potential to have a role in primary care, improving patient satisfaction and helping areas with low rates of GPs per capita. Further research is needed to explore the long-term effects of ARRS on primary care and the potential barriers to its implementation.

How this fits in: English government introduced ARRS to recruit more staff to general practice, but its impact on primary care and patient satisfaction was unclear. This cross-sectional study analyzed data from over 6,000 primary care practices and found that ARRS was associated with lower prescription rates and higher patient satisfaction, particularly in larger practices with

fewer FTE GPs and more overseas GPs. The study suggests that ARRS roles have the potential to improve patient satisfaction and help areas with low rates of GPs per capita. This information is relevant to clinicians as it highlights the potential benefits of ARRS roles in primary care.

Title

Brand loyalty for statins

Author

Paolo Berta, Rosella Levaggi, and Federico Rea

Abstract

Generic entry should allow to reduce expenditure both in the short and the long run, but there is no consensus in the literature on the effects of drug substitution on health outcomes because of several factors. Our paper takes an in innovative look at the choice between generic and branded drug by studying it as a problem of brand loyalty. Our preliminary results show that only a small fraction of individuals switch from brand to generic and viceversa, the initial choice seems to determine future consumption patterns.

Title

The Impact of Ethiopian community-based health insurance on children health outcomes

Author

Zecharias Anteneh, Martina Celidoni, and Lorenzo Rocco

Abstract

Community-based health insurance (CBHI) is increasingly being emphasized as a viable option to finance health care in low-income settings, but evidence on the health impacts of such insurance designs is still limited. Using the Demographic and Health Survey from 2005 to 2016, we estimate the effects of the Ethiopian CBHI on children's health. Difference-in-differences estimates show that CBHI reduced mortality and the probability of being underweight among children under five. We also find that CBHI significantly reduces wasting, a measure of short-term nutritional deficiency or health conditions, but not stunting, known to be an indicator of long-term chronic malnutrition. Potential mechanisms underlying our results are improved maternal health, access to health care, nutrition and a reduced risk of poverty.

Title

Sweet child o' mine: a cohort-based study on adolescents' body mass index and the introduction of duties on soft drinks

Author

Vincenzo Atella, Federico Belotti, Matilde Giaccherini, Francesca Marazzi, Andrea Piano Mortari

Abstract

Research Question. The aim of this project is to analyse whether the health status of Finnish children and adolescents was successfully influenced by the Excise Duty on Soft Drinks (Law n.1474/1994) in terms of body mass index and overweight and obesity prevalence.

Motivation. WHO most recent estimates highlights that overweight and obesity cause more than 1.2 million deaths yearly in the European Region (see WHO, 2022). Furthermore, early-life adiposity and overweight are proved to be associated with later-life morbidity and worsened health status (see Choudhary et al., 2022). Diverse policy measures have been introduced in the attempt to reduce unhealthy dietary habits, starting from childhood. A major category of such policies, aimed at reducing consumption, is represented by taxes on sugary food, such as soft drinks, candies and ice cream. However, their efficacy is controversial. A meta-analysis including 62 studies found that, while the demand of sugar-sweetened beverages (SSB) seems to be sensitive to the price shifts induced by taxes, consumption exhibits non-significant changes (Andreyeva et al., 2022). Along the same lines, Cawley et al. (2022) analyse the effects of taxes on SSBs implemented in Mauritius and find that the tax, overall, had no effect on adolescents BMI and consumption of SSBs. However, they do find an effect on consumption (but not on BMI) for males. Similarly, this study aims at evaluating the effects Excise Duty on Soft Drinks (Law n.1474/1994) implemented in Finland.

Methodology. Using a generalized synthetic control approach, we will compare the health status of the NFBC1986 cohort before and after the introduction of the policy measure, using the NFBC1966 cohort as comparison (non-treated) group. Our analysis will control for individual and contextual factors that can influence outcomes such as BMI and obesity. Specific attention will be dedicated to factors related to the change in the socio-economic conditions the two cohorts experienced, at the `macro' level, proxied by the Finnish yearly GDP (Gross

Domestic Product) per capita, as well as the `micro' level, such as mothers' education and fathers' job type. Furthermore, via multivariate regression analysis, we will also test whether there has been a change in the determinants of BMI and overweight in the two cohorts.

Data. NFBC1966 and NFBC1986: growth data (weight and height), parental questionnaires (mother education and parents' job), polygenic score if available; Statistic Finland for per capita GDP, time usage statistics and possibly other macroeconomic indicators.

Title

An experimental analysis of patient dumping under different payment systems

Author

Massimo Finocchiaro Castro; Domenico Lisi and Domenica Romeo

Abstract

Physicians behave differently depending on the payment systems, giving rise to several problems such as patient dumping in which patients are refused because of economic or liability reasons. This paper tests whether and to which extent the adoption of either fee-for-service or Salary system induces physicians to practice patient dumping. Through the combination of an artefactual field experiment and a laboratory experiment, we test whether the risk of being sued for having practiced dumping can affect physicians' behavior. Dumping is more often observed under Salary than under FFS. The introduction of dumping liability only mildly reduced dumping practice, though the provision of services increased. Our findings call for healthcare policy makers looking at the interplay between remuneration schemes and liability risks, and accounting for the trade-off between the reduction of the risk of being sued for patient dumping and the increase of the costs of the provision of medical services.

Title

Predicting healthcare expenditure in Italy through a Machine Learning approach

Author

Nicola Caravaggio, Giuliano Resce

Abstract

Predicting healthcare expenditure provides crucial information for decision-making, policy formulation, financial planning, and resource management. It supports the effective and efficient delivery of healthcare services, ensuring that individuals and societies can access affordable and sustainable healthcare. From a policy perspective, accurate predictions have a fundamental role, as they are used by several National Health Systems (NHS) to allocate funds at the territorial level to guarantee equity. In particular, the principle of horizontal equity which requires that individuals with the same health needs should have equal access to health services, regardless of where they live (Gravelle, Santos, & Siciliani, 2014; Rice & Smith, 2001). The practical implementation of this principle has many problems, mainly driven by the fact that the decision-maker does not always have the information needed to measure health needs. For this reason, most of the systems for the allocation of national funds are based on statistical models tuned on the use of healthcare services. However, it has been shown that the standard statistical and econometric tools, widely used to estimate needs and predict expenditure, are not appropriate for targeting policies (Kleinberg, Ludwig, Mullainathan, & Obermeyer, 2015). In this regard, the recent economic literature has argued that targeting policy problems, such as public expenditure based on health needs, does not require ex-post correlation or causal inference solutions but predictive inference would be of more use (Kleinberg et al., 2015). Conversely, new developments in the field of machine learning (ML) have shown a great potential for addressing prediction problems Varian (2016). This paper proposes a ML model to predict health care expenditure, which can be used to allocate national health funds to regions with heterogeneous needs. We use the Italian NHS as a case study, since it allocates funds among citizens living in different regions as the regions have organizational responsibility for their healthcare systems (Lagravinese, Liberati, & Resce, 2019; Turati, 2013). The analysis relies entirely on administrative data provided by Istat Istat (2023) through a

specific tool tailored on health data named Health for All (HFA). Since the goal of our study is to predict the Italian healthcare expenditure, our target variable is the total public per capita healthcare expenditure at current prices. To identify crucial features in our investigation, we firstly conducted an extensive literature review of the determinants of healthcare expenditure starting from the pioneer works of Kleiman (1974) and Newhouse (1977). Moreover, the features' selection was driven by a two-fold choice: (i) the willingness to preserve longitudinal data, then several variables with relative short time span, with several missing data or reported with specific yearly periods has been discarded; (ii) the choice to exclude variables which may depend directly or indirectly on healthcare expense itself such as hospital equipment, number of beds, and health personnel as well as mortality rates associated with specific diseases. The final database is composed of 28 features with a time coverage which spans from 1994 to 2019. Starting from the set of features at time t−1, we predicted healthcare expenditure in time t over the period 1994–2018 by implementing four different ML algorithms (Gradient Boosting, LASSO, Random Forest, and Support Vector Regression) with an additional multivariate regression as baseline scenario. We identified Gradient Boosting as the best predictive algorithm based on the lowest out-of- sample MAPE (4.82) and highest R2 (0.93). Furthermore, we tested our model, trained until 2018, on 2019 data obtaining good forecasting performances (R2 equal to 0.82) stressing how, based on the selected features, our model is good in predicting healthcare expenditure among Italian regions. Among the features with the highest predictive importance, we may find time, life expectancy, average number of family members, and regional area. Furthermore, also some of the most important— and debated—determinants in literature resulted among the top features such as GDP per capita and share of population over 65. Eventually, by relying on partial dependence plots (PDP) we graphically disentangle the relationship between each feature and the healthcare per capita expenditure without the necessity of a previous mathematical model in the functional relationship. For example, for life 1 expectancy we find an S-shape relationship which tend to increase abruptly after 82 years for female and around 78 years for male. GDP per capita shows an increasing ladder-pattern, hence characterized by some thresholds. Eventually, the S-shape is also confirmed for the share of population over 65 with a strong vertical growth once the 20% threshold is crossed. Therefore,

PDPs for life expectancy and share of population over 65 confirms the strong relevance of elderly population in Italy in driving the cost of the NHS.

Title

The determinants of organ donation consent and abstention: evidence from Italy

Author

Ivana Pasciuta, Mirco Tonin

Abstract

Background Organ transplants are one of the success stories of modern medicine, the only effective treatment for many people with acute or chronic diseases. Although each year in the EU ~35,000 patients receive a transplant, every day 20 people still die while waiting for one. The combination of an increasing demand and a shortage of organ donors results in a critical public health issue. In this context, understanding the factors that influence people's decision to donate their organs is vital.

Objectives This study empirically investigates the determinants of organ donation consent and abstention rates in Italy, a country characterized by territorial heterogeneity along several dimensions which may influence the decision to donate, e.g. socio-demographic features and civic capital. Our analysis contributes to a broader understanding of such healthcare challenge, informs on future trends, and provides policy recommendations to decrease abstention and, ultimately, increase consent rates.

Methods We use an Italian administrative dataset which reports individuals' declarations of intent regarding organ donation after decease – either positive or negative – as well as abstentions, i.e. not stating an intent. Municipal Registry Offices record such information when ID documentation is issued or renewed. Among the different modalities available to express one's will, Registry Offices are the most frequently used, collecting 90% of the total declarations of intent. Data is aggregated at the municipality level and constitutes a representative sample of the Italian population (~13 million citizens' declarations and ~5 million abstentions from more than 7,000 municipalities). Our outcome variables of interest are, thus, the consent and abstention rates. Explanatory variables include socio-demographic, economic, cultural, and geographic features of municipalities, as well as proxies of human and civic capital. Regression analysis is used to explore the relationship between explanatory variables and both the consent

and abstention rates across municipalities. We integrate regional and provincial fixed effects, and perform robustness checks.

Results Results show a North-South gradient, with people living in the North being less prone to abstention and more inclined towards organ donation than those living in the South. Multiple factors are associated with the outcome variables. The consent rate among those expressing an intent is on average 72% (with considerable heterogeneity across municipalities), and is positively correlated with proxies of civic capital (e.g. voter turnout, presence of no-profit organizations) and human capital (both education and labour market features). On the other hand, municipalities with higher shares of elderly, immigrants and poor people, as well as those with a more dispersed population, are less prone to donate. Almost half of the citizens (on average 47%), however, avoid taking a stance. Higher abstention rates are found in older, poorer, and less educated communities, with larger households and the presence of immigrants and religious beliefs further discouraging an expression of intent. Interestingly, wealth inequality and lower levels of entrepreneurship are associated with lower abstention rates. Overall, findings suggest that a complex set of factors influences organ donation consent and abstention rates. Among these factors, socio-demographic and economic features, and to a lesser extent civic capital, appear to play a role.

Title

Social capital and vaccination compliance: Evidence from Italy

Author

Giulia Montresor, Lucia Schiavon

Abstract

In early 2020, the COVID-19 virus outbreak occurred and rapidly spread around the world, causing an unparalleled pandemic. At an extraordinary speed, between late 2020 and early 2021, several vaccines received approval from national medicines agencies around the world for public use in vaccination campaigns. Watson et al. (2022) estimate that COVID-19 vaccination prevented 19.8 million deaths worldwide during the first year of its availability. In general, relatively little is known about how social capital may interplay with vaccination compliance. A few studies from the medical literature found that different dimensions of social capital, including generalized or governmental trust as well as voting participation are positively associated with vaccination intentions or actual uptake during past infectious disease outbreaks around the world, such as severe acute respiratory syndrome (Chuang et al., 2015), swine flu This paper examines the effect of social capital on compliance with COVID-19 vaccination using high-frequency municipal-level data from Italy, the first Western country hit by the COVID-19 pandemic. Two previous studies, namely Buonanno et al. (2022) and Paseyro Mayol & Razzolini (2022), have documented a positive association between different measures of municipallevel social capital and vaccination coverage rates during the COVID-19 pandemic. However, these studies are limited to the single region of Lombardy 1. We contribute to the literature, by expanding the analysis to the universe of Italian municipalities, which have been historically characterized by heterogeneous levels of social capital (Putnam, 1993; Guiso et al., 2016). Our dataset is unique in that it includes weekly vaccination information detailed by vaccine dose and individual characteristics such as age and gender. This allows us to investigate also the differential effect of social capital on vaccination uptake across different subsets of the population. The geographical and temporal granularity of our data allows us to account for unobserved pre-existing local heterogeneity, confounding shocks such as regional-level policy responses to the pandemic and the differential rollout of the vaccination campaign across

municipalities. In detail, we employ a regression model that incorporates province fixed effects, region-by-month fixed effects, week-since-vaccine-availability-by-week fixed effects. Additionally, we condition our estimation on the local incidence of the pandemic by including one-week lags of the cumulative rates of COVID-19 cases and deaths. Furthermore, our dataset is unique in that it includes weekly vaccination information detailed by vaccine dose and individual characteristics such as age and gender. This allows us to investigate the differential effect of social capital on vaccination uptake across different subsets of the population. We focus on the civic duty dimension of social capital, i.e. the propensity to cooperate and help in the creation of collective goods (Amodio et al., 2012; Guiso et al., 2011). We use voter turnout to 2011 referenda as our main social capital measure. One advantage of voter turnout is that it is measured accurately also at fine geographical level. Additionally, popular referenda arguably provide a more objective measure of civic mindedness, as these are likely not to be affected by the voter's evaluation of the political incumbent's performance. Yet, we conduct a battery of robustness checks, including the use of alternative measures of social capital such as voter turnout to European elections. We find that municipalities lying at top quartile of social capital distribution experienced a positive and significant difference in vaccination coverage rate for the overall population as compared to the rest of municipalities, with a maximum weekly gap of 1.25%. Female and male populations share the same pattern in the evolution of the effect of high social capital on the vaccination coverage rate. However, the heterogeneous analysis by age groups reveals that the overall positive effect of social capital is mainly driven by individuals aged 40-49, with the maximum estimated weekly increase equal to 2.47% on May 31. Results are robust to alternative measures of social capital, a different definition of vaccination coverage, and model specifications. Our results contribute to understanding the role of local-level social capital in promoting COVID-19 vaccination uptake. Such evidence is instrumental not only for advancing vaccination campaigns targeting communicable diseases, but more generally, for designing effective public health policies and interventions.

Title

Analysis of Competitive Dynamics among Anticancer Drugs in the Italian Pharmaceutical Market

Author

Caimmi M., Canali B., Di Costanzo A., Liberati M.S., Mercati R., Vassallo C., Fiorentino F.

Abstract

Background: In recent years, with the rise in public debt and the ageing of population, the financial sustainability of the Italian National Health Service has been subject of concern. The Italian Medicines Agency (AIFA) currently adopts several measures to contain pharmaceutical expenditure. These include, among others, mandatory reductions on final negotiated list prices, Managed Entry Agreements to mitigate uncertainties related to the size of drugs target population and their clinical efficacy, and the requirement for health economic evaluations in pharmaceutical companies' reimbursement requests. Cost containment measures should allow for an "anchoring effect" which links treatment costs of drugs reimbursed within the same indication. Being among the most innovative and rapidly evolving areas of drug development, oncology represents a suitable setting to analyze whether AIFA successfully favors competitive dynamics or not, which should stimulate price convergence. Whereas published literature has already investigated the effect of competition on anticancer branded drugs costs in the United States, few have studied competitive dynamics in a public healthcare system with highly regulated frameworks; none has analyzed the Italian context in particular.

Objectives: The aim of this study is to analyze and measure the impact of competition on costs for anticancer drugs as negotiated by AIFA and pharmaceutical companies. In particular, it was explored the relationship between the cost of treatment of newly launched anticancer drugs and other already available therapeutic alternatives within the same indication.

Methodology: The analysis included all the new anticancer molecular entities that received a first positive opinion by the Committee for Medicinal Products for Human Use from January 2015 and that were reimbursed in Italy within July 2022. Data were gathered from three different sources: drugs Summary of Product Characteristics (SmPC), drugs pivotal clinical trials, and an IQVIA proprietary database on Italian negotiation dynamics. Treatment costs by

drug and indication were estimated based on median exposure to treatment as observed in pivotal clinical trials, posology indicated in drugs SmPC, and the lowest price/mg ratio among those retrieved from different drug pack sizes reimbursed in Italy for each indication. Treatment costs were then deflated considering an IQVIA statistic elaboration on expenditure data from a hospital panel, which includes discount negotiated with AIFA, tender, and commercial discounts. Relevant literature was investigated to identify key variables to measure competitive dynamics and control variables that may have an impact on final negotiated prices in the Italian pharmaceutical market. First, best subset selection techniques were applied to identify the most relevant control variables. Next, the effect of competition was estimated within defined markets by means of both log-linear and log-log regression models. Finally, scenario analyses were run to test whether different market definitions lead to significant changes.

Main results: Based on 86 reimbursed indications for an overall 42 anticancer drugs, 28 markets were identified as unique combinations of cancer site and treatment line (first or second and subsequent lines). Competitive dynamics were analyzed after controlling for, among others, drugs innovativeness, orphan status, incremental efficacy over comparators in clinical trials, and cancer incidence. According to descriptive and inferential statistics, both the average and the last reimbursed treatment cost in the market had a significant impact on negotiated prices. In both cases, the magnitude of coefficient was small, which suggested the existence of an "anchoring effect" that leads to treatment costs convergence among drugs reimbursed within the same market. Scenario analyses confirmed the appropriateness of considering treatment line as a market identifier. This study improved the existing literature in three main aspects: a more precise market definition considering both cancer site and treatment line, costs of treatment based on specific treatment duration estimated as median exposure to treatment in pivotal clinical trials, and prices retrieved from hospital expenditure data, which allowed to include discount negotiated with AIFA, tender, and commercial discounts. These novelties enhanced an analysis that better captures competition mechanisms, which emerged as relevant also in a highly regulated pharmaceutical market such as the Italian market.

Title

The Role of Information and Competition on Hospital Performance

Author

Paola Bertoli, Emanuele Bracco, José J. Escarce, Paolo Pertile

Abstract

In recent years, the use and release of performance indicators on hospital care have become more and more common. Considerable resources are devoted to performance measurement even though it is still often unclear what effect the release of this information into the public domain will generate. The general assumption is that the information will ultimately improve healthcare provision by affecting the behaviors of various stakeholders (Berwick 2003; Smith 2009; Campanella 2016). Information release would improve hospital quality through three not mutually exclusive channels: regulation, professionalism, and market forces (Devers et al., 2004). Public performance indicators can make patients more informed promoting health care through a \selection pathway" where patients choose high quality hospitals (Greenhalgh et al., 2018). At the same time, the release of such indicators can trigger a “change pathway” where providers are motivated to improve quality as the information release can influence their reputation, and/or because of professional norms around maintaining standards and self-governance (Hibbard et al., 2005). Still, existing evidence on the efficacy of public information to improve hospital quality is contrasting. If some studies find no effect (Clough et al. 2002; Ghali et al. 1997), other have observed an increase in hospital quality after the release of performance data (O'Connor et al., 1996; Baker et al., 2001; Hibbard et al., 2003; Hibbard et al., 2005). This mixed evidence can be partially explained by the large variation in the design and dissemination of the performance data. Such data must be easy to interpret, displayed as to be effortlessly understood and to allow the reader to easily distinguish between high- and low performers. The present study contributes to the existing debate on the efficacy of the release of performance information taking advantage of a statewide evaluation program implemented in Italy. As of 2012, the Italian National Agency for Regional Health Services (Agenzia Nazionale per i Servizi Sanitari Regionali - AGENAS) run a national program on healthcare performance (the so-called Programma Nazionale Esiti - PNE) which produces volumes as well as

performance indicators at the hospital level for all public and private accredited hospitals operating in the country. We recollect both performance and volume indicators for a group of selected medical interventions for the period 2008-2019 and assess the impact of the introduction of the PNE on hospital care. We exploit two point in time. First, we examine the impact of making available such performance indicators only to healthcare providers since between 2012 and 2016 the PNE was not accessible to the general public. Second, we examine the effect of releasing the PNE to the public domain since the PNE website became publicly available to anyone in 2016. The release of performance information may impact differently hospital providers depending on contextual factors and their characteristics. For this reason, we also dig deeper into these dynamic focusing on the potential heterogeneous response of hospital providers to information based on their different nature and the competitive pressure to which their are exposed. Specifically, we develop new intervention-specific measures of hospital competition based on the geo-localization of hospitals and the potential hospital catchment area and look at the difference between public managed hospitals, hospital trusts and private accredited hospitals.

Title

Temporary GPs and the effects on patients' health outcomes

Author

Joan Madia, Francesco Moscone, Catia Nicodemo, Cristina E. Orso, Cristina Tealdi

Abstract

The impact of temporary work has been studied extensively in the literature, but little is known about the implications of temporary work in the healthcare sector. In this scientific paper, we investigate the impact of locum doctors on patients' satisfaction and prescription behaviours using a unique dataset that matches the information on temporary contracts for 6781 healthcare practices in England from 2017 to 2022, along with patient satisfaction ratings and psychotropic medication drug prescriptions. We employ panel data techniques that leverage both the cross-sectional and temporal dimensions of the dataset to analyse the relationship between locum doctors and mental health outcomes. Our findings indicate that patient satisfaction is lower in practices with more temporary job contracts. This result supports our hypothesis that patients may prefer a less precarious relationship with their healthcare providers. We also find a positive association between the higher share of locums and psychotropic medication prescriptions, while there is a negative association with antibiotic and infection prescriptions. The reduced time that locums may have to engage with their patients may incentivize them to prescribe, or possibly over-prescribe, psychotropic medications. This suggests that locum doctors may have an adverse impact on the appropriateness of treatments for patients. Our results have significant implications for policy interventions aimed at increasing the flexibility of the labour market in the healthcare sector. Such reforms should also consider the economic and social costs of the changes, including the psychological well-being of patients and the appropriateness of their treatments. Our study highlights the importance of ensuring that temporary work arrangements in healthcare do not compromise the quality of patient care and treatment outcomes.

Title

Overseas GPs and Prescription Behaviour in England

Author

Catia Nicodemo, Cristina E. Orso, Cristina Tealdi

Abstract

The UK imports many doctors from abroad, where medical training and experience might be different. This study attempts to understand how drug prescription behaviour differs in English GP practices which have larger or smaller numbers of foreign-trained GPs. Results show that in general practices with a high share of GPs trained outside the UK, prescriptions for several different types of drugs, such as antibiotics, mental health medications, analgesics and statins are higher, controlling for the characteristics of the patients and the practices. However, we find no evidence of any significant impact of such different prescribing behaviour neither on patients' satisfaction nor on unplanned hospitalisations, suggesting a potential over-prescribing behaviour. Identifying differences in prescribing habits among GPs is paramount to identifying best policies able to guarantee consistent services across GP practices and the consequent reduction of health inequalities.

Title

The Effects of the Employer Mandate on Employees Health Behaviours and Preventive Healthcare Access: Evidence from MEPS

Author

Sara Maria Barbani, Chiara Seghieri

Abstract

The Patient Protection and Affordable Care Act or just the Affordable Care Act (ACA) was approved in March 2010 and came into effect in January 2014. Through a combination of mandates, subsidies, Medicaid expansions, and health insurance exchanges, the ACA has reformed the United States (US) healthcare system, making the services provided therein far more affordable, particularly for US citizens that could not afford them before the reform. The ACA's implementation significantly reduced the number of uninsured individuals, especially low-income individuals and immigrants (Blumenthal et al., 2020). Nonetheless, even though the ACA has allowed more people to access healthcare services, its effects on individual health and health behaviours need to be further investigated.

Within this context, the present study aims at examining the impact of the provision of the employer mandate – one of the ACA policies – on health behaviours. The employer mandate, which came into effect on January 1st of 2015, required large employers (with full-time equivalent workers _ FTEs ≥50) to offer affordable "minimum-value" health insurance to full-time employees and their dependents (to age 26 years) or be subject to annual penalties if at least 1 employee receives premium tax credits for the purchase of individual health insurance via an exchange. In particular, in this study we analyse the impact of this mandate on behaviours related to future health risks, including both behaviours that reduce future risks (such as utilization of preventive medical services, such as blood pressure and cholesterol checks) and those that increase risks (such as smoking and overeating).

Little is known about the Employer Mandate effects on the health status of employees. The majority tries to analyse the adverse effect of this policy on employment and usual hours worked per week, a stream that is not in line with our analysis. Only Lennon, in 2021, investigated if the availability of employer-sponsored health insurance (ESI) has increased

through the Employer Mandate.Using 2011–2017 Medical Expenditure Panel Survey (MEPS) data in a difference-in-difference framework, the author found that there was not an increase in ESI coverage rates.

We use 2012–2018 Medical Expenditure Panel Survey data which allows for a longer post-treatment period than prior studies and therefore a greater ability to detect effects of ex-ante moral hazard (Courtemanche et al. (2018)). We employ a difference-in-difference framework that compares workers at large firms (employees ≥50) who got the health coverage with those who did not benefit from the coverage, before and after the Employer Mandate provision came into effect. To minimize selection bias in this non-experimental study, we also apply the propensity score for having to balanced groups to compare in the model. As outcome variables referring to health behaviours, we consider the following four variables: smoking attitude, obesity risk, cholesterol checks, and blood pressure checks. Age, gender, race, income, marital status, employment status, educational level, resident area, one health status indicators, risk's attitude, insurance's preference were used as control variables.

The study cohort includes in total 108,560 individuals: the treated group is composed by 32,042 employees, of which 49% are men with an average age of 41; the control group is composed by 76,518 employees, of which 45% are men with an average age of 40.

Preliminary results show that the coefficient for the differences-in-differences estimator is not significant at 95% (P>|t| > 0.05) for three of the four outcomes evaluated (risk to obesity, blood pressured checked and checked cholesterol), whereas the coefficient for the smoking habits is found to be statistically significant at 90% (P>|t| > 0.1). Indeed, estimates show that there is a reduction in smoking habits of 1.0% following the provision of the mandate, probably encouraged by the employers' strategy of offering a variety of inducements to their employees with the intent to improve their health such as to lower the rate of absenteeism and health care costs related to smoke. However, we find no evidence that some other changes have been encourage by the reform, suggesting in some case the presence of the to estimate the impacts of the ex-ante moral hazard.

Title

The Impact of a Cost-containment Measure on the Quality of Regional Health Services in Italy: a Parametric and a Non-parametric Approach

Author

Andrea Ciaccio

Abstract

The Italian National Health Service is a regionally based system founded in 1978. Since its inception, the legislator's primary purpose was to provide uniform services across regions and guarantee equitable access to all citizens, regardless of socio-economic conditions. Although one of the main aims of having a decentralized system was to formally attribute regions the responsibility for the RHS's financial stability and thus contain costs, the Central Government has continued to finance ex-post the large deficit run by regional governments over the years. This has led public health expenditure and, in turn, the total deficit for public health expenditure to grow dramatically. In this context, Piani di Rientro (or Recovery Plans in English) were introduced in 2007 in a staggered fashion to counteract the increased spending and restore the financial stability of RHSs. The aim of this policy was twofold: on the one side, to restore budget balance, and on the other side, to guarantee Essential Levels of Assistance (ELAs). Sixteen years after the first Piano di Rientro (PdR) was signed, 10 out of 21 RHSs have undergone at least one round of the policy. Three regions managed to exit, whereas seven remain under a PdR. While there is a wide consensus that introducing PdRs reduced costs, on the other side, the effects in terms of quality and efficiency are mixed. On the one hand, treated regions complain about the deteriorated quality of services provided after the plan's introduction (Calabrò, 2016). On the other hand, the Central Government reports positive effects regarding efficiency and no deterioration in the quality of the RHSs (SiVeAS, 2014; Aimone Gigio et al., 2018). Similar contrasting evidence is found in the literature on PdRs (e.g., Bordignon et al.; 2020, Cirulli et al., 2023). This is probably due to different model specifications and identification strategies used by the different studies. This paper provides novel evidence regarding the causal impact of PdRs on the quality and efficiency of RHSs, by contributing to the existing literature in several ways. First, a longer time span will be employed to evaluate

the long-run impact of the policy. Second, since different studies proved that the estimator for the average treatment effect on the treated (ATT) obtained by the TWFE – commonly used in the existing literature of PdRs – is likely to be severely biased in a context with variation in treatment timing, as the one under scrutiny (e.g., see Goodman-Bacon (2021)), the estimator proposed by Wooldridge (2021), the Two-Way Mundlak (TWM), will be exploited. This estimator lets us estimate the causal effect of PdRs by explicitly considering the staggered nature of the policy. In addition, this approach allows the researcher to estimate heterogeneous treatment effects. Specifically, heterogeneity along two dimensions will be introduced: across regions and over time. The former will allow us to understand whether regions that underwent a more abrupt reduction of costs experienced different impacts regarding the quality and efficiency of the RHS. The latter, instead, will let us estimate the long-run impact of the policy. Further, the sub cluster wild bootstrap proposed by Mackinnon and Webb (2018), which may lead to improved finite-sample inference in a context with few (treated) clusters, will be employed. Lastly, since three strong assumptions must be satisfied for the estimator of the ATT obtained via the TWM approach to be consistent, building on Depalo (2019), results obtained via bounds (Manski and Pepper, 2018) will also be presented. This latter estimator will allow us to understand whether the results obtained using the parametric estimator are robust to the relaxation of the main identifying assumptions by directly incorporating the uncertainty about the validity of the "exact invariance" assumption - exploited to construct the counterfactual outcome - and deriving bounds for the treatment effect. There are two main advantages of this approach. First, the exact reason for which the identifying assumption may not hold must not be known to the researcher. Second, it allows us to estimate region-specific treatment effects, thus shedding light on the results obtained via the parametric estimator. On average, PdRs managed to reduce costs and healthcare expenditures. Cost reduction was pursued through decreased hospital beds and hospitalization rates. However, contrary to what was expected from the policymaker, except for Abruzzo and Calabria, the policy did not enhance the efficiency and appropriateness of care provided in treated RHSs. In addition, a deterioration in the quality of services was observed in regions that underwent a PdR as proxied by the mortality rate (all causes and from ischaemic heart diseases) and the % of patients migrating to other regions for

ordinary acute hospitalizations. These results also hold in the long run and are robust to different sensitivity exercises. Moreover, the findings obtained using the TWM approach align with those obtained via the non-parametric estimator, suggesting that there may be no serious violations of the main identifying assumptions needed for the parametric estimator to be consistent. Lastly, the larger negative consequences regarding quality indicators were documented in regions that experienced a more drastic reduction in the hospitalization rate. These findings, coupled with the fact that regions that faced a less abrupt reduction of costs experienced a less severe deterioration in the quality of services provided, may inform policymakers about the importance of taking a more gradual approach toward healthcare spending cuts. Sudden drops in health spending unavoidably translate into worse health outcomes without necessarily enhancing the efficiency of healthcare providers.

Title

The impact of public-private partnership on facility management costs: Evidence from healthcare in England

Author

Alena Podaneva, Evgenii Monastyrenko

Abstract

The Public-Private Partnership (PPP) contracts, long-term contractual arrangements between government and private partners, have become an increasingly popular way to build major public infrastructure projects. The effectiveness of such contracts has been assessed across various dimensions, including, among others, cost savings. Since the 1980s, there has been an ongoing debate regarding the cost efficiency of PPPs as an alternative form of delivering public services.

This study focuses on the healthcare sector in England and its use of Private Finance Initiatives (PFIs), a type of PPPs. This paper enriches the literature that compares alternative procurement methods of public projects, PPP and Traditional Procurement (TP), across various dimensions and industries. Another novelty of this study is the use of granular and sparse data on the healthcare sector in England. The study relies on Estates Returns Information Collection (ERIC) dataset provided by NHS Digital. This reach collection of data that covers the costs of providing and operating facility management services of the NHS trusts from 2018 to 2021. The dataset also includes detailed information about NHS foundation trusts, aggregated to the PFI and non-PFI estates levels. Based on this data, it appears that PFI hospitals are typically newer, larger, and less numerous compared to traditional hospitals. Additionally, these PFI hospitals tend to be geographically concentrated around major urban areas.

To the best of our knowledge, this study is the first to apply panel data empirical analysis to a comparison of public projects procurement types (i.e. PPPs and TPs) in healthcare sector. Our dependent variables are Hard Facility Management (HFM) and Soft Facility Management (SFM) services costs. HFM services are responsible for maintaining the physical assets of NHS buildings, including both internal and external elements. On the other hand, SFM services

provide an extensive set of other amenities, including but not limited to catering, cleaning, security, postal services, and waste management.

Our main independent variable of interest is a dummy indicating whether the hospital procurement type is PFI or non-PFI. Our analysis starts with simple OLS regressions. We control for various characteristics that fall into five categories: labour, areas, energy, backlog costs, catering and laundry services. The tested empirical specifications include alternative sets of fixed effects: hospital profile × year and UK region × year. They capture time-varying unobservables that are specific to the range of medical services offered by the hospital and its geographical location, respectively.

To tackle potential endogeneity problem, we employ 2SLS estimator, using the London Interbank Offered Rate (LIBOR) as an instrumental variable. This instrument is constructed by weighting the LIBOR rate by the age profile of hospital sites, as reported in the ERIC dataset. We postulate that the interest rate directly influences the selection and availability of financial resources, which subsequently affects the government's decision regarding the type of hospital procurement.

The key results show that HFM and SFM costs are systematically higher for PFI than for traditional hospitals, augmenting HFM and SFM service costs by 25.1% and 3.9%, respectively. This coefficient for HFM service costs is larger for PFI hospitals with old buildings, while the opposite is true for SFM service costs. Similarly, the difference between PFI and traditional hospitals is larger for hospital sites that are partially delivered under PFI contract, while the difference in SFM service costs is larger for fully delivered ones.

This paper provides interpretations to these results from different perspectives. For instance, we consider the role of energy consumption in hospitals, that is expected to significantly impact hard facility management costs. According to our estimations, for each additional percent of total energy consumed by a hospital, hard facility management costs increase by 10.5% faster for PFI than for TP hospitals. This might be due to the fact that younger PFI hospitals need to comply with modern environmental regulations, invest in green energy solutions and undertake costly maintenance and upgrades to cope with peak load.

At the same time, we find evidence, although limited, that outsourcing of some auxiliary hospital activities impacts facility management costs. For instance, we found that in-house laundry and linen services can reduce SFM costs by 6.2% regardless of hospital procurement type.

Finally, we find that difference in HFM costs between PFI and non-PFI hospitals increases with the reduction of backlog costs. This means that as hospitals become more efficient in managing and reducing their deferred maintenance tasks, PFI hospitals tend to have higher HFM costs compared to non-PFI hospitals. This result might be due to the different financial structures and contracts in PFI versus non-PFI hospitals, affecting how they manage and finance their maintenance tasks. This result is overall in line with principal-agent theory.

Title

Patient migration for adequate cancer treatments: an analysis of the geographical mobility within the Italian National Health System

Author

Sergio Beraldo, Antonio D'Ambrosio, Michela Collaro, Immacolata Marino, Jonathan Praschke

Abstract

We investigate the relationship between the regional configuration of health systems and the geographical mobility of patients over time. We use data derived from the Hospital Discharge Records (2009-2019), including detailed information on hospital stays of cancer patients. We analyse both intra- and inter-regional mobility according to the characteristics of the health facilities, so as to identify the structural properties which may encourage patients to travel for care. We also explore whether the flows are directed towards health providers high-specialized in the delivery of cancer-specific treatments, looking at their structural characteristics and at the volume of clinical activities, possibly associated with waiting lists. The study suggests ways to reallocate public expenditure in such a way as to reduce inter-regional flows of patients, with positive effects on disparities in access to care.

Title

Refuelling a quiet fire: old truthers and new discontent in the wake of Covid-19

Author

Gabriele Beccari, Matilde Giaccherini, Joanna Kopinska, Gabriele Rovigatti

Abstract

This paper investigates the determinants that contributed to the proliferation of online COVID skepticism on Twitter across Italian municipalities. We focus on economic lockdown measures that had severe economic implications for suspended workers belonging to non-essential economic sectors. Exploiting the spatial heterogeneity of economic restrictive policies, we find that COVID skepticism spreads more in municipalities with a higher share of suspended workers from non-essential sectors. We also study the effect of online pre-COVID anti-vax sentiment on Twitter COVID conspiracy. Our findings suggest that old "truthers" amplify the online COVID skepticism in local communities. Finally, the spread of COVID mistrust is positively associated with COVID vaccine hesitancy. Our results highlight the potential unintended consequences of stringent policies on public opinion and health-related decisions. Significance statement The widespread crisis of misinformation erodes collective sense-making, and in particular, poses significant risks to public health. In this paper, we study the origins and consequences of COVID skepticism on Twitter in Italy in relation to the economic lockdown measures implemented by the government and to pre-COVID anti-vax sentiment. Exploiting the spatial heterogeneity of economic restrictive policies, we find that COVID skepticism spreads more in municipalities with a higher share of suspended workers from non-essential sectors. We also show that Twitter COVID conspiracy is stronger in municipalities with higher levels of anti-vax sentiment expressed on Twitter prior to COVID. Finally, we find that the local spread of Twitter COVID skepticism is associated with differences in the uptake of COVID vaccines.

Title

Labour force participation and area-level supply of psychological therapies in England

Author

Joe Dodd, Igor Francetic

Abstract

Background: The interlinked nature of various labour market outcomes and mental health conditions has been extensively documented. Common mental health conditions – such as depression or anxiety – can be addressed by appropriate combinations of psychological and drug therapies. In England, the Improving Access to Psychological Therapies (IAPT) programme was launched in 2008 to expand access to these therapies, now renamed as NHS Talking Therapies for Anxiety and Depression. Yet, utilisation and supply of psychological therapies remains limited, with a large gap in the literature surrounding the individual-level impact associated with area-level supply of IAPT.

Objectives: i) estimate individual-level wellbeing effects of area-level IAPT waiting times for treatment of common mental health conditions in England, and ii) examine whether waiting times for treatment affect individual-level labour market outcomes.

Methods: We use data on 61,895 individuals from the 2015-2019 waves of the UK Household Longitudinal Household Survey (UKHLS), containing detailed information on inter alia, whether respondent worked a paid job week prior to interview, reason for absence from paid job, and subjective wellbeing. We define a measure of the supply of IAPT services in the local area surrounding participants by aggregating publicly available provider-level data on location and monthly activity of IAPT providers to their respective Lower Layer Super Output Area (LSOA). We explore the relationship between area-level median waiting times from referral to starting course of IAPT treatment and labour market participation of the survey respondent. This is conducted by using regression analysis to estimate the impacts of the previous month's LSOA-level waiting times for IAPT treatments on whether the survey respondent completed paid employment the week prior to interview and whether the respondent is absent from their employment for health-related reasons. We estimate intention-to-treat effects of waiting times for IAPT treatments on individual outcomes due to the UKHLS not including information on

whether participants accessed the services. We create a treatment indicator for those with a GHQ-12 caseness score of seven or above to identify the probable users of IAPT services. To produce regression estimates we rely on selection on observables, controlling for individual and area-level characteristics to achieve plausible unconfoundedness of the supply of IAPT.

Results: Initial results show GHQ-12 scores have statistically significant relationships with both if the survey participant completed paid work, and if they were absent from their paid work, the week prior to interview. However, median waiting times for IAPT treatment have no significant association with either outcome. Using panel fixed effects regression models, we find an increase of 10 days (0.76 SDs) in median wait time for IAPT treatment is associated with a reduction of 1% in probability of completing paid work, and a 1% increase in probability of absence from paid work, in the week prior to survey interview (p-value<0.01).

Conclusion: The supply of IAPT has the scope to improve individuals' wellbeing, and this will in turn improve their ability to participate in the labour force. For future work, we will assess spillovers on labour outcomes, e.g. reduction of absenteeism.

Title

Monetary flows for health mobility. The Italian NHS from a network perspective

Author

Giovanni Carnazza, Raffaele Lagravinese, Paolo Liberati, Irene Torrini

Abstract

Background. The Italian National Health Service (NHS) is a multi-layered system based on universal and equal access to a comprehensive set of services. The organization involves the central government, which sets the essential levels of care, the regional governments (RGs), responsible for the organization and administration of health care, and the local health authorities, financially accountable for the services provided locally. Over time, the NHS has undergone numerous reforms aimed at introducing quasi-markets and fiscal decentralization. The separation between providers of services and purchasers and free patient mobility has been established to increase competition and efficiency, with general taxation supplementing the regional one in covering local financial needs. In compliance with patient free choice, individuals are allowed to choose any provider within the Italian territory. Payments for out-of-region care give rise to financial transactions between regions of residence and destination on the basis of a conventional flat rate. The exporting regions (debtors) reimburse those importing "foreign" patients (creditors), with the amount of compensation including the running and full costs of care. Since exporting regions also bear the fixed costs of their public services, they face strong incentives to limit outflows. Moreover, as importing regions obtain net gains from positive mobility balances, they are highly motivated to attract inflows, especially for high-cost treatments.

Research question. In the long run, free patient choice should determine zero voluntary interregional mobility, as competition should stimulate quality levelling and ensure fair market sharing (Brekke et al., 2012). However, the NHS is still characterized by high and persistent interregional mobility (Fabbri and Robone, 2010). Our paper addresses this issue by introducing new features. First, we exploit monetary flows for hospital acute care between Italian regions, analysing not only mobility, but also its economic burden. Second, the study is

conducted over the long time period from the introduction of free patient choice in 2002 to the last year of the pre-Covid era, 2019, and consider two complementary tools.

Empirical strategy. In the first step of our empirical strategy, we conceptualize interregional health mobility using complex network theory (Cappelli et al., 2023; Wasserman and Faust, 1994), where regions represent the nodes and between-regions monetary flows the connections. The importance of nodes is assessed through the weighted degree, a measure of the flow intensity of each region with the other regions, computed by considering not only the number of connections but also the relative amount of monetary exchange. In the second step, we estimate a Conditional Random Effects Spatial Durbin Model (LeSage and Pace, 2008; Mundlak, 1978) to study the determinants of monetary flows between origin and destination regions (OD-pair). This approach relies on a gravity model where the dependent variable represents outflows (inflows) for the origin (destination) region. The outcome of interest is specified as a function of contextual traits and regional health service characteristics of the origin and destination region and respective neighbours. OD-pair random effects and time averages of the included regressors are controlled for to capture the effects of time-invariant unobserved factors.

Main results. The results from the network analysis on the export side identify the southern regions as the main debtors and northern regions as the main creditors, with the main flow direction from south to north even when OD-pair distance is taken into account. When population size is considered, the North is also characterized by high monetary outflows, although all directed within the respective macro area. The Centre plays an intermediary role, receives revenue from southern patients and compensates northern regions for outgoing patients. Focusing on the import side, southern regions and islands tend to get revenue from adjacent regions with the exception of Abruzzo, that is an attractor of patients from Lazio. The same characterisation applies to central regions. The mechanisms behind these patterns are clearly unveiled by the results from the second-step analysis. At the origin, a relevant role is played by the availability of health service supply. Commissioned regions under financial recovery plans face high outflows. This is because of greater financial constraints, which translates in reduced resources for health care (Beraldo et al., 2023). Opposite results are

observed for regions with a high proportion of beds in private licensed hospitals (PLHs) to total beds. PLHs have market shares of more than 40% in widely spread and highly complex specialties such as orthopaedics, oncology and cardiac surgery, thus offering a broad and diverse range of treatments (Petracca, Ricci, et al., 2016). Regarding spill-over effects, origin regions are more able to retain patients when located close to regions with high inefficiencies and few discharges from specialized facilities. Surprisingly, higher percentages of PLH beds in neighbouring regions are associated with lower patient retention, a finding requiring future in-depth investigation on bordering regions only. At the destination, our findings point to specialization as the main driver of monetary inflows, as evidenced by the positive effects of technology levels and the percentage of discharged from specialized facilities, and the negative impact of the heterogeneity of diseases treated (Balia et al., 2018). The largest effect is found for the share of PLHs, due to their engagement in highly complex and high-cost sectors and the incentives they face to attract patients (Brenna and Spandonaro, 2015). Spatially, only GDP interacts with inflows, with the ability to generate revenue increasing with proximity to low-wealth regions.

Title

Let Them Eat Cake? The Net Consumer Welfare Impact of Sin Taxes

Author

Valeria di Cosmo, Silvia Tiezzi

Abstract

When judging the distributional impact of a sin tax, what matters is not just how much low income people would pay but how much the tax would benefit or harm them overall. In this paper we assess the consumer welfare impact of a fat tax net of its expected benefits computed as savings from averted internalities. Using data on Italian consumers we estimate a censored Exact Affine Stone Index (EASI) incomplete demand system for food groups and simulate changes in purchases, calorie intake, consumers' welfare and the monetary value of health benefits after the tax. Our results suggest costs from taxation larger than benefits at all income levels. As a fraction of income, the net impact would be regressively distributed.

Title

Friday Morning Fever. Evidence from a Randomized Experiment on Sick Leave Monitoring in the Public Sector

Author

Tito Boeri, Edoardo di Porto, Paolo Naticchioni, Vincenzo Scrutinio

Abstract

Sick leave is a key institution protecting workers' health and providing income smoothing, but its misuse can promote absenteeism, presenteeism and harm productivity. There is a huge variation across OECD countries in the number of working days lost for illness. Such differences can hardly be explained either by data sources (self-reported in surveys vs. administrative data on days of compensation), or by differences in the age structure or in the sectoral and occupational composition of the workforce. Indeed, average reported days of sickness per year and worker vary almost by a factor of 10: they range from 2.1 in the United Kingdom to 18.3 in Germany. As regulations are rather similar across the EU (OECD, 2010), and cross-country differences in epidemiological risk are second order. Heterogeneity in enforcement procedures is likely to play an important role in these huge cross-country differences in absenteeism rates. Several countries have introduced strict sickness monitoring policies in the last 20 years to contain sickness absence and reduce public expenditure on sickness benefits. Despite this high policy relevance, only a few attempts have been made to date to evaluate the effectiveness of such enforcement measures, notably in the public sector where absenteeism is generally larger than in the private sector.

This paper provides the first analysis of a population-wide controlled field experiment for home visits checking on sick leave in the public sector. The experiment was carried out in Italy on the universe public employees sick leave claims. Italy is a country known for the large absenteeism in the public sector sometimes associated with suspect behaviours. For instance, on 2014 New Years' eve 764 local police officers out of 900 reported sick leave in Rome.

Data from the sickness benefit register confirms the suspects on strategic behaviour: sickness certificates are far from being uniformly distributed over weekdays as one would expect based on epidemiological factors. We exploit unique administrative data from the Italian social

security administration (INPS) on sick leave and work histories. We find very strong heterogeneity in sick leave claiming among Italian public employees and this is associated with strong heterogenous results in terms of detected irregularities by public sector, location, and income. We also find that receiving a random home visit reduces the number of days on sick leave in the following 16 months by about 12% (5.5 days). The effect is stronger for workers who are found irregularly on sick leave (-10.2 days). We interpret our findings as a deterrence effect of home visits: workers being found irregularly on sick leave experience a decline of about 2% of their wage in the following 12 months. Uncertainty aversion (there is no automatism in these sanctions) can play a role in these results. We also find very strong heterogenous response to home visit by public sector, location, and income. Our estimates suggest that home visits are cost-effective: every Euro spent for the visits involves up to 10 Euros reductions in sick benefits outlays. We estimate the marginal value of public funds (MVPF) spent on home visits at about 1.13, which is significantly lower than estimates of MVPF of income taxes in the US.

Title

Non-traditional roles and unmet care need during primary care appointments

Author

Ben Walker, Igor Francetic

Abstract

Background: To combat shortages of doctors and nurses, the NHS has increasingly hired non-traditional roles such as Physician Associates. These non-traditional practitioners, though lower cost, tend to have less formal training than Doctors, which may affect quality of care.

Aim: To assess the effectiveness of non-traditional practitioners at recognising and meeting patient needs relative to doctors in primary care.

Methods: We use data from 1,930,151 respondents to the General Practice Patients' Survey, a repeated cross-sectional survey randomly distributed to individuals registered at any General Practice in the UK. Our outcome is a binary variable indicating whether patients felt that their needs were met during their last appointment. Our exposure is seeing a non-traditional practitioner instead of a General Practitioner (GP). Our main empirical approach uses a control function approach to account for the endogeneity mostly in relation to availability and integration of staff in non-traditional roles across the practices in our sample. We use the number of staff FTE (per 1,000 patients) who are in medical roles not traditionally associated with primary care (i.e. neither GPs nor nurses), which we argue to be plausibly exogenous from the perspective of patients. We contrast results of our control function approach (second stage estimated with Probit) with naïve models assuming a linear probability model (LPM), with and without accounting for practice fixed effects but ignoring endogeneity. We also contrast our main results with control function estimates estimated assuming linear models in both first and second stage, and accounting for practice fixed effects. Acknowledging the vulnerability of patients with mental healthcare needs, we also analyse this sub-sample separately.

Results: After adjusting for covariates and practice fixed effects, naïve models ignoring endogeneity suggest that seeing a non-traditional practitioner is associated with a 0.7% lower probability of feeling that care needs were met in the pooled sample (and 1% in the sub-sample with mental healthcare needs). Our preferred control function approach reveals a much

stronger relationship, with a drop in the probability of feeling that care needs were met of a 17.9% in the pooled sample and 22% in the sub-sample with mental healthcare needs.

Discussion: Results suggest that patients are less likely to feel needs were met when seeing a non-traditional practitioner, and this is slightly stronger amongst patients with mental health needs. Discrepancies could be due to lower ability of non-traditional practitioners to treat patients, or due to patients lacking trust in non-traditional practitioners.

Title

Offering a perspective and dissemination of a fast-increasing field of research at the intersection of health economics and political economy. Presentation based on the forthcoming Edgar Elgar Handbook on the Political Economy of Health Systems

Author

Alberto Batinti, Joan Costa-Font, Gilberto Turati

Abstract

Although many would agree with the statement "that effective health care is at the heart of staying healthy and caring for those sick", it is far less obvious for most of us to understand how important rules constraining and incentivising health care activity are for efficient health care, and more specifically to keep the costs of medicines under control, and to motivate physicians and nurses in the pursuit of their daily duties. Country-specific rules, influencing the constraints and incentives of healthcare activity are often defined as healthcare institutions. Such rules can take the form of policies when they refer to specific interventions. More generally, the rules influencing how health care is provided, and financed are widely heterogeneous across countries, and define what we know as health systems. Health systems differ by several features including the way physicians and medicines are regulated and paid, whether they have a single or multiple payers for health care, or the barriers current and future patients face to access health care. This book will focus on studying how institutions affect the activity, outcomes, and financing of health systems widely understood. Health systems are in continuous reform to respond to new evidence and challenges, and such reforms are interdependent, and countries learn from each other in making policy choices. Similarly, health systems are affected by changes in social values and ideologies (e.g., the shared belief in the primacy of market choice over government provision, irrespectively of social efficiency, can explain the heavy reliance of health care on markets in the United States), which add to the economic and financial constraints is country sets its self which often exerts consequences in people's health and wellbeing (e.g., austerity cuts weaken the preparedness of nursing homes during the pandemic in Europe). A recent example of the role of regulation in health care at the time of writing this book is the US Supreme Court decision to overturn the 1973 Roe vs. Wade decision on federally

sanctioning the right to abortion and the significant consequences this decision will have on maternal and child health. Another paradigmatic example can be found in the series of decisions made by governments during the various waves of the Covid-19 pandemic and the vaccination campaigns that followed (see Chapter 24). At the core of all these examples, it is possible to identify what can be defined as public choices, namely collective decisions made by citizens and, influenced by the associated political processes that lead to such decisions, which are critical for population health.

Title

Fiscal consolidation and impaired health? Evidence from 27 European countries

Author

Vanessa Cirulli, Giorgia Marini, Francesco Moscone

Abstract

Over the past few years, numerous researchers have explored the connection between health, social spending, and the adoption of austerity measures. As an example, Bradley et al. (2015) investigate the discrepancies in health and social service expenditures (adjusted for GDP per capita) among OECD countries and evaluate how they relate to five health outcomes at the population level, while Bucci et al. (2019) examine the impact of health on an OECD country's level of economic development through the utilization of "aggregative" health measures, such as life expectancy.

In our research, we aim to analyse healthcare systems within the European Union (EU) in order to gain a deeper understanding of the intricate factors that influence health expenditure decisions and their consequent impact on population health.

We collect data on health outcomes, health and social expenditure, fiscal consolidation plans, socio-demographic features, healthcare technologies for 27 European countries from 1995 to 2015 (21 years).

By utilising panel data techniques, our objective is to investigate two key aspects: (a) the presence of disparities in healthcare spending across different countries, and (b) the relationship between these spending patterns and their effects on public health improvements. We initiate our investigation with the hypothesis that these disparities are primarily influenced by various attributes of EU countries, particularly their resource allocation strategies during periods of consolidation. Specifically, we posit that countries compelled to reduce their health spending and adopt more efficient approaches are likely to observe improvements in health outcomes. Conversely, countries that implement across-the-board budget cuts are expected to have either minimal impact on health outcomes or even exhibit negative effects, as suggested by existing literature in the field of health economics.

Title

"My body is a temple": Moral purity and COVID-19 vaccine hesitancy

Author

Marcello Antonini, Mesfin Genie, Arthur E. Attema, Aleksandra Torbica, Alessia Melegaro, Francesco Paolucci

Abstract

Background During a pandemic, noncompliance with vaccination programs is a complex issue that has the potential to create uncertainty for public health outcomes and undermine management efforts. Vaccines are intended to reduce the introduction of infection into the body and thus are associated with moral purity. Moral purity is about protecting people and communities against potentially harmful pathogens. According to studies on moral foundations, people with high levels of moral purity avoid individuals, objects, and experiences that violate a sense of sanctity or self-control or that induce disgust. Furthermore, people with high moral purity fear biological contamination and see disease antigen injection as a damaging corruption of the body's integrity.

Objective While we know that during a pandemic, people make trade-offs between accepting or rejecting the offered vaccines, it is critical to understand how moral purity shapes preferences and trade-offs for vaccination policies enacted to reduce virus transmission and excess death.

Methodology We use a discrete choice experiment (DCE) and a moral attitudes survey to investigate how moral purity influences preferences for vaccination campaigns to mitigate the effects of a pandemic. Because the effectiveness of vaccination campaigns is dependent on individuals' willingness to be vaccinated, it is important to understand preferences for vaccination programs. The DCE included vaccine-related attributes (efficacy, risk of side effects, origin of manufacturer, duration of protection, time spent in development), as well as the corresponding policy adopted (societal restrictions and employment mandates). Moral attitudes were collected through the Moral Foundation Questionnaire (MFQ30). The survey was sent to residents in 21 countries: Australia, Brazil, Chile, Croatia, France, India, Israel, Italy, Latvia, Norway, Russia, Singapore, Slovak Republic, Slovenia, Spain, South Africa, South Korea,

Sweden, Turkey, UK, and the US), via an online panel managed by DemetraOpinioni, between July 2022 and March 2023. The total sample size is 51,000 respondents, who are representative of the country's population in terms of age, gender, and geographical distribution. We estimated the effects of moral purity on preferences for COVID-19 vaccine characteristics and hesitancy using a hybrid choice model.

Main results We found heterogeneity in moral purity attitudes across the countries surveyed. India, Russia, and South Africa are the countries that reported the highest scores, whilst Norway and Sweden are those that reported the lowest scores. Moral purity consistently influenced preferences for COVID-19 vaccine characteristics and social restrictions across countries ($p<0.05$). We also find that individuals with a higher moral purity are more likely to be vaccine hesitant. Vaccines may feel wrong to someone with significant moral purity concerns. Thus, people with high moral purity have a negative preference for most vaccine attributes and are more likely to become vaccine hesitant. The purity foundation includes "physical and spiritual contagion, including virtues of chastity, wholesomeness, and control of desires", the need to avoid people with diseases and being pure. During a pandemic, vaccination campaigns may be identified as potential threats to individuals and their families in their households. Understanding moral attitudes may be useful for communication strategies, with information tailored around the moral purity attitudes. Using messages focused on moral purity to promote vaccine campaigns, for example, may encourage vaccine uptake and makes vaccination a routine practice.

Title

Examining the Relationship between Consumption of Harmful Substances and Healthcare Resources: A Regional Analysis for Italy

Author

Francesco Moscone

Abstract

This study outlines a potential research study aimed at investigating the relationship between the consumption of harmful substances (e.g., tobacco, alcohol, excessive sugar and fat) and healthcare resources or health-related spending in Italy. The study primarily focuses on the impact of consumption on hospital admissions, considering the number of beds and physicians as supply-side variables, which serve as proxies for healthcare costs. Regional disparities in consumption will also be taken into account through the use of panel data methods. The analysis includes the 20 regions of Italy over a 20-year time horizon over the period 2000 to 2019. The proposed methodology involves applying Ordinary Least Squares (OLS) regression, with an emphasis on including Fixed Effects to account for unobserved heterogeneity. The study further explores the option of conducting a deep dive into regional comparisons. The proposed structure of the research paper includes an Introduction and Motivation section, followed by a Literature Review to contextualize the study. Descriptive statistics will provide an overview of the data, and the Methodology section will outline the research design and statistical techniques employed. Results derived from the regression analysis will be presented, and an optional deep dive into regional comparisons may be included. The implications for risk reduction and strategies to mitigate risk will be discussed, leading to the conclusion of the study.

Title

Cutting the queue: investigating waiting times and demand-supply elasticity for elective surgeries in Tuscany, Italy

Author

Caputo A., Vainieri M.

Abstract

Background: Several OECD countries are faced with increasing waiting times for specialist visits and elective surgery, with consequences on patient satisfaction and health outcomes. The rise can be attributed to several factors, including demographic changes characterized by an aging population, which correlates with an increased prevalence of chronic conditions and a subsequent rise in treatment demands. Additionally, advancements in medical treatments and the accumulation of backlogs due to the pandemic have also contributed to this upward trend. To reduce the waiting times, countries have put in place different strategies: contracting out, enhancing the opening hours, enhancing the number of personnel or equipment, and even introducing elements related to appropriate prescriptions (Dixon & Siciliani, 2009; Gutacker et al., 2016; Lungu et al., 2019; Mariotti et al., 2014; Nuti & Vainieri, 2012; Siciliani et al., 2009, 2013; Siciliani & Hurst, 2003; Vainieri et al., 2020). The pandemic led to a reduction in the number of elective surgeries, especially those considered not deferrable with a potential reduction in the unwarranted variation (Vainieri et al. 2022) which in turn can lead to a reduction in the demand for specific interventions. As waiting times can be shaped by both demand and supply factors, any strategy meant at reducing them should consider their elasticity, i.e. the degree to which demand and supply are responsive to waiting times (Martin & Smith, 1999; Riganti et al., 2017). Despite the conceptual awareness of the factors influencing waiting times, there is still poor empirical evidence on the relationships between all these factors and their interactions.

Objective: The primary objective of this study is to investigate the impact of waiting times on the utilization rates of elective surgeries, specifically examining how sensitive the demand and supply are to waiting times. This issue carries great policy implications, as it underscores the importance of considering resource constraints when devising strategic plans to reduce waiting

times in healthcare systems. Consequently, the analysis aims to equip managers and policymakers with a tool to improve resource allocation based on the population's needs and demands, considering also geographic unwarranted variation.

Methods: We investigated demand and supply elasticity with respect to waiting times through a retrospective cohort study in Tuscany (Italy) over 2017-2022, using administrative data disaggregated by local health district and procedure. The paper analyses the relationship between waiting times and treatment rates for some elective surgeries classified in A, B, and C-priority according to the Italian Homogenous Waiting Groups (HWGs). Following the approach by Martin & Smith (1999), we employed linear regression models expressing use rates (dependent variable) and waiting times (main independent variable) as a logarithm. We interpret the regression coefficients as the elasticity of demand and supply in relation to waiting times. For both time groups, we built two models, including in the first one the demand-control variables, and in the second one, the supply-control variables. Furthermore, we incorporated the time variable to capture trends over the years. Our intention is to enhance the analysis by incorporating supplementary control variables that can capture the main drivers of demand and supply. Furthermore, we plan to incorporate a measure of geographic variability, specifically the systematic component of variation (SCV), calculated at the level of Local Health Authorities. This inclusion aims to address disparities in elective surgery rates that are considered non-random, beyond chance. We also intend to employ a model incorporating instrumental variables to address the potential endogeneity associated with waiting times.

Preliminary results: Preliminary analyses were conducted on a set of fourteen elective surgeries, several of which are being closely monitored by the Italian Ministry of Health as part of their efforts to effectively govern waiting lists (Piano nazionale di governo delle liste di attesa 2019-2021). The initial findings indicate that demand is inelastic to waiting times since the estimated coefficient (-0.144, p=.000) is below 1, in line with the previous research carried out by Riganti et al. (2017). By incorporating the year variable into our analysis, we were able to examine the influence of time on utilization rates. Initial findings indicate that the years following the pandemic have a detrimental effect on these rates, with a significant decrease observed compared to 2017 (-0.206 in 2020, -0.19 in 2021, -0.216 in 2022, p=.000). The R-

squared value of 47.6% indicates that, despite being in the preliminary stage, the analysis successfully captures a significant portion of the variance. The definitive analysis will be performed considering additional variables. We expect results to be consistent with the preliminary analyses. Additional results will come from regression analyses which consider unwarranted variations and interactions among variables. We plan to explore the potential application of the Baron & Kenny's method for mediation.

Discussion: Numerous countries have implemented strategies aimed at decreasing waiting times, with different degrees of success. To ensure that policies accomplish their intended outcomes, it is essential to understand to what extent demand and supply respond to waiting times. The preliminary results show that implementing policies meant at increasing the supply would be successful in curbing waiting times, given that demand is inelastic with respect to waiting times. The pandemic appears to have altered the dynamics of supply-demand relationships. This suggests that the policies governing waiting lists should be revised to reflect the changes brought about by the pandemic.

Title

Unveiling the determinants of drug switching after patent expiration

Author

G. Fiorentini, M. Lippi Bruni, I. Mammi

Abstract

The rising trend in pharmaceutical expenditure represents a substantial challenge to the long-term sustainability of both public and insurance-based healthcare systems. A strategy to address this issue is the substitution of brand-name drugs with generic alternatives. Given that generics maintain therapeutic effectiveness at lower unit costs compared to branded alternatives, regulators often recommend transitioning to the most cost-effective generic option after patent expiration, unless specific clinical considerations indicate otherwise. However, when multiple active substances can be prescribed for the same condition, substitution patterns can involve more intricate dynamics than simple branded-generic substitution, including shifts across different active principles within the same family of drugs. Indeed, patients, prescribing doctors, and pharmacists have the possibility to bypass recommendations for generic-brand substitution by opting for different molecules. The substitution of molecules, in some cases, can hinder or, on the other hand, support initiatives aimed at enhancing the cost-effectiveness of treatments through systematic branded generic substitution. Therefore, gaining a better understanding of these dynamics is crucial as it has significant implications for implementing policies that curb the dynamics of expenses and that promote the appropriateness of pharmaceutical treatments. Objectives We aim to conduct a study on the prescription patterns of statin drugs at the patient level in the neighbourhood of a significant economic event, represented by the patent expiration of a blockbuster molecule. The objective of our current study is twofold. Firstly, our aim is to investigate how the characteristics of the patient and of the healthcare system, which organises the administration of the drugs, influence the substitution patterns between branded and generic alternatives when the patent expires. Through this analysis, we will gain valuable insights into the factors that either promote or hinder the adoption of generics. These insights will enable us to draw policy recommendations that further facilitate generic diffusion. Secondly, our objective is to

examine whether the drop in the price of one molecule resulting from the loss of patent protection also leads to switches to drugs within the same family and identify the factors influencing such a process. By leveraging the price shock, we aim to investigate whether a large one-time variation in relative prices between drugs that are partial substitutes leads to therapeutic substitution that may not be clinically justified. Such evidence would be suggestive of potential opportunistic behaviour and/or of a lack of compliance with guidelines that vary with large price variations across drugs. Similar dynamics can be rationalized in multi-principal contexts where prescribers act at the same time as agents for their patients as well as for the public authority responsible for funding pharmaceutical expenditures. Methodology We begin by constructing individual prescription trajectories for patients receiving statins in the Emilia-Romagna region of Italy. Then, we investigate the determinants of patients' switching across molecules and between branded and generic versions of the drug that loses patent protection. Our empirical approach relies on regression discontinuity in time, and we specifically examine the impact of patients' characteristics (such as their prior clinical history, comorbidities, and length of treatment history) in conjunction with supply-side factors. The latter factors encompass institutional characteristics, such as the density of general practitioners (GPs), as well as local characteristics of the retail pharmacy market.

Title

A comprehensive measure of healthcare quality for OECD countries: A multi-directional robust Benefit of the Doubt model

Author

Francesco Vidoli, Elisa Fusco, Calogero Guccio, Giacomo Pignataro

Abstract

OBJECTIVES Policymakers, researchers and healthcare professionals are constantly looking for robust methodologies to measure and compare the performance of national healthcare systems across different countries or regions. OECD initiated the "Health Care Quality Indicators" (HCQI) Project in 2001, with the aim of developing common indicators for international comparisons of health care quality. Over the years, an ongoing activity of progressive expansion of the measurement of different dimensions and aspects of quality of care, and of the number of countries involved, has been carried out. In 2021, the OECD the Healthcare Quality and Outcomes (HCQO) data collection process, the successor of the original HCQI programme, included a total of 64 indicators covering the following areas: Primary Care, Safe Prescribing in Primary Care, Acute Care, Mental Healthcare, Cancer Care, Patient Safety, and Patient Experiences. The collection reports data from 40 countries, including non-OECD member countries such as Singapore, Malta and Romania. While these data provide valuable and updated information on how the different countries have performed in each single area and in each quality dimension that has been measured, the 64 measure cannot convey an overall picture of the global performance of the different healthcare systems, in balancing the different outcomes, and the change over time of this overall performance. The objective of our study is to provide a measurement of the overall quality of healthcare provision at the system level for the OECD countries surveyed in the HCQO programme, developing a composite indicator, Multi-Directional Robust Benefit of the Doubt (MDir_RBoD), which represents an extension of the so-called Benefit of the Doubt (BoD) methodology, accounting for some of its typical drawbacks (perfect compensability of simple indicators, lack of robustness to outliers).

METHODOLOGY We develop what we call the MDir_RBoD methodology, and make a first application, using the latest available data in the HCQO programme, related to four indicators

of acute care (AMI 30 day mortality, Ischemic stroke 30 day mortality, Hemorragic stroke 30 day mortality and Hip-fracture surgery initiated within 2 days after admission to the hospital). It combines different evolutions of the original BoD methodology. First, it removes the assumption of perfect compensability of the performance under each single indicator, introducing a penalty for unbalanced performances across the different indicators, based on the directional distance function. Second, differently from the simple Directional orientation of the BoD methodology, in this multi-directional perspective, the benchmark selection is based on adjustments in simple indicators proportional to the potential improvements given by the input/output specific excesses, instead of an implicit selection based on efficiency enhancements proportional to the past (actual mix of dimensions). In practice, this aspect of the methodology allows to retain information not only on the global performance, but also on what specific directions of improvements, for each indicator, the units under evaluation should follow to improve this performance. Third, it uses a robust assessment of the composite indicator scores, by a resampling procedure aimed at decreasing the effect of the outliers on the scores of the other units under analysis.

RESULTS The results of the application of the MDir_RBoD methodology, in terms of scores of a composite indicator, are presented for the different countries in the OECD sample and compared to the traditional BoD ones. Moreover, we identify for each country what the global performance improvement path should be, across the different indicators.

Title

Migrant Health and Import Competition: Differences in Subjective Health and Mental Distress Among Migrants in Germany

Author

Andreea Piriu, Simona Gamba

Abstract

This paper investigates the effects of import competition on the health outcomes of migrant manufacturing workers in Germany. Following reunification, Germany underwent remarkable transformation and became Europe's largest exporter, with an increased use of manufacturing imported inputs from China – currently, Germany's most important trading partner. Recent evidence on the China trade shock in industrialized countries does not only show adverse trade-induced economic effects and significant compositional shifts in the labour force but also negative outcomes for individuals. However, there is a lack of understanding as to what happens to migrants, which were particularly instrumental in the post-reunification German economic transformation. Specifically, while relying on data from the German Socio-Economic Panel, we look at Chinese import competition in relation to migrants' subjective health assessments (SHA) such as self-reported health status, physical health, general health concerns, sport frequency and the mental health component of the Short Form Survey (SF-12) indicative of stress and exhaustion.

To identify the effect of Chinese imports on migrant health, we exploit differences in industry-region imports and obtain measures of Chinese import exposure for the period 1995 to 2016. Given endogeneity concerns that imports may be affected not only by supply shocks but also by demand shocks, we instrument import exposure by considering Chinese import in three other high-income countries.

Results of this reduced-form model show that higher import competition from China decreases self-reported migrants' health while increasing their mental distress. Potential channels include job insecurity, dissatisfaction with current life, financial concerns and reduced general employment opportunity, consistent with recent evidence on trade-induced labour market conditions. Findings are robust for the inclusion of several controls, as well as for alternative

health outcomes (i.e., increased physical pain and general health concerns, increased probability of developing disability, decreased sport frequency). They also hold across different population subgroups. In particular, the effect on mental distress seems to be higher for Turkish and Italian migrants.

We eventually investigate effects on workers employed in low-technology and medium-low technology manufacturing industries, which make up the majority of the sample but are also, notably, subject to automation risk. For this subgroup, we find that the Body Mass Index (BMI) increases drastically by over two points when faced with higher import competition. The drastic effect on BMI is explained via labour-market and quality-of-life outcomes such as reduced earnings and job autonomy but also a lower probability of taking a second job and of working in one's initial trained-for occupation.

Title

Leader identity and Cesarean childbirths: Evidence from random allocations of female leaders in Indian villages

Author

Mujaheed Shaikh, Raf van Gestel

Abstract

Cesarean section (C-section) use for childbirth currently accounts for more than 1 in 5 of all childbirths (21%) worldwide and its use as a mode of delivery is expected to rise to 29% by 2030. In India, C-sections are increasing at an alarming rate with some states having C-section rates as high as 54%. The focus on birth by C-sections is a topic of policy interest for at least two fundamental reasons. First, it has consequences for women's health and economic outcomes, and second, it has been widely documented that birth by C-section as opposed to vaginal birth has detrimental effects on child development and long run outcomes. While C-sections may be medically necessary, not all C-sections are carried out for medical reasons. Therefore, policy makers have taken great efforts in reducing unnecessary C-sections and have introduced laws/guidelines/regulations for controlling C-sections births.

In this paper, we focus on the policy effects of electing a female leader at the local level and its impact on healthcare services (more generally) and C-section rates (more specifically). Due to the endogenous nature of election outcomes, we leverage a policy experiment in India that randomly allocated 1/3rd of all positions of chief at the village level to women. As these women leaders are randomly elected, we are able to elicit the causal effect of female leaders on C-sections and identify key mechanisms driving our results.

We use data on fertility history of women from the Indian Human Development Survey (2011-12) and complement this data with data on elections from the Ministry of Panchayati Raj to exactly identify the year elections were due in each state. Using exogenous variation in leader identity due to random allocation of chief positions for women, we find that in villages where female leaders are elected, C-sections are lower by 4 percentage points. Data on complications during birth allow us to show that the reduction was primarily in unnecessary C-sections whereas medically necessary C-sections were not affected. We investigate possible

mechanisms for this decline and find that female leaders invest in both supply and demand side measures. On the supply side, they improve public hospital infrastructure and the healthcare workforce, and improve access to healthcare institutions by investing in better transport. On the demand side, they incentivize women to utilize healthcare facilities and antenatal care services. We also show cumulative effects over time such that villages with female leaders for a longer duration show larger effects.

The findings of this paper are important because C-sections are rising worldwide and despite efforts by policy makers they continue to rise. Further, quotas for women in leadership positions are continuing to be implemented at various levels of government. The paper therefore makes an important contribution to these areas and outlines a rather straightforward policy solution to improve health and healthcare.

Title

The Socioeconomic Status Gradient in Pain: A Cross-Country Analysis

Author

Enrica Croda

Abstract

Chronic pain is a fundamental dimension of well-being and is one of the most common reasons people seek medical care and take medications. Pain also complicates the treatment of other diseases and limits one's ability to work and function in the society. At the individual level, it is associated with a series of negative outcomes, including depression, job loss, reduced quality of life, impairment of function and disability. At the societal level, it imposes considerable costs on the health care system and the economy. Taking into account both the direct costs of medical treatment, and the indirect costs associated to the loss in productivity, the Institute of Medicine has estimated that chronic pain affect approximately 100 million U.S. adults at a cost of $560 - 635 billion every year. These figures are greater than the annual costs of heart disease, cancer, or diabetes (IOM, 2011).

In this paper, I investigate the extent to which chronic pain is associated with socioeconomic status in mid-life in fourteen European countries (Luxembourg, Switzerland, the Netherlands, Austria, Denmark, Sweden, Germany, Belgium, France, Italy, Spain, Czech Republic, Slovenia, and Estonia) and the United States. Specifically, I exploit newly available data from SHARE and HRS to study (i) the variability in the rates of pain across the 15 countries, (ii) whether sex-based differences in pain are relatively similar across countries, (iii) which country-specific characteristics matter the most for people in the bottom of the income distribution (Chetty et al., 2016), and (iv) whether greater use of pain medication is associated with lower (or higher) rates of aggregate pain (Krebs et al., 2018).

In the preliminary analysis conducted so far, I find that pain is part of life for two out of five midlife individuals, with wide heterogeneity across countries, from 23% of Swiss to 53% of French (Figure 1). Perhaps surprisingly, given the widespread use of opioids and the "death of despair" in the US, the prevalence of pain in the US (34%) seems to be in line with the prevalence in other European countries (38%).

In every country, more women are bothered by pain than men, with noticeable differences in the gender gap across countries: in Slovenia and the Mediterranean countries (Italy and Spain) the gender gap is quite large, compared to the US and some other countries (Figure 2). While reporting styles may explain some of these differences, some patterns are consistent across countries and the disparities are fairly large.

What can explain this strong association between pain and socioeconomic status and the observed disparities? A possible explanation for these differences is that people with lower socioeconomic status are more likely to have worked in manual jobs, or to suffer from poor health. In the multivariate analysis, I plan to control for such differences using controls for occupation and industry and for several dimensions of health status, that may be associated with pain at older ages, and I estimate probit regressions for the prevalence of pain and ordered probits for the intensity of pain.

Title

Patient outcomes and surgeons experience in a regulated healthcare system: Evidence from hip fracture surgeries

Author

Sahar Paktinat, Cristina Ugolini, Rossella Verzulli

Abstract

Background and objectives This paper examines the causal link between patient outcomes and surgeons experience in a regulated healthcare system where surgeons move across hospitals and patients refer to the closest hospital to receive urgent surgery for hip fracture. The specific characteristics of this context make the hypothesis of a 'selective referral' implausible and provide a favorable context to identify a potential 'practice makes perfect' effect at surgeon level.

Methodology As measures of patient outcomes, we use in-hospital mortality, mortality within 30 days after hip fracture surgery and 30-day emergency readmissions. We apply a multivariate regression analysis with a large set of covariates to control for potential confounders to analyze whether surgeons who have performed more surgical interventions experience an improvement in performance.

Data The data we use are drawn from a sample of emergency patients admitted to publicly funded hospitals in the Italy's Emilia-Romagna region over the period between 2017 and 2019. Our primary data sources include individual patient records drawn from the administrative hospital discharge dataset complemented by the regional mortality register data. Hip fracture patients are identified using the International Classification of Diseases version 9 (ICD-9 CM) codes 820.0-820.9.

Main results Our findings provide evidence of a significant effect of learning-by-doing at surgeon level, suggesting that surgeons experience improve patient outcomes. However, the magnitude of this effect is quite small. The results provide useful insights for policy intervention in the public health care sector.

MANAGEMENT SECTION

Title

KPI dashboard to improve healthcare network performance: Some focuses

Author

Francesco Schiavone, Anna Bastone, Attilio Bianchi, Sandro Pignata, Ugo Trama

Abstract

Background and objectives. The literature identifies three performance levels: process, structure, and outcomes (Donabedian, 1988). Measuring healthcare processes entails determining if the care procedures outlined in the recommendations have been carried out or have been effective (Raymond et al., 2017). The operations along the healthcare supply chain are complex and heterogeneous (Schiavone et al., 2022). In this vein, finding common indicators or criteria to measure the health process is complicated. Indeed, this paper highlights how a very unambiguous and efficient measurement system may be carried out. The research question concerns how defining a well-structured, multidisciplinary KPIs dashboard improves the performance of a health network.

Methods. To answer the research question, a qualitative analysis was conducted using the case study method (Yin, 2009). Our analysis explores the Campania region's cancer network, the so-called Rete Oncologica Campania (hereafter ROC). One of the main innovations of ROC is a digital platform linking various stakeholders. To triangulate the data, primary and secondary sources of evidence were analysed (Yin, 2017). Direct observation of the oncology network enabled the definition of a multidisciplinary KPI dashboard that provides an overview of the network's performance based on data provided by a digital platform. The dashboard is constructed starting from three main strategic areas: the network's performance in the quality of care, the allocation of system resources and internal efficiency. The influence of an adequate monitoring system was measured through longitudinal analysis to highlight the improvement in the quality of care and patient safety.

Results. The results showed that a consistent KPI dashboard to monitor performance allows the reformulation of healthcare organisations' processes, creating solid forms of cooperation. Comparing the performance in time, our results highlight a profound change in network services. Greater attention to the patient and his needs emerges. Furthermore, communication

among networks increases, putting the basis for a paradigm shift. For instance, cost evaluation (e.g., repetition of diagnostic examinations) optimises resource allocation and reduces health expenditure. Thus, the quality of care increases, influencing the overall performance. This study identifies three main drivers for improving overall performance: (1) the quality of health care, (2) the allocation of economic resources and (3) stakeholder coordination.

Discussion. Our findings demonstrate how implementing a KPI dashboard can impact overall health performance (Schiavone et al., 2022). They highlight the need for a multidisciplinary approach to assess network performance (Nambisan et al., 2019). The analysis confirms that healthcare systems are moving from a hospital-centric perspective to a more patient-centric and systemic perspective (Wehde, 2019). Furthermore, the case study analysis emphasises the central role of a digital platform in facilitating the construction of a KPI dashboard (Jayaraman et al., 2020). Based on the large amount of data provided by digital platforms, an adequate monitoring system implies an overall reconfiguration of the role and function of extant healthcare actors (Hermann et al., 2016). Constant monitoring minimises network heterogeneity enabling stakeholders to identify possible bottlenecks to reduce healthcare expenditure and optimise resource allocation (Schiavone et al., 2022). This study offers valuable insights for theory and practice. It is not without limits. It opens the window for future research to make results generalisable.

Title

Evoluzione della presa in carico della cronicità in Regione Lombardia: excursus storico delle politiche regionali e prospettive per il futuro

Author

Francesco Longo, Claudio Buongiorno Sottoriva, Francesca Guerra

Abstract

Background La gestione della cronicità rappresenta una sfida prioritaria per i sistemi sanitari di tutto il mondo occidentale. La crescente incidenza delle malattie croniche, associata all'invecchiamento della popolazione, richiedono nuovi approcci e modelli di assistenza sanitaria che garantiscano una presa in carico sempre più integrata e continua dei pazienti. La regione Lombardia ha affrontato queste sfide attraverso un iter programmatorio e normativo complesso e articolato e si è dimostrata laboratorio interessante nella gestione della cronicità grazie ad alcuni elementi di particolare rilievo del suo modello di presa in carico: (i) una governance regionale accentrata nel disegno, promozione e implementazione dell'innovazione; (ii) un sistema informativo in grado di segmentare nominativamente i pazienti in classi secondo logiche di numerosità e intensità delle patologie; (iii) la presenza di strumenti operativi digitalizzati per gestire la presa in carico come il Piano di Assistenza Individuale (PAI) diffusi fra i Medici di Medicina Generale e tutti i provider del Sistema Sanitario Regionale associati a un sistema regionale in grado di monitorare la loro completezza, diffusione e dinamica nel tempo.

Obiettivi Questo contributo si propone di ricostruire le politiche e le iniziative messe in atto dalla Regione a partire dalle sperimentazioni CReG del 2011, quali punto di partenza per lo sviluppo di modelli innovativi di presa in carico, per poi esaminare l'approvazione del Piano Regionale per la cronicità nel 2015 e le riforme del 2017, tra cui le Delibere sul "Governo delle Domanda" e il "Riordino della Rete d'Offerta" per arrivare al processo di riforma in atto nel 2023. L'obiettivo è quello di contribuire alla ricostruzione delle best practice e delle aree di miglioramento dell'esperienza lombarda e mostrare come hanno influito sulla revisione del progetto di presa in carico e quindi nella futura delibera regionale del 2023.

Metodologia Lo studio è stato condotto adottando un approccio metodologico misto, risultato della combinazione di elementi qualitativi con l'approccio research action. Infatti, la ricerca si è strutturata grazie alla consultazione e all'analisi delle delibere regionali in tema di cronicità e della letteratura disponibile sul tema del health policy making regionale ed è stata arricchita dal coinvolgimento degli autori nel tavolo di lavoro istituito per la revisione del modello, che ha consentito di conferire alla ricerca una prospettiva più approfondita e contestualizzata.

Principali risultati La trattazione ha permesso di ripercorrere e ricostruire in modo unitario le tappe fondamentali del modello di presa in carico dal 2011 ad oggi, mettendo in evidenza gli elementi di successo e gli aspetti migliorabili del modello. Alla luce di queste considerazioni, la ricerca ha mostrato gli elementi innovativi della futura delibera regionale del 2023 raggruppandoli in due categorie: (i) la revisione degli assetti organizzativi e della distribuzione delle responsabilità fra gli attori coinvolti nell'erogazione dei servizi; (ii) il ripensamento delle logiche di service design personalizzate per le diverse classi di pazienti. Altri contesti regionali possono trarre vantaggio da questa esplorazione del modello lombardo, in quanto costituisce un punto di riferimento interessante e avanzato in tema di gestione delle patologie croniche. La vera sfida sarà, per ogni contesto, personalizzare le logiche presentate in questo contributo coerentemente con le risorse, le esigenze e le peculiarità da cui è contraddistinto.

Title

Integrated care and patient's satisfaction: evidence from the case of people with epilepsy

Author

Rossella Pellegrino, Maria Paola Caria, Stefano Villa

Abstract

Background The current healthcare scenario is characterized by the well-known increasing number of chronic multi-morbid individuals. With this epidemiology context, organizing multi-specialty expertise around patient's needs is beneficial, such as better resource utilization, minimization of unnecessary costs, improvements in job performance and work quality, and more efficacious outcomes for patients and their families. The integrated care has proven to be an effective strategy for healthcare delivery that can ensure both an improvement in the quality of healthcare and an improvement in the quality of patient's life. On the other hand, the implementation of integrated care requires several changes such as in workforce, behaviour, governance and financing, but also in organisational models. The literature mainly identifies three main organizational models to realize and facilitate coordination and integration of care: (i) hub and spoke (Lega, 2003); (ii) Comprehensive Care Network (Federici A., 2014; Marino et al., 2018); (iii) Comprehensive Care Center (Herzlinger R., 1997; Meyer H., 2008; Andreatta P. B., 2010) Patient satisfaction is one of the main indicators used to measure the quality of healthcare: High levels of patient satisfaction were positively associated with improved of keeping, medication use, adherence to treatment recommendations, ensuring an improvement of continuity of care (Prakash, 2010; Black et Al., 2022).

Objectives Epilepsy is a complex chronic disease often associated with comorbidities, and it is characterized by a quite high level of intensity of service in terms of both pharmaceutical consumption and access to hospital care (ED visits and hospital admissions). About 50 million people suffer from this chronic disorder (WHO 2022). The present paper tries to accomplish three different goals: 1. How can we measure the concept of integrated care in the case of complex and chronic diseases such as epilepsy? 2. Is integrated care a feature of healthcare provision that is positively evaluated by patients? 3. Which are the most effective organizational models to implement the concept of integrated care?

Methods The study sample consisted of 474 adults over 18 years of age with epilepsy, treated at six specialized centers in different Italian regions, who participated in a survey. The survey was composed of 4 items: (i) personal data and state of health, (ii) treatment and organizational methods for taking charge, (iii) direct and indirect costs of the overall care, (iv) patient 2 satisfaction. The overall satisfaction with epilepsy management experience was measured by 7-points Likert scale, from 1 ("not at all satisfied") to 7 ("completely satisfied"). Then we conducted a regression analysis to study the "integrated care approach" as predictor of personal satisfaction, by including in the model other variables potentially implicated.

Results In the literature, the integrated care was conceptualised around 7 concepts and characteristics. Based on this framework and the clinical pathway, we have identified 7 questions related to these concepts to measure the integrate care approach in the case of epilepsy. We built an "integrated care approach" binary index based on patients' answers to a set of these questions formulated, by considering satisfied anyone who has given a score of 5, 6 or 7. The statistical analysis show a quite robust evidence: patients who perceive their care approach as integrated, are more likely to declare themselves overall satisfied with the management of their epilepsy (OR=2,48, CI=1,14-5,39), even taking into account other possible confounding variables (such as: frequency of epileptic crisis, number of accesses at the centre, need for a caregiver support, anxious state, recent change of therapy or centre). A further statistical analysis was carried out to examine perceptions of integrated care approach and total costs (total NHS costs + indirect costs + out of pocket costs). The results obtained are statistically significant (α=0.05 p-value<0.05): patients who perceive their care approach as integrated incur on average a lower cost (€ 3,496.66) than those who do not perceive their approach as integrated (€ 4,447.63). As outlined in the literature, the integrated care approach ensures a more efficient management of the disease. The results of the survey and the insights of the focus groups organized with the directors of the Centers show that the CCC can work well in the case of complex and chronic disease such as epilepsy but, at least, three conditions need to be met. First, the center needs to respect some criteria in terms of (i) minimum number of patients to be treated; (ii) availability of technologies (iii) presence of all professions, specializations and competences needed to guarantee a comprehensive care of the disease.

Title

The relevance of experience and participation on the patient journey: a new framework to describe the therapeutic pathway

Author

Agnese Palvarini

Abstract

BACKGROUND: In the past, healthcare was based on relations in which patients had a passive role. In reality, doctors, nurses and other health professionals have knowledge and skills to interpret symptoms, understand needs and decide effective treatments. Nowadays, health professionals use complex and helpful technologies such as surgical robots and telemedicine. At the same time, patients are more and more active due to higher education and easier access to health information on the Internet (Borgonovi, 2021). This evolution was introduced also in diagnosis and treatment processes, as the patient experience is considered an element that can influence health outcomes. Therefore, hospitals, diagnosis centers and other health providers must change their approach: they can no longer stay as providers on demand, but they must be proactive in attracting and involving patients (Palumbo et al., 2016). In this context, the main topic of the paper is the patient experience, intended as the combination of perceptions and connections that the person has with the healthcare system throughout the therapeutic path. This process involves five dimensions (Schmitt, 1999): sense, feel, think, act and relate.

OBJECTIVES: The three main objectives of the paper are the following: i) find out the major determinants of a positive patient experience; ii) understand which are the building blocks of the patient journey; iii) suggest what the healthcare system should do to improve the effectiveness of the whole therapeutic pathway.

METHODOLOGY: After analyzing the existing scientific literature, the methodology is structured in two steps. The first concerns the adaptation of the four realms of customer experience (Pine and Gilmore, 1998) to the health context. By the intersection of participation (passive vs active) and involvement (low vs high empowerment) – considered as the two explanatory dimensions of the model – it is thus possible to identify four different typologies of patients: resigned, informed, expert and responsible (Figure 1). The second consists in the

creation of a new framework – called "Snail model" – to describe the patient journey and point out each phase of the care experience, emphasizing the role of patient empowerment, patient entered and personalized care. This model is applicable to specific categories of individuals, notably chronic and acute patients. It is composed of four parts: health communication policies, diagnostic procedure, patient participation and therapeutic non-adherence. Each of them is associated to: i) a part of the animal; ii) a color and its corresponding meaning; iii) a set of direct and indirect/proxy measures (Figure 2). Some examples of applied indicators are the percentage of carried out screenings over the target population and the percentage of new early-stage diagnosed cases for prevention policies; the average number of days for a visit and the saturation time rate of diagnostic structures for waiting time; Chemical Adherence Testing (CAT) and Medication Possession Ratio (MPR) for patient empowerment and patient dropout. On the basis of these metrics, it is possible to point out to what extent the healthcare system is able to enhance the whole therapeutic pathway in different typologies of diseases.

RESULTS: The results of the analysis lead to the classification of patients according to their degree of proactivity, as well as to the understanding of how effective the health sector actually is in the delivering of care. The managerial implications are thus related to the organizational, clinical and relational improvements that health providers should enact to better meet the needs of patients.

Title

Non-financial reporting in healthcare organizations: a systematic literature review

Author

Elisa Guidotti, Anna Prenestini, Clodia Vurro

Abstract

Beginning from the 1980s, worldwide healthcare systems started introducing reporting mechanisms with the aim of being more efficient, effective, and accountable (Lapsley, 1999; Saltman et al., 2006). In a preliminary phase, reporting focused on financial issues and accountability mechanisms, the well-known 'financial reporting' (Lee, 1985). However, financial information was considered only partial in reporting healthcare organizations' performances. Pressure was progressively exerted by several stakeholders to report also on other relevant organizations' dimensions, since they engage in sustainable development and are stewards of social and environmental issues (Manes Rossi et al., 2020a). Consequently, healthcare organizations have progressively been prompted to also provide disclosure of social and environmental activities via non-financial or integrated reports (Andrades Pena and Larran Jorge, 2019; Manes Rossi et al., 2020b). Despite the importance, research on non-financial reporting for hospital organizations seems to be still limited (Manes Rossi et al., 2020a). Therefore, the aim of this study is to analyze the existing literature on non-financial reporting across healthcare organizations with the scope of identifying:

Rq1: What is the rationale for adopting non-financial reporting in healthcare organizations and what are the main drivers and barriers?

Rq2: What are the main characteristics of non-financial reporting in healthcare organizations, especially in terms of dimensions of performance and stakeholders' engagement?

Rq2: What are the main gaps in the current research that need further investigation?

The methodology follows the PRISMA 2020 guidelines for reporting systematic reviews (Page et al, 2021). Three databases were selected as data sources: Scopus, ISI Web of Science, and PubMed. The search was launched on February 4, 2023, with no restrictions. Only scientific articles written in English and published in peer-reviewed journals were searched for. This choice was made to ensure that the SLR covered high-quality research that had already been

subjected to peer review. The database search retrieved 5,621 contributions. To identify and exclude duplicates, a manual search was conducted by inspecting the list of contributions. After removing 151 duplicates, the dataset included 5,470 contributions. Preliminary results showed that research on non-financial reporting formats in healthcare organizations registered a growing trend from 2017 onwards. The search for legitimacy among stakeholders emerged among the main reasons for adopting non-financial reporting in healthcare organizations. The dimensions most reported were the environmental one, especially in the first years of hospital non-financial reporting, followed by the social one. However, still few non-financial reporting experiences were identified. Further analysis will be carried out to systematize the main gaps and implications for policy and managerial practices will be discussed.

Title

Health digitization: the impact of training and digital investments in healthcare innovation management

Author

Roberta Muraca

Abstract

Background The healthcare system faces the constant challenge of adapting to the latest technologies and the changing demands of payers and patients, affecting social welfare. The technological evolution is, in fact, considerably improving the results by evolving the business models of the companies they follow in all sectors at a global level (Rippa and Secundo., 2019; Elia et al., 2020; Raimo et al., 2021). In this scenario, healthcare innovation plays a primary role in the development of modern healthcare systems (Barlow, 2016). According to the World Health Organization "health innovation identifies the systems, health technologies and methods of providing services aimed at improving the health and well-being of the individual" (World Health Organizations, 2018). Certainly, a substantial boost to the digital innovation process has been dictated by the spread of the COVID-19 pandemic (Drago et al., 2021; Tortorella et al., 2022). A report by Deloitte (2020) stated that 65% of healthcare organizations have increased their adoption of digital technologies following the pandemic to support ways of working and provide comprehensive patient care. In the light of continuous technological progress, innovation in the healthcare sector is gaining importance in the literature (Ciani et al., 2016; Thune and Mina., 2016) and is becoming a tool of primary importance for professionals in the sector to be used in contexts such as digital health (European Commission, 2021). Academic studies have identified the main technologies implemented in the healthcare sector (Tortorella et al., 2020). The adoption of digital solutions has increased the level of automation (Tortorella et al., 2022) and contributed to greater support for training and education of medical personnel (Guha & Kumar, 2018; Qi et al., 2018). Although the interest in the topic has increased over the years, there is limited empirical literature on the drivers and determinants of innovation processes in healthcare systems. Therefore, in this study, adopting the case of Italy, we propose a framework of the innovation process in healthcare, identifying the determinants capable of

driving innovation in public healthcare organizations, focusing on the role played by medical personnel. The case of Italy can offer interesting insights into the healthcare innovation process in view of the public ownership of most Italian hospitals (Visconti et al., 2017).

Objectives Starting from the case study of Italy, the research is aimed at providing a theoretical framework aimed at understanding the determinants and drivers of innovation in public health organizations. The objective of the research is to understand what are the elements that can guide organizations towards the digital transition. The research question is aimed at understanding which activities include innovation processes based on the technologies adopted (Tortorella et al., 2020) and based on the digital skills of healthcare personnel (Meinert., 2005). Specifically, the use of technology in hospitals and the role of staff in healthcare innovation processes are tested. The exponential growth of innovation in healthcare should imply that all healthcare professionals are trained digitally.

Methodology To understand the determinants of innovation and evaluate staff training we test the use of technology used in healthcare by including twelve main technologies based on a review of the existing literature (Tortorella et al.,2020; Raimo et al. al., 2020; Giri et al., 2021; Vrontis et al., 2021). To test the research model, we conduct a survey of a random sample of 155 NHS companies. The survey is addressed to qualified healthcare professionals, general and administrative directors of Italian public healthcare companies. Scale items are used to assess digital use and dimensions related to healthcare workforce innovation and education. All items are based on a 5-point Likert scale (Joshi et al., 2015). The use of technologies and staff training are activities related to the research and development (R&D) dimension (Ayeleke et al., 2016; Orlando et al., 2020). The items are divided into three groups: a first group focused on identifying the technologies used in healthcare; the second relates to investments and patents, the third personnel training. We perform a principal component analysis and analysis of variance to analyze the use of technology within these firms and the degree to which employees are educated relative to innovation.

Results The literature does not offer empirical evidence on innovative outputs but deals with the issue of digital technologies and how, if used correctly, they generate a better delivery of health care. The results of the study contribute to research on the topic of innovation by

highlighting whether investments in the training of healthcare personnel can generate innovation and which technologies adopted in healthcare can trigger innovation processes. The results show that the use of advanced technologies is one of the main determinants of innovation processes. Not all financial resources allocated to technological assets are capable of triggering innovation, but only those invested in software and patents. Furthermore, investment in personnel training is the variable most correlated to innovation. This implies that healthcare companies should invest in the training of healthcare personnel, placing workers at the center. The results obtained on the determinants of innovation could provide policy makers with guidance on the training of healthcare personnel to support future innovation processes.

Title

Methods to measure the environmental impacts of health technologies and to include them in economic evaluations: A scoping literature review

Author

Vittoria Ardito, Helen Banks, Niccolò Cusumano, Rosanna Tarricone

Abstract

BACKGROUND AND OBJECTIVES: The environmental impact of the healthcare sector is widely acknowledged and increasingly impacting decision-making in health policy. This study aims to explore what methods, approaches and metrics have been proposed to measure environmental impact of health technologies, and to investigate the feasibility and consequences of its inclusion in economic evaluations for pricing and reimbursement. This study is part of a larger Horizon Europe project, HI-PRIX.

METHODS: We conducted a scoping review of the scientific and grey literature according to the PRISMA-ScR guidelines in PubMed, Web of Science and Scopus between 2013 and March 2023. The search strategy was developed around two core concepts: environment and health technology assessment. Furthermore, the International HTA Database and HTA agencies websites were searched to identify ongoing or published HTA dossiers.

RESULTS: We identified 12,336 records and read the full text of 39 papers. A total of 14 studies were included for data synthesis. Most of the studies were economic evaluations (n=5), former reviews (n=4), methodological papers (n=3) or commentaries (n=2). Process-based life cycle assessment is the most established approach to measure the environmental impact, although the environmentally extended input-output analysis has also been proposed. Difficulties in measuring environmental impact currently exist, e.g., methodologies for greenhouse gas emissions are established while pollution, waste, resource depletion, and reduced biodiversity are still under development. Nevertheless, methods to incorporate environmental impact into economic models have already been applied, considering it as health outcome (e.g., converting it into health-related quality of life) or as an additional cost.

CONCLUSIONS: Incorporating the environmental impact of health technologies in economic evaluations is under development, but consensus is still lacking on appropriate, feasible

methodologies for its uptake. Before considering it in pricing or reimbursement-related decisions, the preferred method to maximize utility levels of different stakeholders (e.g., HTA agencies, industry) needs clarification.

Title

Investigating the Nature and Scope of Innovative Payment and Pricing Schemes for Health Technologies

Author

Vittoria Ardito, Ludovico Cavallaro, Michael Drummond, Oriana Ciani

Abstract

BACKGROUND AND OBJECTIVES: Innovative payment and pricing schemes have been proposed as solutions to the problems with the affordability of new health technologies and uncertainty about their long-term effectiveness. However, little is currently known about the nature and scope of these arrangements, or their impact in practice. The objective of this research is to investigate these issues.

METHODS: As part of a Horizon Europe research project on health innovation next generation payment and pricing models (HI-PRIX), we undertook a review of the literature and of health technology assessment (HTA) agency websites to determine the types of schemes either proposed or implemented. These schemes were then classified according to several criteria, such as their purpose, nature, governance, product category, data collection needs, foreseen distribution of risk, and implementation challenges.

RESULTS: 'Innovative payment and pricing schemes' were defined as arrangements that go beyond price per pill (or unit) of the technology, simple price/volume agreements or expenditure caps. Twenty-eight innovative pricing schemes have been classified so far. The schemes referred either to pharmaceuticals, vaccines, or medical devices. Most of the schemes were or had been implemented in practice, while 6 were only specified in principle. Among the 28 schemes mapped so far, a significant proportion (36%) were performance-based schemes involving the measurement of health outcomes either at the patient- or population-level. Financial-based models were also common and concerned only expenditures or the volume of use of the technology.

CONCLUSIONS: Available pricing and payment schemes have the potential to offer a comprehensive toolkit to policymakers facing reimbursement and access decisions, highlighting that it is not the scheme per se which is innovative, but rather its application or use

in a given context or for a given challenge. The catalogue will populate the Pay-for-Innovation Observatory, that will be made public in December 2023.

Title

Hyperthermic intraoperative peritoneal chemotherapy (HIPEC) with cytoreductive surgery (CRS) versus CRS and systemic chemotherapy or systemic chemotherapy alone in people with peritoneal metastases from colorectal, ovarian or gastric origin: A cost-effectiveness analysis

Author

Elena Pizzo, Jeffrey Leung, Niall Boyle, Claire Vale, Danielle Roberts, Audrey Linden, Brian Davidson, Tim Mould, Mark Saunders, Omer Aziz, Sarah O'Dwyer, Kurinchi Gurusamy

Abstract

Background: There is uncertainty in the cost-effectiveness of Hyperthermic intraoperative peritoneal chemotherapy (HIPEC) with cytoreductive surgery (CRS) and systemic chemotherapy versus CRS and systemic chemotherapy or systemic chemotherapy alone in people with peritoneal metastases from colorectal, gastric, or ovarian cancers.

Objectives: In this paper we provide comprehensive updated estimates of the cost utility of performing HIPEC with CRS versus CRS alone adopting the NHS perspective.

Methods We performed a model-based cost-utility analysis using methods recommended by The National Institute for Health and Care Excellence (NICE). We populated the model parameters from a systematic review on the same topic by our research team. A micro-costing approach has been used to assess the cost of the interventions in the UK. Extensive sensitivity analyses, including a probabilistic one (PSA), have been run to test the robustness of the results.

Main results In people with colorectal peritoneal metastases, deterministic results show that HIPEC with CRS and systemic chemotherapy results in more costs and similar QALYs as CRS with systemic chemotherapy while it results in more costs and more QALYs than systemic chemotherapy alone. In people with gastric peritoneal metastases, the deterministic results show that HIPEC with CRS and systemic chemotherapy results in increased costs and increased QALYs than CRS with systemic chemotherapy. HIPEC with CRS and systemic chemotherapy results in more costs and more QALYs than systemic chemotherapy alone.

In women with grade III or above ovarian cancer requiring interval cytoreductive surgery, HIPEC plus CRS and systemic chemotherapy results in more costs and more QALYs than CRS and systemic chemotherapy. There is considerable uncertainty in the parameters, particularly

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those used for gastric cancer. Overall, HIPEC with CRS and systemic chemotherapy may not be cost-effective versus CRS with systemic chemotherapy for colorectal cancer but may be cost-effective for the remaining comparisons.

Conclusions In people with colorectal peritoneal metastases, HIPEC with CRS and systemic chemotherapy is not cost-effective and cannot be recommended in a state-funded healthcare system such as NHS. There is uncertainty about the cost-effectiveness of HIPEC with CRS and systemic chemotherapy in gastric cancer due to lack of available data. In women with grade III or above ovarian cancer undergoing interval cytoreductive surgery is cost-effective and should be recommended in NHS.

Title

Healthcare services for vulnerable populations and voluntary organizations: opportunities emerging from a mixed-methods study in Italy

Author

Federica Dalponte, Elisabetta Listorti, Angelica Zazzera

Abstract

Background: In Italy, as in many other European countries, healthcare services for vulnerable populations are provided not only by the National Health Service (NHS) but also by organizations in the voluntary, community, and social enterprise (VCSE) sector. The long-lasting strategy adopted by VCSE organizations entails more person-oriented approaches, services that are more sensitive to cultural specificities, and the support of interpreters and cultural mediators who help overcome linguistic barriers (Rajabi et al, 2021)1. This set of practices enables VCSE professionals to: i) reach people in need of care who have the right to use NHS services but don't utilize them, thus acting as the first point of access for such patients and case managers directing them to the appropriate NHS care pathway; ii) guarantee access to care for individuals who do not have this right, such as undocumented migrants (e.g., primary care), and provide a linkage to care with the NHS when these patients access the NHS (e.g., for acute care). As such, VCSE organizations offer complementary services to a population that the NHS is not capable of reaching. Given this role, it is of paramount importance for the system actors to be aware of the services offered by VCSE organizations and their users, in order to foster integration strategies among them and with the NHS (Baxter et al, 2018)2. This could lead to avoiding inefficiency and ineffectiveness in providing healthcare services for vulnerable populations, with consequences for their health, well-being, and costs for both VCSE and the NHS.

Objectives: Our study aims to analyze: i) the main characteristics of healthcare services provided by VCSE organizations; ii) the level of integration among VCSE organizations providing healthcare services, as well as between these organizations and the NHS; iii) the barriers and opportunities for integration.

Methodology: The study uses a qualitative methodology to collect information from 10 VCSE organizations that operate in the metropolitan city of Milan. The data collection methods include semi-structured interviews and a survey. The chosen organizations were enrolled in a recent project funded by the local Agency for Health Protection, in which the authors were also involved. The interviews were conducted by at least two researchers to representatives of the VCSE organizations from April to June 2023. The interviews consisted of three parts: i) characteristics of the VCSE organization; ii) characteristics of the healthcare services provided (professionals, frequency, users, etc.); iii) integration with the NHS and other VCSE organizations. Each interview was recorded and analyzed using qualitative thematic analysis to identify the main topics emerging. Based on the interviews, a survey was created to complement the qualitative data with quantitative information, particularly on the quantity, frequency, and mode of provision of healthcare services and the characteristics of the patients receiving them, as well as on the level of integration with the NHS and other VCSE organizations. The survey will be distributed through the Qualtrics platform in July 2023.

Main results: Information collected during the interviews revealed a variety of services offered by VCSE organizations, targeting a population comprising both Italians and non-Italians, and provided by both employees and volunteers. Regarding healthcare services, they appeared to be primarily offered through street outreach units, where doctors provide first aid and non-prescription drugs to individuals. Some VCSE organizations have more developed healthcare services, such as outpatient clinics for primary care, but only a few offer more complex services like secondary level diagnostics or prescription drugs. Some aspects hinder integration: often, even when patients have the right to access NHS services, VCSE organizations retain the role of case managers due to difficulties in directing patients to NHS services caused by a lack of integrated care pathways. When patients do not have the right to access to some NHS services (such as undocumented migrants), administrative delays make it challenging for VCSE organizations to retain the patients, thus endangering their compliance. Furthermore, there appears to be a lack of information sharing about patients among VCSE organizations and with the NHS. However, when VCSE organizations collaborate with each other and with the NHS,

everyone perceives the benefits of such collaboration, and there is willingness and opportunity to improve this aspect.

Title

Il ruolo dell'assistenza domiciliare nell'assistenza agli anziani non autosufficienti: un'analisi comparata

Author

Giovanni Fosti, Francesco Longo, Simone Manfredi, Elisabetta Notarnicola, Eleonora Perobelli, Andrea Rotolo

Abstract

Background L'invecchiamento è una delle sfide più dirimenti per le società europee (Commissione Europea, 2021). Una popolazione più anziana porta inevitabilmente a una maggiore incidenza della non autosufficienza, che già nel 2020 coinvolgeva 3,9 milioni di over65 (Fosti, Notarnicola, Perobelli, 2023). La diffusione del fenomeno, unita alla multi-dimensionalità in cui si manifesta richiede un ripensamento dei modelli di servizi di Long term care, a partire da una maggiore capacità di garantire un'adeguata permanenza al domicilio per ritardare l'istituzionalizzazione. Attualmente il dibattito attorno al ripensamento dei servizi domiciliari in Italia è stimolato da due input significativi: da un lato, il target fissato dal Piano Nazionale di Ripresa e Resilienza (PNRR) che richiede di raggiungere il 10% degli over65 tramite Assistenza Domiciliare Integrata (ADI) entro il 2026; dall'altro, la "nuova assistenza domiciliare" proposta nel recente Disegno di Legge Delega in materia di politiche in favore delle persone anziane, che promuove una maggiore integrazione tra interventi sociali e sanitari al domicilio e un ripensamento del ruolo dei trasferimenti economici (in primis, Indennità di Accompagnamento).

Obiettivi A partire da queste premesse, l'obiettivo del presente lavoro è di contribuire al dibattito in corso sul ripensamento dei servizi domiciliari ponendo l'attenzione sulla vocazione di questi setting assistenziali nella più ampia filiera sociosanitaria e sui modelli di servizio che possono sostenere una permanenza di qualità al domicilio tra la popolazione over65. Per farlo, si propone un'analisi comparata del modello di assistenza domiciliare italiano in controluce rispetto a quelli presenti in quattro paesi europei: Belgio, Francia, Germania, Svizzera (Canton Ticino). L'ambizione è di poter trarre indicazioni utili da quanto avviene in sistemi comparabili

a quello italiano per il ripensamento del ruolo dell'assistenza domiciliare nella risposta alla non autosufficienza.

Metodologia e risultati preliminari Il lavoro si basa su un disegno di ricerca qualitativo, in particolare sull'analisi di caso comparato. La raccolta dati prevede un'analisi desk della letteratura scientifica e grigia in tema di assistenza domiciliare nei paesi oggetto di studio, indagando anche database internazionali quali OCSE, Eurostat e WHO. Le variabili di interesse osservate in ciascun paese afferiscono a quattro aree: la governance complessiva del servizio, la vocazione all'interno della filiera assistenziale, il profilo di utenti in carico, le performance dei servizi (in termini di popolazione raggiunta e intensità assistenziale erogata). L'attività di ricerca si concluderà entro luglio 2023, ma i risultati preliminari indicano una forte eterogeneità tra i modelli presenti. Ad esempio, Germania come Italia ha una forte tradizione di trasferimenti economici per il mantenimento al domicilio, tuttavia questi possono essere utilizzati in due modi: da un lato, in maniera simile a Ida (scelto in oltre il 50%dei casi); dall'altro, possono convertire parte di queste risorse in servizi, contrariamente a quanto avviene per l'Indennità di Accompagnamento.

Title

Longitudinal Analysis of a Mature Clinical Network: Exploring Implementation Journey, Accessibility, and Impact on Cancer Care

Author

Valeria D. Tozzi, P.R. Boscolo, L. Ferrara, O. Bertetto, A. Castiglione, G. Ciccone, D. Di Cuonzo, G. Fasola, M. Gilardetti, E. Pagano, B. Pongiglione, R. Tarricone

Abstract

Introduction Clinical networks have emerged as strategic approaches to address complex coordination problems in health and social care. These networks aim to manage and coordinate care, promote integrated service delivery, and enhance quality. The concept of clinical networks aligns with the Network Governance model of public management, which considers them as a policy response to "wicked problems" characterized by the absence of obvious solutions, involvement of multiple stakeholders, disagreement among stakeholders, and the need for behavior changes. Cancer services have been at the forefront of clinical networks, with countries like England and Italy investing significantly in their development. Despite extensive research on the configuration, management, and potential impact of clinical networks, there is a lack of real-world evidence on the activities and contributions of developed networks. This study aims to fill this gap by taking a longitudinal perspective and examining the implementation journey of a mature clinical network for cancer care in the Piedmont Region of Italy.

Methods The study adopts a mixed-method approach, combining quantitative and qualitative analyses. The quantitative analysis utilizes administrative data from 2010 to 2019, including outpatient services and Hospital Discharge Records, to examine access to the clinical network. Logistic regression models are employed to assess the association between demographic and clinical characteristics and network access. The qualitative analysis involves interviews with the network's founder, former director, and close collaborators, as well as a focus group with clinicians. These qualitative data provide insights into the network's goals, ideation, implementation process, challenges, and evolution. Key dates, events, distinctive

characteristics, managerial practices, and shifts in governance modes are identified and analyzed to understand the network's history and impact on professional practices.

Results The study analyzes the dynamics and behaviors of the clinical network and its nodes across different phases of development. The data reveal a doubling of network access from 35.3% in 2010 to 73.3% in 2019, with younger age and absence of comorbidity positively associated with network access. Elderly patients often bypassed Cancer Assessment Service (CAS) appointments and accessed the network through hospitalization, indicating a need to standardize care for this population. Complex patients tended to receive care at specific nodes, and highly educated patients showed lower network access. Multivariable analysis confirms these associations and the overall time trend of increasing network access and reducing local differences. The study highlights the heterogeneity in accessibility based on residence areas, cancer sites, and differences among hospitals, which can impact the effectiveness of the network.

Discussion The study focuses on the ROP clinical network and its evolution over time, serving as a mature example of a clinical network. The findings highlight three key characteristics that contribute to the effectiveness and longevity of clinical networks. Firstly, the establishment of the ROP network improved accessibility to cancer care by reducing variability in access across the region. Common goals and standardized organizational models played a crucial role in achieving this outcome. Secondly, the study emphasizes the importance of network implementation and the adoption of various operational conditions and managerial tactics, such as professional education, dissemination, audit, training, and incentives. These tactics align practices, facilitate knowledge management, and ensure the network's sustainability. Finally, the study underscores the significance of leadership and governance models that evolve alongside the institutionalization of the network. The role of the network director in driving the vision, engaging stakeholders, and providing strategic leadership is crucial for the network's success.

Conclusion This study contributes to the understanding of clinical networks by confirming their effectiveness in promoting alignment in clinical practices. It provides real-world evidence of the impact of the ROP network on improving access to cancer care. Additionally, the study

highlights the importance of leadership, managerial tactics, and evolving governance models for the long-term sustainability of clinical networks. By examining the implementation journey of a mature clinical network, this research offers valuable insights for the implementation of networks in the public sector and sheds light on the contributions of clinical networks to achieving policy goals in healthcare.

Title

Development of Performance Indicators for the Management of Spinal Muscular Atrophy: A Comprehensive Study on Feasibility and Applicability

Author

Federica Dalponte, Lucia Ferrara, Valeria D.Tozzi

Abstract

Context: Spinal Muscular Atrophy (SMA) is a rare neuromuscular disorder that affects approximately 1 in 11,000 live births. In 2018, an international panel of experts published a consensus statement on SMA standard of care and highlighted several recommendations for diagnosing SMA and managing musculoskeletal, orthopaedic, nutritional, respiratory, swallowing, gastrointestinal problems, and bone health. These recommendations aim to enhance the clinical management of SMA patients. The objective of this study was to develop a set of performance indicators for the management of SMA based on the existing standards of care documented in the literature.

Methods: We conducted a three-phase iterative process following the methodology developed by COMET for defining Core Outcome Sets (COS). Firstly, a research team created a preliminary list of indicators through a literature search and two rounds of workshops involving a panel of 30 expert physicians, including neurologists, paediatric neurologists, and paediatricians. This panel discussed the indicators and rated their priority and feasibility. Subsequently, the indicators were scored based on two dimensions: the target of the indicator (whether it applied to all patients or only to a subgroup) and the feasibility of measurement using information from administrative databases of hospitals. The indicators were then categorized into four sub-groups: A) indicators with high feasibility applicable to all patients, B) indicators with high feasibility applicable only to a subgroup of patients, C) indicators with low feasibility applicable to all patients, and D) indicators with low feasibility applicable only to a subgroup of patients. Finally, a feasibility assessment of the indicators belonging to sub-group A was conducted through three case studies in Italy, each representing a different organizational configuration: the "concentrated" model, where the majority of services are provided within the SMA Unit; the "intra-hospital model," where multiple units within the same hospital provide the services; and

the "inter-hospital model," where services are provided by multiple hospitals within the network. For this assessment, in-depth interviews were conducted with data experts and accountants at each site to evaluate three dimensions: applicability, availability, and retrievability. Additionally, a survey was conducted with a panel of physicians to assess the applicability of the set of indicators in various hospital configurations.

Results: From the literature and expert panel workshops, a preliminary list of 69 indicators was identified. Out of these, 20 indicators were ranked as highly feasible and applicable to all patients, and they were included in the feasibility study. Based on the feasibility assessment and discussions with the Expert Panel Group (EPG), a final set of 15 indicators was identified.

Discussion: This study has several important implications. Firstly, to our knowledge, it represents the first attempt to identify a set of performance indicators for the management of a rare disorder that extends beyond clinical evaluation. Secondly, the methodology employed allowed for the translation of standard care practices into feasible and applicable performance indicators that can be utilized for all patient targets and within various organizational configurations. Thirdly, the development of these indicators took into account the perspectives of different stakeholders, including clinicians, patient representatives, data experts, and healthcare managers. Fourthly, the methods employed in this study can be replicated in other contexts and applied to other disorders. Lastly, there are potential opportunities associated with the adoption of Population Health Management (PHM) approaches, which can help identify patients, assess their needs, evaluate their care pathways, and analyze consumption patterns.

Title

Variability in Care Pathways for Older Multimorbid Cancer Patients: Insights from a Multi-Country Study

Author

Lucia Ferrara, Vittoria Ardito, Valeria D. Tozzi, Bridget O'Sullivan, Anthony Staines, Paul Davies, Rosanna Tarricone

Abstract

Introduction The need for enhanced care coordination among multimorbid and vulnerable patients is widely recognized. However, the current healthcare system predominantly focuses on single diseases, often resulting in inadequate evaluation and management of coexisting morbidities. Consequently, this approach leads to suboptimal care, inefficiencies, duplications, and compromised quality of care. Various strategies have been developed to address the care needs of older multimorbid patients, but they vary across different countries. In this study, our objective is to describe the care pathway for older multimorbid cancer patients and gain insights into the current practices followed by 16 clinical sites across three countries (France, Belgium, and the Netherlands) participating in a European Union-funded research project.

Methods Semi-structured interviews were conducted with key stakeholders (e.g., oncologists, geriatricians, nurses) at each clinical site. An interview outline was systematically followed to ensure consistency in data collection across centers. A total of 39 interviews were conducted. The interview data were analyzed across several dimensions, including the organizational context, involvement of healthcare professionals, multidisciplinarity, physical spaces, and organization of activities.

Results The analysis revealed significant variability in the care processes for older multimorbid patients across countries and clinical sites. The organizational context in which each site operates greatly influences its functioning. Three key dimensions emerged that impact the delivery of patient care: a) the scope of services offered by each clinical site within the care pathway, b) the relationships among healthcare professionals, including access to specialized knowledge, and c) the availability of tools to facilitate integration among professionals at different stages of the care pathway.

Conclusion

The findings demonstrate significant heterogeneity in the care provided to older multimorbid cancer patients across the participating countries and clinical sites. The organizational context of each site plays a crucial role in shaping care delivery. Therefore, the study highlights the importance of considering the specific characteristics of the organizational context when designing care pathways for older multimorbid patients and determining which change management practices can be implemented in each context. The insights gained from this research project contribute to shedding light on best practices for effective care coordination and can inform future initiatives aimed at improving care for this patient population.

Title

Carer Preferences and Willingness-to-Pay for Home Care Services for Older People with Dementia: A Discrete Choice Experiment in the Milan Metropolitan Area

Author

Michela Meregaglia, Simone Manfredi, Eleonora Perobelli, Andrea Rotolo, Elisabetta Donati, Elisabetta Notarnicola

Abstract

Background. Because of aging populations, dementia has become a major health and social care challenge in developed countries. The majority of people with dementia are cared for in their own homes for as long as possible and most of this care is provided informally by family members, who are likely to experience health and economic issues due to their caring role. Policies to support family carers are being implemented in several countries. However, there is limited evidence about user preferences for different types of home care support.

Objective. This study aimed to elicit informal caregiver preferences and willingness-to-pay (WTP) for alternative bundles of public home care services for older people with dementia living in the Milan metropolitan area.

Methods. A discrete choice experiment (DCE) was included in a larger survey administered to a sample of informal caregivers recruited through a network of non-profit organizations. The study received approval by the Ethics Committee of Bocconi University. An optimal orthogonal in the differences (OOD) design was used to create nine choice sets with Ngene. Each choice set included two alternative hypothetical scenarios (A and B) described by different combinations of attribute-levels. Four attributes articulated into three levels each were included in the experiment based on literature review, expert opinion, and prior interviews with caregivers: 1) the number of home care hours per month; 2) the type of care provided (i.e., health, social, mixed); 3) the caregiver peer support group (i.e., none, among carers only, with also professional support); 4) the monthly family's cost (€). A mixed logit model run in Stata 17 was used to analyze the choices, explore preference heterogeneity, and calculate WTP post-estimation. The random parameters for all attribute-levels were estimated assuming a normal

distribution. Log-likelihood, Akaike information criterion (AIC) and Bayesian information criterion (BIC) were computed to assess the fit of different models.

Results. A total of 90 questionnaires self-completed by caregivers were collected in January-April 2023. Two thirds (66.7%) of caregivers were female; the mean age was 59.1 (±12.3) years. Most were children (65.6%) or spouses (24.4%), and in 37.8% of cases they lived with the care recipient. The mean age of people with dementia was 82.1 (±6.57) years; around two thirds (65.9%) were female and almost half (48.9%) had also a paid caregiver. The DCE results showed that increased home care hours, mixed health and social care, caregiver groups with professional support and lower cost per month were mostly valued by carers of older people with dementia. The most preferred attribute-level was mixed health and social care, for which the average WTP was estimated at around €300. Some preference heterogeneity was detected in relation to caregiver's socio-demographic characteristics. For example, female and older carers revealed a stronger preference for mixed or health home care, while wealthier caregivers valued more the option of including professionals (e.g., psychologist, neurologist) in caregiver support group meetings.

Conclusions. This study is expected to provide relevant information to policymakers to recalibrate public home care services for people with dementia and their informal caregivers according to preferences and values placed on alternative hypothetical interventions.

Title

The development of a comprehensive archive of Patient-Reported Outcome Measures (PROMs) for clinical research and clinical practice in oncology

Author

Francesco Malandrini, Michela Meregaglia, Carmine Pinto, Massimo Di Maio, Oriana Ciani

Abstract

Background Patient-reported outcomes (PROs) are health or treatment outcomes reported directly by the patient without added interpretation of a healthcare professional or anyone else. The advantage of using PROs in clinical practice and research is that they provide a more holistic interpretation of the benefits of the intervention delivered or under investigation. However, choosing the most adequate measure of PROs in clinical trials, clinical practice, and post-authorization studies is not straightforward.

Objectives This study aimed to develop a comprehensive archive of patient-reported outcome measures (PROMs) in oncology and identify their main characteristics and target outcome domains.

Methodology As part of the PRO4All project, we retrieved the available PROMs in oncology by searching across a variety of sources including: facit.org, eortc.org, eprovide.mapi-trust.org, ema.europa.eu (European Public Assessment Reports), and published reviews. We developed a data extraction form to collect information on: PROM name, cancer area (based on ICD-10), type of questionnaire (i.e., self-reported, proxy-reported or caregiver's report), questionnaire variant(s), recall period (e.g., last week) and number of items. Moreover, we assigned each item a specific domain according to a predefined 38-item taxonomy for outcome classification.

Main results A total of 308 PROMs were identified and fully analyzed. Over half (n=156, 50.6%) were cancer type-specific (e.g., breast cancer n=27, 8.8%), 132 (42.9%) were generic for cancer and 20 (6.5%) were intended for the general population but also recommended or used for cancer patients. 48 (15.6%) were variants of another questionnaire. The great majority of questionnaires (93.2%) were self-reported, 3.2% were proxy-reported (e.g., by parents), and 3.6% were related to caregiver's status. In almost half of the cases (47.1%) the recall period was last week. The mean number of items per questionnaire was 22.5 (range: 1- 130). In total,

6921 items were assigned an outcome domain, which was emotional functioning/wellbeing in 21.5% of cases, physical functioning in 15.0%, general outcomes in 9.9% and delivery of care in 9.6%. This review study highlighted a significant number and heterogeneity of PROMs in oncology, even within the same cancer area. The newly developed archive represents a useful tool for guiding researchers and practitioners in selecting the most suitable measures for cancer patients and fostering a patient-centered approach in oncology.

Title

Out of office: a model-based cost-effectiveness analysis of return-to-work interventions in Norway

Author

Niccolò Morgante

Abstract

Background: The sickness absence rate in Norway is at its highest point since 2009 and the decision on the reimbursement of return-to-work (RTW) programs requires a thorough analysis. This study aimed to assess the long-term cost-effectiveness of two RTW interventions for patients with musculoskeletal and psychological disorders. The interventions included in the study were I-MORE (inpatient multimodal rehabilitation program) and O- ACT (outpatient acceptance and commitment therapy). Musculoskeletal and mental disorders are widespread among the Norwegian population where the prevalence of musculoskeletal conditions can be up to 80% among working adults, with 50% of the cases lasting more than three months. These conditions are highly correlated with sick leave and other types of medical benefits. Their long-term effects highlight the need for research on the societal repercussions of RTW interventions. These interventions often include multiple components and aim at reducing sick-leave days, helping the worker in returning to their profession. However, throughout the years, studies on the cost-effectiveness of RTW programs have produced inconsistent results. Most of the research conducted so far focused on the cost-effectiveness alongside clinical trials, while only a few studies fully developed models to assess the long-term outcomes.

Objectives: The main objective of this study was to develop a model that could extend the results of the clinical trial (ClinicalTrials.gov NCT01926574) and consider a longer time horizon. The respective research question was: Is I-MORE, compared to O-ACT, a cost-effective intervention in the long term for individuals on sick leave due to musculoskeletal or psychological disorders in Norway?

Methods: Starting from patient-level data, we extrapolated transition probabilities with maximum likelihood estimation methods. In-depth analyses were performed to fit the multi-state model that better captured the complex transition paths between the four model states

(work, sick leave, work assessment allowance, and disability benefit). Time-independent transition probabilities were estimated using exponential distribution. Time-dependent probabilities were elicited from a piecewise exponential distribution. Both time homogeneous and inhomogeneous models were assessed in terms of cost-effectiveness. Given our relatively small sample size (166) we inevitably had to make assumptions regarding parameters and the underlying model structure. Nevertheless, after that transition probabilities were defined, we estimated input parameters such as costs and health-related quality of life (HRQoL). Costs included primary and secondary care consumption, while HRQoL data were elicited from the 15D questionnaire. Point estimates and standard errors for both costs and HRQoL were based on multiple random effects regressions. Once all input parameters were defined, we developed a discrete-time state-transition model to perform a cost-effectiveness analysis. A probabilistic analysis was performed to propagate the uncertainty around model parameters, while different scenario analyses allowed us to explore structural uncertainty.

Results: Considering a healthcare perspective, over 25 years, I-MORE was not cost-effective compared to O-ACT (ICER: 1,167,887 NOK/QALY). Out of 10,000 simulations, with a threshold of NOK 500,000, I-MORE was cost-effective in 18% of the cases. Once we considered a limited societal perspective, which accounted for production loss, I-MORE not only became cost-effective but strongly dominated O-ACT. From a limited societal perspective, I-MORE became cost-saving after 3 years since the intervention.

Conclusion: Under current benchmark thresholds for cost-effectiveness, the inpatient nature of I-MORE drove up the costs which outweighed the small increased effects. However, the results of the evaluation were strongly influenced by the perspective of the analysis and the chosen time horizon. Our results emphasize the importance of discussing the role of the societal perspective in current economic evaluations. To our knowledge this is the first multi-state model developed to assess the cost-effectiveness of RTW in Norway. As policymakers seek strategies to improve population health outcomes while managing healthcare expenditures, evidence-based assessments such as this study can guide decisions regarding resource allocation.

Title

La co-produzione di valore in sanità dalla prospettiva degli attori coinvolti: due esperienze di partnership con organizzazioni di volontariato per il miglioramento dei servizi sanitari in un'azienda ospedaliero-universitaria

Author

Antonio Barretta, Federica Centauri

Abstract

Background: Accademici e policy maker pongono forte enfasi sulla centralità e sul ruolo attivo di coloro che usufruiscono dei servizi sanitari all'interno dei percorsi di cura e dei processi organizzativi di programmazione ed erogazione, ai fini del miglioramento continuo dei servizi e della sostenibilità del sistema. A livello collettivo e di gruppo, gli utenti concorrono alla produzione di valore nell'ambito di partnership collaborative con i professionisti e altri portatori di interesse del contesto sanitario, incrementando la qualità e la legittimazione delle decisioni assunte e le possibilità di successo della loro implementazione. Diversi contributi hanno fatto emergere la necessità di indagare maggiormente all'interno dei processi di co-produzione in sanità e dei meccanismi di gestione dei rapporti collaborativi che li caratterizzano, acquisendo il punto di vista dei soggetti coinvolti.

Obiettivi: La ricerca intende fornire un contributo alla letteratura sulla co-produzione di valore in sanità ed alla pratica delle organizzazioni sanitarie nei processi di co-programmazione e co-progettazione dei servizi, attraverso l'osservazione e l'analisi delle dinamiche di funzionamento di partnership avviate con alcuni dei principali portatori di interesse di un'azienda sanitaria, i.e. le organizzazioni di volontariato, per il miglioramento dei servizi sanitari. L'obiettivo è far emergere determinanti del funzionamento delle partnership ed i principali meccanismi per il loro efficace e sostenibile governo, a partire dalla prospettiva degli attori coinvolti.

Metodologia: È stata condotta un'indagine qualitativa, con l'analisi di un caso studio, attraverso il ricorso a principi propri della metodologia della ricerca interventista, in base alla quale il ricercatore contribuisce, con riferimento al fenomeno investigato, tanto al miglioramento/perfezionamento delle proprie azioni quanto allo sviluppo di conoscenze teoriche. Sono state analizzate due consolidate esperienze di partnership con le organizzazioni

di volontariato, negli ambiti dei trasporti sanitari e delle donazioni di sangue, avviate da un'azienda ospedaliero-universitaria che ha intrapreso, a partire al 2021, un percorso di adozione sistematica di modelli partecipativi allo sviluppo di processi aziendali di pianificazione strategica, progettazione e valutazione dei servizi e delle performance organizzative. Il caso studio è stato sviluppato combinando una preliminare concettualizzazione e interpretazione dei fatti rilevanti relativi al fenomeno (svolta da un autore coinvolto direttamente, in qualità di manager aziendale, nelle dinamiche delle partnership con funzioni di indirizzo dei processi), con un'analisi documentale e interviste semi-strutturate ai referenti delle organizzazioni di volontariato (condotte dall'altro autore che non ha alcun ruolo attivo nei processi di partnership). Un'analisi di contenuto qualitativa, seguendo un approccio principalmente induttivo, ha consentito di identificare, classificare e correlare pattern di significato emergenti dalla realtà indagata, che sono stati discussi congiuntamente dai due autori ai fini di una interpretazione condivisa del caso studio.

Principali risultati: Diverse categorie di fattori sono state individuate come rilevanti per alimentare e governare il sistema di relazioni nell'ambito delle partnership. Innanzitutto, il commitment, l'azione di sponsorship e di guida della Direzione Aziendale hanno legittimato, all'interno e all'esterno dell'organizzazione, l'avvio e lo sviluppo di approcci partecipativi al miglioramento continuo dei servizi ma anche ai processi di governo aziendali, stimolando consapevolezza diffusa sull'importanza del coinvolgimento, responsabilizzazione e comportamenti proattivi. L'istituzionalizzazione dei processi di co-programmazione e co-progettazione dei servizi (i.e. inserimento delle partnership all'interno delle strategie triennali aziendali e di un progetto aziendale dedicato al coinvolgimento), insieme alla strutturazione delle nuove prassi di gestione partecipata (i.e. formalizzazione di obiettivi e modalità operative delle partnership in Protocolli d'intesa sottoscritti dalle Parti, istituzione di Tavoli permanenti di confronto, definizione congiunta di programmi di attività per lo sviluppo di iniziative) hanno contribuito alla stabile integrazione delle sinergie all'interno dell'azione organizzativa ed all'allineamento delle azioni degli attori coinvolti verso la finalità comune di garantire servizi sempre più rispondenti ai bisogni di salute e assistenza della comunità di riferimento. Infine, assicurare forme di visibilità e riconoscimento dell'impegno profuso, anche attraverso

momenti di celebrazione pubblica dei risultati conseguiti con le iniziative (i.e. istituzione della Giornata annuale dedicata al coinvolgimento), ha alimentato meccanismi di motivazione intrinseca funzionali alla continuità delle partnership.

Title

Monitoring the use of health technologies: a practical example

Author

Stefania Simoni, Salvatore Russo, Marina Coppola

Abstract

Background Health technologies are fundamental tools for ensuring access to quality healthcare, but their optimal use is challenging (Henshall et al., 2012; Hogervorst et al., 2022). The introduction of health technologies with high financial and organizational implications requires the identification of a methodology capable of evaluating their adoption (Shuren & Califf, 2016), especially in the European context where the economic crisis and the shortage of healthcare workers have negatively affected the healthcare system (Kroezen et al., 2015). HTA is a transparent and accountable process that decision-makers and other stakeholders can use to support health decision-making at the policy level by providing evidence on specific technologies (WHO) through an evidence-based approach (Facey, 2020; O'Reilly et al., 2021). In this way, decisions can be made after proper evaluation, improving the accessibility, effectiveness, and sustainability of health systems (European Commission). The GRADE method (GRADE Working Group; Schünemann et al., 2013) is increasingly used to check such evidence's congruence. However, in the field of oncology drugs and innovative oncology drugs, further research is needed to overcome the shortcomings associated with technology assessment by addressing the challenges of assessing the adherence of the collected data to the recommendations provided.

Aim The present research aims, on the one hand, to strengthen the role of HTA in decision-making processes for administrating health technologies and, on the other, to encourage the establishment of joint monitoring and accounting standards to be proposed as a model. In summary, the research aims to improve the methodological framework for evaluating health technologies (oncology drugs and innovative oncology drugs) by providing a practical tool to improve their dissemination and use.

Method To pursue the research objectives, this paper adopts the case study method. The case study is appropriate when the researcher wants to understand a complex phenomenon in a

specific context (Eisenhardt & Graebner, 2007; Yin, 2017). The case study was developed by sourcing information from systematic retrieval and desk analysis of available documentation regarding efficacy, safety, and costs; analysis of HTA reports; analysis of Recommendations regarding oncological and hematological drugs. The Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) was used to assess the available evidence's quality and the recommendations' strength. (De Palma et al., 2009; Marinai, 2017) The monitoring, in particular, covered: 26 recommendations and 1 HTA report on oncology drugs;16 recommendations and 2 HTA reports on hematology drugs. To pursue the research objectives, a Qlik Sense Hub data warehouse was implemented. (Gil et al., 2016; El Morr, 2019; Torres et al., 2021; Shaari et al., 2022). The creation of the database allowed the following analysis parameters to be brought together: date of therapy, patient biographical data, diagnosis and site of pathology, treatment protocol, purpose, line of therapy, and treatment cycle number. Guidance on how to interpret oncological data (Chiesa & De Benedetto, 2010) was taken into account when selecting the analysis parameters.

Results By comparing the information with the eligibility criteria (AIFA) and with what is recommended at the regional level, it made it possible to develop a standard procedure capable of improving decision-making processes by health authorities. The application of this monitoring tool to the selected cases made it possible to highlight the percentage of the appropriateness of the prescriptions made and to assess whether the utilization rate was in line with the regional estimates.

Conclusion The study made it possible to develop a standard procedure for evaluating adherence to recommendations to be proposed as a model. This tool can improve cost management, transparency, and accountability and strengthen the public health system.

Title

Gatekeeping as a critical function in healthcare governance: how decision-makers can choose wisely

Author

Maggioni Elena, Lega Federico

Abstract

Background. The relationship between General Practitioners (GPs) and specialists, both territorial and hospital, is a highly complex governance theme differently approached by worldwide health systems' models. At the same time, this relationship can bring significant benefits to both patients' clinical outcomes and the NHS' economic sustainability. Again, the GPs' role as gatekeepers for specialist services is one of the main debated topics about the interoperability of the actors in daily practice. However, structuring an organizational model based on the gatekeeping activity of general practitioners involves important leadership dynamics, people engagement, and cultural change for both health professionals and the population. These structural, organizational, and cultural consequences on the healthcare system mean that decision-makers pay great attention to this issue even in contexts where healthcare outcomes already have very high standards. In the current historical moment, in which the pandemic emergency profoundly challenged healthcare delivery models, it is becoming crucial for healthcare decision-makers to have an unambiguous reference framework of the opportunities available worldwide to implement "ad-hoc" governance models for reference systems. Furthermore, the exponential aging of the population and the consequent increase in the burden of chronic disease on health systems entail unavoidable greater attention to proactive medicine rather than acute care and hospital-centric models.

Objective. This paper aims to examine the cogent role of governance in the daily practice of general practice related to specialist services within universal, tax-funded, and single-payer healthcare systems. Once the GPs' role in the gatekeeping has been verified, the analysis will investigate the system and context conditions capable of facilitating and encouraging general practitioners in carrying out this activity. Furthermore, the present study has the ultimate objective of presenting a working framework aimed at guaranteeing support for healthcare

decision-makers in the definition and restructuring of the system's operations between primary and secondary care (territorial and hospital) based on the characteristics of pre-existing models.

Methodology. The literature review will be carried out through the databases PubMed, Embase, and Scopus following the integrative review approach. English language articles published in the last ten years will be considered for eligibility, while the studies that take place in one or more OECD countries with healthcare systems primarily based on universal, tax-funded, single-payer models and the ones describing the impact of a policy or combination of policies on the gatekeeping role of general practitioners will be included. The qualitative analysis of the selected studies will be carried out by tailoring the Critical Appraisal Skills Program (CASP) method questionnaire. The PRISMA Statement will be used to transparently transmit the procedure used for consulting the databases up to the final list of included studies. During the analysis of the results, the researchers will keep controlled different variables to limit the possible interpretative bias due to the replicability or not of the different elements of context and incentive elements of gatekeeping found in the literature, such as contracting and funding models for GPs, demography of GP and their university background, and countries health literacy level.

Results. Regulating patients' access to secondary care is supposed to give better outcomes both on health and patients/caregivers' satisfaction and clinical outcomes by increasing the appropriateness of care, and on the managerial and economical side by enabling overall control over costs and workflow scheduling. To date, the literature appears to present numerous case-control studies mainly investigating the clinical aspects (in terms of health outcomes and clinical practices) and the direct health costs incurred by the system or by third parties paying. They agree on the fundamental role of the gatekeeping activity in improving healthcare services in terms of effectiveness, efficiency, appropriateness, and increasing the cost-effectiveness of delivery models. The literature review shows different governance models adopted in single contexts making their specific 2 characteristics identifiable. At the same time, however, the literature is not very extensive in modelling the approaches presented by comparing them with each other. The present study aims to cover this gap.

Title

An overview of reviews: what do we know about task shifting and skill mix change in healthcare?

Author

Francesca Meda, Paola Cantarelli, Milena Vainieri

Abstract

Background

Task shifting has been defined by the WHO as "the rational re-distribution of tasks among health workforce teams" (WHO, 2007; 13). It is recognized as a potential strategy to respond to different challenges that healthcare systems are nowadays facing: global shortage of healthcare workers (Callaghan et al., 2010), change and growth in technology (Simms et al., 2019), change in epidemiological trends and disease patterns (Barnett et al., 2012), changing role of patients and communities in healthcare (Maier et al., 2016), rising healthcare costs and the necessity to meet the needs of a growing and aging population with the use of limited resources (Liu et al., 2017).

Objectives Starting from these premises, the paper aims at answering the following research question: how are task shifting and skill mix change strategies conceived in the provision of healthcare services? The paper draws its theoretical foundation in the framework developed by Sibbald et al. (2004), that conceptualizes skill mix change as (i) enhancement (increasing the depth of the job by extending the role or skills of a particular group of workers), (ii) substitution/delegation (exchanging tasks from one type of workers to another), (iii) innovation (creating new jobs by introducing a new type of workers, role or also technological innovation).

Methodology The study is a systematic review of reviews, identified as the best suited approach to synthetize and combine relevant data from the existing literature (Smith et al., 2011; Kraus et al., 2020). The search was performed on Scopus, completed in February 2023, confined to reviews (all primary studies were excluded), published in English language from 2004 onwards, consistently with the year of publication of the work by Sibbald and colleagues. The search algorithm has been constructed as follows: ("task shift*" OR "skill mix") AND

("health*") AND ("nurs*" OR "doctor" OR "physician" OR "therapist" OR "technician" OR "social worker" OR "community worker"). Reviews that examined health workers engaged in task shifting activities were eligible for inclusion. These task shifting roles could encompass worker substitution or delegation across any disease or medical condition, but also skills and competence enhancement or creation of new roles, tasks, and responsibilities. The PRISMA guidelines for systematic reviews were followed to conduct the search strategy and the data assessment (Moher et al., 2009).

Results Of the 692 publications identified, 37 met the inclusion criteria, whereas 655 were excluded either because primary studies (581), not pertinent with the research objectives (64) or methodologically not coherent (10, i.e., conceptual papers). Relatively to the methodological approach, 23 are systematic reviews, 8 narrative, 3 scoping and 3 meta-analyses. The total number of reviewed papers by those included is 787. 7 reviews report a definition of task shifting, conceiving it as "a process whereby specific tasks are moved, where appropriate, to health workers with shorter training and fewer qualifications" (Aurizki & Wilson, 2022, p. 2). It is consistent with the dominant approach of the literature, that considers task shifting as an answer to solve the shortage of qualified health workers, whose pressure can be alleviated by shifting some of the less complex tasks to others with lower levels of training (Callaghan et al., 2010). 19 studies are focused on low and middle-income countries (8 on African countries), 2 on developed countries and 16 do not specify it. This is also consistent with the literature, generally focused on developing contexts, where health workforce needs-based shortages and skill mix imbalances are even more relevant and challenging for healthcare systems (Fulton et al., 2011). With respect to specialties, there is a significant variability: 6 on HIV/AIDS treatments, 6 on chronic diseases, 5 on surgery care services, 3 on primary care services, 3 on maternal health, 2 on mental health, 2 on acute care; 10 studies do not indicate any specific disease or treatment, referring broadly to task shifting between qualified-unqualified staff. Most of the reviews (31) conceive task shifting as substitution/delegation of tasks among different cadres of health workers. Among them, 28 describe exchange of tasks between doctors and various non-physician professionals (nurses, midwives, allied or community or training lay health workers, technicians). One is focused on the task transfer between surgeons,

anesthesiologists and non-physician clinicians; and one between mental health specialists and general practice nurses. 4 reviews describe the expansion of roles and skills of a particular group of workers (2 focusing on nurses, 1 on nurses and midwives, 1 on enhanced physical therapists); just 1 has been classified as innovation, describing the adoption of new technologies and product innovation to support healthcare workers in providing cardiovascular auscultation. 23 reviews describe task shifting as a promising strategy: potentially improving health outcomes (6), increasing care effectiveness (8), promoting access to care (3), being a viable strategy to respond to health workers shortage (6). 7 reviews underline the need to provide adequate training, mentoring and supervision to ensure task shifting effectiveness, whereas 3 focus on the necessity to establish a favorable regulatory framework and valid instruments and protocols. Finally, 3 reviews report that evidence on cost-effectiveness of task shifting are still limited and need to be further analyzed.

Title

Economic burden and health-related quality of life among older people with dementia living at home and their informal caregivers in the Milan metropolitan area

Author

Simone Manfredi, Eleonora Perobelli, Elisabetta Notarnicola

Abstract

Objectives. Dementia is a leading cause of disability in older populations worldwide. In Italy, 1.2 million people live with dementia, but this number is expected to increase to up to 1.6 million cases by 2030 because of aging population. People with dementia are mostly cared for at home informally by family members and for as long as possible. This study investigates the socioeconomic burden and quality-of-life (QoL) of people with dementia and their caregivers in the Milan metropolitan area.

Methods. A cross sectional survey was conducted between January and April 2023 using a self-administered caregiver questionnaire. The target participants were informal (unpaid) caregivers recruited through a network of non-profit organizations involved in the assistance of older residents. Their care recipients had a formal diagnosis of dementia (of any type) by a physician or showed clear symptoms of cognitive impairment. The questionnaire was composed by a 35-item cost-of-Illness questionnaire and two QoL questionnaires (i.e., EQ-5D-5L - proxy version and CarerQoL-7D). The cost analysis was conducted from: i) the health and social care system perspective (using official regional tariffs for inpatient/outpatient services and prostheses, national reimbursement prices for drugs and local cost data for social assistance); ii) the family's perspective (using self-reported out-of-pocket costs); iii) the societal perspectives (estimating caregiver's productivity losses through the human capital approach). We applied a generalized linear model to identify factors associated with costs and QoL. The study was approved by the Ethics Committee of Bocconi University.

Results. The sample included 106 caregiver-care recipient dyads. Most caregivers were children (64%), female (68%); the mean (±SD) age was 59.2±11.9 years. The mean CarerQoL utility score (0-100, UK tariffs) and VAS (0-10) were 64.2±19.6 and 4.9±2.0, respectively. Most caregivers reported (some or a lot of) problems with their own mental health (82.9%) or

combining care tasks with their daily activities (88.6%). People with dementia had a mean age of 82.7±7.0; 66% were female. Their mean EQ-5D-5L utility index (Italian tariffs, range: -0.571;1) and EQ VAS (0-100) were 0.297±0.345 and 49.1±22.8, respectively. The great majority of caregivers reported that their care recipients had problems (any severity level) with self-care (92.5%) and usual activities (97.2%). Over the last 12 months, the most frequently consulted physician was the general practitioner (57%) followed by the neurologist (49%); 41% of the elderly required emergency services due to dementia; antidepressants (45%) and acetylcholinesterase-inhibitors (38%) were the most consumed drugs; 69% of the elderly used absorbent aids; 46% of families hired a home care worker. Then, over the last 12 months, the mean economic burden was estimated at €14,362±13,594, divided into health (€3,234) and social (€11,128) care costs. The 79.9% (€11,474) of this amount was incurred by families, who only received a public allowance of €4,772±3,658 on average. The existence of comorbidities was associated with higher healthcare costs. In addition, we estimated a mean productivity loss of €1,772±4,479. The caregiver's QoL was significantly lower for female carers and those with chronic illnesses.

Conclusions. The homecare of people with dementia is associated with significant costs mainly incurred by families and poor QoL of both caregivers and care recipients. Following the "Ageing in place" paradigm, homecare is often seen as the best solution, but caregiver and economic burden is rarely taken into consideration when comparing different care arrangements. Policy makers should incorporate these aspects and promote more supportive and affordable solutions.

Title

Managing chronic diseases in healthcare: which role for non-governmental organisations?

Author

Oppi C., Cattaneo C., Galizzi, G.

Abstract

Background The Lombardy health system has recently undertaken a range of regulatory interventions to reorganize its health and social-health services, as well as its strategies for handling chronic diseases. Specifically, a series of regulatory interventions proposed a new model to meet the needs of chronic patients through the creation of networks that support chronic patients' management and their compliance to care both at regional and local level. Networks in healthcare aim at addressing citizens' wellbeing and satisfaction of needs (Provan and Milward, 1995), ensuring distributional effectiveness of and access to services (Conrad et al., 2003; O'Toole and Meier, 2004), and participation and activation of the community in health (Sofaer, 2000; Wagner et al., 2000; Sabol, 2002). In this sense, network effectiveness relies on multiple organisations that co-ordinately operate to delivery of an array of different and complementary services (Turrini et al., 2010). In the Lombardy Region case, when dealing with chronic diseases management, the precise configuration of the network remains uncertain (Barzan et al., 2018), as it strongly depends on the active involvement of different actors, such as health institutions, public and private providers, general practitioners (GPs) and the advancement of the integration and coordination process that includes them (Longo et al., 2018). In this context, also non-governmental organisations (NGOs) with non-for-profit aims are engaged with institutional and private actors to sustain such chronic care model. They role, however, still remains underexplored, while they might contribute to the overall achievement of network's goals.

Aims This paper aims at focusing on the role NGOs play within chronic model care in healthcare. Specifically, this research emphasizes their role in the interaction with institutional actors, such as the Lombardy Region, the local health authority (LHA), local hospital trusts (LHTs), but also general practitioners (GPs) and patients.

Methodology To answer the research question, the authors conducted an exploratory case study (Scapens, 2004) centred on the functioning of the regional chronic care model. Semi-structured interviews were conducted with the actors involved at different stages in the network with a narrow perspective on the local level. Between May and June 2023, a total of five interviews were conducted with different actors involved in the network. The sample included two representatives from local NGOs, a representative at the Region, the former and present responsible for chronic model care in the LHA, and a representative of a LHT. Interviews with NGOs, such as the cooperative that supports GPs in patient management activities and patients' associations aimed at understanding their role and the engagement with the other actors in the network. On the other hand, interviews with institutional actors (the Region, the LHA, and a LHT) focused on their perception about network organization and the dynamics of interaction with other actors, as well as their recognition of NGOs role for pursuing institutional aims. All the interviewees discussed the changes in the network in COVID-19 times and how they contributed to network functioning in that period. Data were then coded to identify major themes leading the subsequent discussion of results.

Main results The coordination among the actors is only partially defined by the regional provisions (Regional law 23/2015, DGR X/6164/2017 and DGR X/6551/2017). In fact, some underdeveloped issues generate difficulties in achieving the network aims, and left space for different actors to engage one the others. Specifically, issues mainly refer to coordination to ensure patients' compliance to care activity (i.e. attendance to visits, periodic controls, etc.), and to monitoring care outcomes. NGOs' role resulted key to support the aforementioned issues, also on the light of increasing resource constraints. For instance, regarding the relationships with GPs, NGOs support them in patient management activities, thus contributing to ensure patients' compliance to their care plan; NGOs also interact with patients to enhance their health literacy and push them towards their engagement with GPs and specialists in LHTs. NGOs are also increasingly regarded by institutional actors as key players in the chronic care model. The COVID-19 pandemic exacerbated this trend. In a context in which access to hospitals was limited and GPs' activity was threatened, NGOs played a relevant role as a primary contact for patients, thus integrating institutions' care activity. In this sense, some of them defined daily

contacts with their patients though the operate of their administrative and healthcare professionals, while they also provided health monitoring instruments to prevent patients from leaving their houses. The findings of this research help identifying flaws in chronic care model. The study also emphasizes whether and how NGOs role could be more institutionalised to improve the relationships between actors, to support the monitoring of chronic patients, and enhance network effectiveness.

Title

Financial resources produced by Kidney Transplantation: a case study

Author

Roberto Cacciola, Maria Bernadette Donato, Lara Gitto, Francesca Leonardis

Abstract

Background: In Italy, healthcare services for Organ Donations and Transplantation (ODTs) are commissioned by the Regional Authorities. The regional legislation is very similar across all the twenty Italian regions: providers (the hospitals performing transplantations) are funded by the Regional Commissioners of the Services (RCS), which follow the Regional Legislation. ODT activities have a crucial role in healthcare and the benefits for patients have been widely recognized along the years. Among the different types of Solid Organ Transplantation (SOT), Kidney Transplantation (KT) is acknowledged as the best treatment for eligible patients with End Stage Kidney Disease (ESKD); relevantly, KT may produce significant financial savings comparing to the other types of Renal Replacement Therapy. Such savings, as it is being explained, may constitute an additional budget available to the commissioners of the healthcare services.

Objectives: The objective of the present study is to calculate the effectiveness of ODTs, estimating the probability of obtaining savings with a better allocation of resources. The analysis has been performed looking at data related to the central Italy region of Lazio and the ODTs considered relate to different types of organs as heart, liver, kidney, lung. Both the activity of donation and transplantation were included in the calculation of costs.

Methods: For this study, we analyzed the volume activity of the ODTs services in Lazio for five consecutive years, from 1st January 2015 to 31st December 2019. The study applies an optimization problem, known in the economic literature as “competing choice problem”: for being defined, the problem requires data related to the budget available (that acts as budget constraint), information about the alternatives to choose from (costs and effectiveness of each alternative). The ODTs activity was evaluated through the number of Utilised Donors, defined as donors from whom at least one organ was transplanted. The indicator of effectiveness selected was the number of procured organs. Instead, the costs were represented by the tariff

reimbursed for the ODTs activity for each organ. The case study considered in this research refers specifically to KT: a functioning kidney will guarantee a higher survival for the patient, as well as lower costs related to renal replacement therapies, first of all, dialysis, that have to be sustained by the NHS and that greatly diminishes length and quality of life for patients with ESKD. Overall, the information considered in the problem, included the available budget employed, constituted by the amount reimbursed by the National Health System, which is fixed, costs (given by the tariff paid for all types of SOT considered in the problem, and, in addition, the fixed cost for organ procurement), effectiveness (measured in terms of procured organs). The solution of the problem leads to a reliable estimate of the optimal number of transplants that could be carried out, if the organs were available, given the observed activity of transplant centres, without losing efficiency.

Main results: The results outline how an improved transplant activity may increase without incurring in higher costs for the National Health Service. The amount of savings (avoided costs due to such re-organization of the transplants to carry out) along the study period, which goes from 2015 to 2019, show how it could be possible to retrieve resources likely to finance ODTs for the years following those in the time horizon considered.

Title

L'efficacia delle note AIFA: una analisi di interrupted time series per i farmaci in uso per la prevenzione e carenza di vitamina D in Regione Toscana

Author

Benedetta Dal Canto, Giaele Moretti, Francesco Attanasio, Francesca Ferrè

Abstract

Background e Obiettivi: Con appropriatezza prescrittiva si intende il corretto utilizzo del farmaco in base alle evidenze scientifiche per il trattamento di una determinata condizione medica. Riguarda la scelta del farmaco più idoneo per il paziente in base al rapporto beneficio/rischio favorevole, conservando la logica costo/beneficio sostenibile per il Sistema Sanitario Nazionale (SSN). Alcuni dati di appropriatezza prescrittiva, sia in ambito territoriale che ospedaliero, mostrano variabilità tra le regioni, come riportato dall'indicatore di sintesi per l'anno 2022 sull'appropriatezza prescrittiva presente nel "Sistema di Valutazione della Performance dei Sistemi Sanitari Regionali" del Laboratorio Management e Sanità della Scuola Superiore Sant'Anna1, che permette di monitorare l'utilizzo di alcune categorie di farmaci per cui si registrano consumi elevati e soggette ad usi impropri. Sebbene l'indicatore non sia esaustivo, poiché non consente di associare l'utilizzo del farmaco con la diagnosi del paziente, la variabilità e l'andamento costante negli anni consente di individuare alcuni fenomeni di potenziale inappropriatezza. Nel tempo sono stati introdotti a livello nazionale diversi strumenti di governance per il conseguimento di maggiori livelli di appropriatezza prescrittiva: i) Note AIFA, che definiscono quali indicazioni terapeutiche di un dato farmaco sono rimborsabili a carico del SSN; ii) Piani Terapeutici che consentono di limitare l'uso a farmaci ritenuti essenziali per singola patologia e rimborsabili da parte del SSN garantendo la continuità della prescrizione da medico specialista a medico di medicina generale; iii) Registri di Monitoraggio con scopo di garantire l'appropriatezza d'uso di farmaci in relazione alla loro indicazione terapeutica associandoli ai Managed Entry Agreements (MEAs). Le note AIFA in particolar modo sono introdotte qualora un medicinale goda di più indicazioni cliniche di cui solo una rappresentata da patologia rilevante, quando soggette a usi impropri e quando l'utilizzo del medicinale è finalizzato a prevenire un dato rischio in certe popolazioni. Lo scopo

della loro introduzione è di guidare verso una maggiore appropriatezza prescrittiva e sicurezza d'uso, nonché di governo della spesa. Il presente studio si pone l'obiettivo di valutare mediante analisi di Interrupted Time Series (ITS) gli effetti sui consumi e sulla spesa legati all'introduzione della Nota 96 relativa alla prescrizione dei farmaci indicati per la prevenzione ed il trattamento della carenza di vitamina D. La scelta di investigare l'istituzione della suddetta Nota sull'andamento della spesa e consumi nasce dall'elevata spesa sostenuta dal SSN nei tre mesi antecedenti l'introduzione (Agosto 2019 – Ottobre 2019) pari a 77.140.728 €, e dalla recente revisione della stessa da parte di AIFA.

Materiali e Metodi: L'analisi è stata condotta sui dati amministrativi relativi alla farmaceutica convenzionata della Regione Toscana per gli anni 2018-2022. La nota 96 è stata introdotta a novembre 2019 nel contesto nazionale. I consumi mensili di confezioni, il tasso di DDD su popolazione e la spesa sono stati stimati per un periodo complessivo di 60 mesi, comprendente i 22 mesi precedenti all'implementazione della nota (gennaio 2018-ottobre 2019) e i 38 mesi successivi (dicembre 2019-dicembre 2022). I costi sono stimati in euro (€) e calcolati dalla prospettiva del SSN, al lordo del pay-back e al netto degli sconti alle farmacie e della compartecipazione a carico del cittadino. L'analisi di ITS ha permesso di confrontare mediante regressione segmentata le variazioni delle variabili sopra menzionate prima e dopo l'intervento, e di indagare la presenza di una correlazione statisticamente significativa tra l'intervento e le variazioni osservate mensilmente per le variabili di interesse.

Risultati: Il numero medio di confezioni erogate in Regione Toscana nei mesi precedenti all'introduzione della nota si attesta a 150.391, con una spesa media di 789.680 € e un tasso medio di 6,1 DDD per popolazione. Nei mesi successivi all'introduzione, il numero medio di confezioni è pari a 91.331, con una spesa media di 527.138 € e un tasso medio di 3,7 DDD. Dall'analisi ITS emerge una riduzione dei consumi statisticamente significativa nel mese immediatamente successivo all'introduzione della Nota, in termini sia di confezioni erogate (p-value: 0.000; 95% CI: -69308,4 – -43097,3), sia di tasso di DDD (p-value: 0.000; 95% CI: -3,6 – -2,02) che di spesa (p-value: 0.000; 95% CI: -369196,9 – -203506,4). Il post-linear trend mostra una graduale ripresa dei consumi in termini di confezioni erogate e del tasso di DDD non

statisticamente significativo, diversamente risulta significativo l'incremento della spesa nel tempo (p-value:0,048; 95% CI: 24,7 – 7670,8).

Conclusioni: L'analisi dei dati consente di effettuare una prima valutazione sull'impatto della Nota 96 rispetto alla riduzione di consumo e spesa. I risultati mostrano una riduzione significativa immediata a seguito dell'introduzione della nota. Tuttavia, sebbene non statisticamente significativo, il trend in aumento dei consumi nei mesi successivi all'introduzione suggerisce una progressiva perdita di efficacia nel tempo, che si riflette in un incremento statisticamente significativo della spesa. Emerge quindi la necessità di promuovere e monitorare l'impiego della Nota sul territorio indirizzando i prescrittori all'utilizzo della stessa in maniera appropriata. I risultati dello studio rappresentano un primo tassello per la valutazione dell'efficacia delle note AIFA come strumento di governance. Ulteriori studi saranno svolti per ampliare l'analisi a tutte le note attualmente in vigore, applicando la metodologia anche ad altre realtà regionali per avere un confronto più ampio.

Title

Health Technology Assessment (HTA) and organizational performance: A systematic literature review on the role of Performance Management Systems (PMSs)

Author

Esther Oluwatosin Akinbobola, Francesca De Domenico, Guido Noto

Abstract

Background In recent years, the healthcare sector has witnessed a rapid integration of technology, leading to significant advancements in patient care, operational efficiency, and organizational performance (Palozzi, et al., 2019). Health technology assessment (HTA) plays a crucial role in evaluating the clinical, economic, and social impact of these technological innovations (Vainieri et al., 2021). HTA is indeed a process used to determine the value of health technology. This technique evaluates health technology's costs, risks, and benefits as it advances from existing to new (Bryan et al., 2014). Its primary purpose is to provide policymakers with information on health technology's clinical and economic value to support their decisions regarding reimbursement and coverage (Angelis and Kanavos, 2016). It aims to provide evidence-based information to guide decision-making regarding technologies' adoption, reimbursement, and utilization. HTA incorporates rigorous evaluations of clinical efficacy, cost-effectiveness, patient-reported outcomes, ethical considerations, and broader societal impacts (Sarri et al., 2021). Through HTA, healthcare organizations can make informed decisions about adopting and integrating technologies into their practice (Miniati et al., 2013). In order to put in place this kind of evaluation at the organizational level, healthcare facilities need to adopt adequate informative systems that may drive decision-making. In this sense, it is interesting to analyze the role that performance management systems (PMS) may play in supporting HTA and, consequently, in steering organizational performance. PMS may be defined as the set of devices, tools, and activities directing the behavior of internal stakeholders in order to pursue organizational objectives by measuring, managing, and evaluating its performance (Ouchi, 1979; Lebas, 1995; Malmi & Brown, 2008; Ferreira & Otley, 2009). These systems provide a structured approach for setting performance targets, monitoring progress, identifying gaps, and implementing corrective actions.

Objectives Despite extensive studies on the features of PMS in the healthcare sector and health technology assessment HTA, little is known about the interaction between the two interest areas. In fact, although PMSs are widely adopted, their influences on HTA are little researched. This research would examine the relationship and interaction between PMS and HTA and their direct or indirect effect on organizational performance, including sustainability. On the one hand, PMS may provide HTA activities the possibility to benchmark the expected results coming from the adoption of technology with the overall organizational objectives, answering questions such as: how does the introduction of this technology contribute to the progress toward the objectives set? Moreover, PMSs heavily rely on information systems, data flows, etc., that may be used to carry out HTA activities. On the other hand, HTA may inform PMS on which data to collect, how to analyze them, and how to report them for decision-making purposes (in the context of technology adoption).

Methodology In order to understand how studies have analysed the interaction between HTA and PMSs, we conducted a literature review following a systematic approach with the aim of establishing conceptual boundaries to help us select relevant contributions from the literature, by adopting a replicable, meaningful, and transparent process. We searched the Scopus database within abstract, title, and keywords by entering ("health technology assessment" OR hta AND performance AND management). The analysis thus conducted returned a sample of 130 papers published from 1995 to 2023. The authors independently analysed each article. After an initial screening, 71 articles were removed as non-relevant, resulting in 59 articles. Finally, through discussion and further review of the remaining articles, a further 14 articles were excluded. As a result, a total number of 45 studies were recognised as valid for inclusion in the analysis.

Main results In an era of rapid technological advancements, healthcare organizations must prioritize the integration of HTA and PMSs. Health technology assessment plays a critical role in evaluating the value and impact of health technologies within healthcare organizations. However, the successful adoption and integration of these technologies may largely benefit from adequate PMSs. By aligning goals, measuring performance, promoting continuous

improvement, engaging stakeholders, and facilitating resource allocation, PMSs contribute to guiding HTA in meeting organizational objectives.

Title

Unfolding the determinants of citizens' telemedicine co-creation intention

Author

Marta Marsilio, Gabriele Infante, Martina Pisarra

Abstract

Introduction The Covid-19 pandemic has accelerated the development and adoption of digital innovations in healthcare. Telemedicine (TM) has emerged as a form of remotely delivering healthcare services using innovative technologies that enable the active involvement of patients and caregivers (Leite & Hodgkinson, 2021). These novel forms of collaboration have been found to yield significant clinical and economic outcomes for patients, practitioners, and the entire healthcare system (Marsilio et al., 2021). TM can be considered an enabler for value co-creation (Vargo & Lusch, 2004). Recent studies have examined and conceptualized the antecedents that facilitate the attainment of value co-creation outcomes in healthcare, exploring managerial activities from a multi-stakeholder and multi-dimensional perspective (Fusco et al., 2023). However, there remains a lack of empirical evidence analyzing the contribution of these antecedents to value co-creation. This study aims to empirically investigate the influence of determinants of value co-creation on citizens' willingness to co-create using innovative technologies such as TM. Specifically, we propose a Telemedicine Co-creation Intention (TMCCI) model to describe the combined effects of these antecedents and develop an individual predictive model.

Theoretical framework This study adopts the Health Co-Creation Evaluation Framework (HCEF) developed by Fusco and colleagues (2023). The HCEF identifies multiple health co-creation antecedents that facilitate co-creation. Accordingly, HCEF has been restructured in order to consider the most relevant user-related specificities in the TM context that could enable the intention to co-create through TM.

Methods and data Each antecedent was tested in a univariate logistic model for descriptive purposes, estimating odds ratios and Wald p-values. Subsequently, all antecedents were included in a random forest (RF) classification model (Ishwaran & Kogalur, 2023) based on the TMCCI dependent variable. This model provided insights into maximal second-order subtrees

to examine variable interactions, minimal depth metrics, and variable importance measures for each variable. Quantitative and qualitative variable selection were performed based on these results and their coherence with the HCEF. The final model, incorporating the selected antecedents, was evaluated for its predictive capabilities (AUC), interpreted through partial plots, and employed to obtain individual TMCCI probability estimates. The data employed were derived from a web-based survey conducted in collaboration between the Department of Economics, Management, and Quantitative Methods of the University of Milan and RCS Corriere della Sera, one of the prominent Italian newspapers. The questionnaire was administered in June 2022, gathering responses from 3802 citizens. To capture the antecedents of value co-creation, single-choice, multiple-choice, and Likert scale questions were utilized, drawing from validated scales for item selection (e.g., Norman et al., 2006 for eHealth literacy). A preliminary question examined whether respondents had previous experience with TM. Thus, the subset of citizens without prior TM experience was selected to analyze their future intention to co-create value through TM. Survey items regarding prior TM proposals and future intention to use TM allowed to obtain the outcome variable; the TMCCI binary indicator was devised to distinguish those who would have used TM if offered from those who rejected or would have refused the TM proposal.

Results A total of 1988 subjects who had not used TM services were included based on the completeness of their responses: 1479 (74.4%) expressed intention to use TM. Univariate analyses revealed that 50% of the tested antecedents were not significantly associated with the intention to co-create. The following factors were identified as statistically significant predictors of the TMCCI outcome: age, gender, profession, household composition, health status, previous experiences with digital healthcare, digital health literacy, and awareness of TM. The RF interaction analysis identified a strong relationship between age and ten antecedents. Employing a qualitative and quantitative variable selection methodology led to the exclusion of age, profession, and difficulty of access to services from the final model, while maintaining the frequencies of access to hospital or community services. The partial plot results of the model suggest that a high probability of TMCCI is positively associated with previous usage of digital health tools, awareness of the meaning of TM, and health literacy in retrieving

and utilizing digital health information. The model correctly identified 88% of the subjects exhibiting co-creation intention (high sensitivity). The model's AUC of 0.63 indicates a reasonable level of predictive accuracy.

Conclusions

These results provide a solid foundation for developing targeted interventions to promote widespread adoption of TM. Specifically, the findings highlight the need to address certain gaps in terms of (1) available digital health tools (e.g., Electronic Health Records, appointments, e-prescriptions), (2) TM awareness, and (3) the ability to search, understand, and utilize health information found on the web. Disseminating the TMCCI model can have practical implications for healthcare management practices by providing a comprehensive framework to select potentially compliant patients for TM and identify those in need of training or further information. Improving access to digital health services, promoting telemedicine awareness, and developing technological competencies can contribute to enhance the effectiveness and efficiency of the healthcare system, generating benefits for patients, healthcare organizations, and professionals (Saigì-Rubiò et al., 2022).

Title

Towards the development of an implementation framework for AI/ML-powered applications in healthcare organizations

Author

Vittoria Ardito, Giulia Cappellaro, Amelia Compagni, Francesco Petracca, Luigi Maria Preti

Abstract

Context: An increasing interest in clinical artificial intelligence (AI) – and in particular in learning-based systems – has been observed amongst scholars and healthcare professionals. However, while clinical AI has been shown to be effective and has the potential to change the delivery of patient care, its implementation in healthcare organizations is complex, and several are the challenges that currently hamper its uptake in the daily practice. This work proposes a theory-informed implementation framework to be used as a managerial tool to guide the implementation of AI within healthcare organizations.

Methods: This multi-stage work is based on a mixed methodology. The first step consists of a systematic literature review, aimed at investigating barriers and enablers observed in the implementation of clinical AI in organizational settings, with a focus on empirical studies reporting on learning-based AI-powered interventions used by healthcare professionals. The review has been conducted using the PRISMA methodology and four databases (PubMed, Scopus, EBSCO, and Web of Science) were searched through three blocks of keywords (AI, implementation, healthcare). The synthetized scientific evidence will then be interpreted and conceptualized adapting established implementation science theoretical frameworks, previously collected and systematized. Implementation science is a research stream that seeks to identify and address the barriers that slow the uptake of proven interventions. As a result, a preliminary version of our implementation framework for AI is developed. This will be later shared, discussed, and validated with a focus group with subject matter experts (SMEs).

Results: The research is currently ongoing, and its activities will be finalized by July, 2023. Preliminary results from the empirical review highlight that implementing clinical AI requires the combination of several interdependent AI-specific features, such as trust, transparency, or data governance, which should be governed in an implementation process. Concurrently,

multiple actors need to be engaged at different stages in the implementation process with tailored resources and approaches. Compared to established implementation science frameworks, we therefore plan to account for the specific features of AI to develop a dedicated conceptual framework.

Discussion: The implementation of clinical AI is a hot topic that will have a central role in the debate in the near future. Implementing clinical AI in healthcare organizations is a multilayered, multi-stakeholder effort, influenced by many interdependent factors, and AI-specific characteristics such as learning, autonomy, and inscrutability, pose additional degrees of complexity compared to traditional digital and IT technologies. This works highlights the need to further elaborate on the determinants of successful implementation of learning-based clinical AI to provide the management of healthcare organizations with viable indications on how to arrive to a daily use of proven health interventions.ù

Title

Impacts and determinants of digital technologies for administrative supporting processes in healthcare

Author

Marianna Mauro, Guido Noto, Anna Prenestini, Fabrizia Sarto

Abstract

Background The topic of digital transformation in healthcare has assumed an increased relevance over the last two decades (Marques and Ferreira, 2020). In this setting, the application of digital technologies (DTs) to support existing healthcare processes and treatments or to develop new ones has generated the term Healthcare 4.0 (H4.0) (Tortorella et al., 2022). However, while this topic seems to assume a strong relevance within research, there are still some gaps that need to be filled. First of all, literature has documented that scholarly efforts have especially adopted a narrow perspective by exploring the use and adoption of specific DTs (Corny et al., 2020; Rolls et al., 2020), while limited attention has been devoted to investigate the general level of digital transformation and the related drivers and barriers within healthcare (Raimo et al., 2023). Moreover, most studies have focused on the introduction of specific technologies aimed at addressing clinical needs and processes (Corny et al., 2020; Rolls et al., 2020; Tortorella et al., 2022). Differently, literature is still lacking in terms of studies exploring how the introduction of DTs might improve the administrative processes and the related decision-making (Behkami and Daim, 2012) linked to both 'primary support processes' (e.g., pharmacy, logistics, operations and patient flow logistics, risk management) and 'secondary processes' (e.g. performance measurement and management, human resource management, ICT, technology development, procurement) of the Porter value chain model (Porter and Teisberg, 2006). Finally, most articles exploring DT in healthcare have investigated the topic by providing conceptual analysis and literature reviews (Aceto et al., 2018). Differently, empirical research assessing the degree of use and impact of new DTs and the related barriers and drivers is still missing.

Research objective This article aims to fill the above-mentioned gaps by answering the following research questions: RQ1: What is the impact of DTs on administrative supporting

processes (i.e. 'primary support processes' and 'secondary processes') in healthcare organizations?; RQ2: what are main determinants of DTs adoption in performing administrative supporting processes in healthcare organizations?

Methodology The article employs the Delphi methodology and examines six areas of DTs (including IoT, Artificial intelligence and Machine learning, Big data & Business Analytics, Cloud storage and computing, Social media, Blockchain). Specifically, it follows the research design of a Delphi study and implements an inductive qualitative approach based on the involvement of 11 experts interviews to get opinions on the most impactful DTs and on significant factors hampering or limiting digital transformation implementation.

Main results Our results show that: a) internet of things and artificial intelligence are the new emerging DTs that mainly impact administrative and support processes; b) among specific determinants – drivers and barriers – able to affect digital transformation, skills and competencies are considered as the most recalled ones for the selection and introduction of DTs. Our findings have practical implications for healthcare service providers, policymakers, and other stakeholders, as they highlight the crucial factors that contribute to the successful implementation of H4.0, allowing the identification of strategies to promote digital transformation. Furthermore, this study provides valuable insights for healthcare service providers to assess their current progress in H4.0 implementation and take strategic actions in each critical dimension to ensure a successful adoption of H4.0.

Title

Patient-reported outcome data in post-mastectomy care: differences between reconstruction types

Author

Riccardo Novaro, Francesca Ferrè

Abstract

The impact of breast reconstruction in patients with breast cancer should consider not just clinical outcomes but also cosmetic results and psychosocial effects of the physical and aesthetic deformity (Cordeiro 2008). Studies therefore tended to focus on the patient's perception of the care and on the impact on quality of life using patients-reported outcome (PRO) measures, able to measure physical, mental, social and emotional status directly from the patient without the interference of clinicians. This prospective study considers 1343 women (response rate 38.5%) enrolled in Tuscany region (Italy) who underwent mastectomy with breast reconstruction between 2018 and 2022. The validated BREAST-Q™ questionnaire has been used to assess women satisfaction before the surgery and after 12 months across four domains: satisfaction with breast and psychosocial, physical and sexual wellbeing, measured on a 0-100 scale. A total of 225 women completed both the pre- and 12 months post-surgery questionnaires for all the four BREAST-Q™ domains; about 72% of them followed the one-step (prosthesis/mesh) surgical approach while the remaining 28% underwent two-steps (with tissue expander) reconstruction. The compliance rate (completion of all the questionnaires) was 16.8%. We conducted t-tests to compare pre- and post-operative PRO score gains over time, as well as group-score comparisons to determine whether differences were significant between reconstruction types. Further analysis, developed through OLS regressions, tested whether the BREAST-Q scores at 12 months after the surgery are affected in the two subgroups by the main sociodemographic characteristics (age, education, BMI, menopause status), lifestyles (sport activities and smoking habits) and spatial (breast centres) and temporal (year) fixed effects. The evidence emerging from the t-tests is mixed: looking at the satisfaction with breast score, women undergoing one-step reconstruction experienced a statistically significant increase at 12 months after the surgery compared to pre-test score (from 53.5 to 56.5, p-value:

0.011), while those under the two-steps path showed no significant changes (from 55.3 to 53.3, p-value: 0.356). For psychosocial wellbeing for both groups there are no statistically significant changes between the pre- and follow-up scores (one-step: from 64.3 to 64.4, p-value: 0.956; two-steps: from 60.5 to 62.9, p-value: 0.285), while for physical and sexual wellbeing the scores worsened between the two periods in a statistically significant way: women under the one-step reconstruction path showed a decrease in physical wellbeing from 72.2 to 65.2 (p-value: 0.000) and in sexual wellbeing from 59 to 50.7 (p-value:0.000), while the other subsample experienced a decrease from 62.8 to 58.4 (p-value: 0.165) and from 59.1 to 46.6 (p-value:0.001) respectively. Also between-group differences show mixed evidence: for breast satisfaction at pre-surgery the two groups do not show significant score differences (53.5 for one-step vs. 55.3 for two-steps, p-value: 0.353), but these become significant at 12 months, with higher scores experienced by women under one-step reconstruction (56.5 vs. 53.3, p-value: 0.062); such group shows higher scores also for psychosocial wellbeing, but in this case the pre-surgery statistical significance in the difference between the two scores (64.3 vs. 60.5, p-value: 0.040) is lost after 12 months (64.4 vs. 62.9, p-value: 0.560). Looking at the physical wellbeing score, women under one-step reconstruction show significant higher scores both at the pre- (72.2 vs. 62.8, p-value: 0.002) and post-surgery questionnaires (65.2 vs. 58.4, p-value: 0.009), while for sexual wellbeing no significance is found neither before (59 vs. 59.1, p-value: 0.971) nor after the surgery (50.7 vs. 46.6, p-value: 0.284). The evidence emerging from the OLS regressions shows a statistically significant negative impact of age and education levels on satisfaction with breast, with overall lower scores for women undergoing reconstruction in two steps. Such negative impact of the reconstruction type is confirmed and amplified on the physical wellbeing score, while no statistically significant effects are found on psychosocial and sexual wellbeing from the aforementioned and the other covariates. These preliminary analyses are informative about the quality of life of breast cancer women after breast reconstruction, highlighting differences among reconstruction types: women undergoing two-steps reconstruction report significant lower PRO scores at 12-months after surgery both for physical and sexual wellbeing and not significant changes in psychosocial and breast satisfaction; older and more educated women show significantly worse PROs scores. The collection of PROs can support surgeons and

patients to decide the most appropriate surgery path for a particular patient-profile and to identify those who require further support. The study comes with some limitations: firstly, the high loss to follow-up is a critical issue, which can be limited considering responses to shorter follow-ups (e.g. 3 months after surgery); other critical elements relate to the imbalance between the two subgroups (72% vs. 28%) and to the fact that actual data does not include clinically relevant information about tumour characteristics, therapies or complications as well as the type of prothesis used, that could inform more the regression analysis.

Title

L'offerta di prestazioni di specialistica ambulatoriale: profili regionali a confronto e ruolo del privato accreditato

Author

Laura Giudice, Luigi Maria Preti, Alberto Ricci

Abstract

Background I servizi territoriali del SSN attraversano un profondo processo di cambiamento. Quest'ultimo è stimolato, oltre che dalle dinamiche di domanda e di evoluzione tecnologica, dal corposo programma di riforme e investimenti rappresentato dal PNRR. Dei 15,6 miliardi riservati espressamente al sistema sanitario, 7 sono diretti al potenziamento dell'assistenza territoriale tramite la creazione di nuove strutture (come Ospedali di Comunità e Case della Comunità), il rafforzamento dell'assistenza domiciliare e lo sviluppo della telemedicina. Al di là degli investimenti, per la prima volta il PNRR ha previsto l'elaborazione di standard nazionali per l'assistenza territoriale, elaborati a livello centrale e approvati ufficialmente con il DM 77/2022. Attraverso l'introduzione di tali linee guida, il policymaker nazionale intende avvicinare la dotazione e l'organizzazione di massima dei servizi distrettuali pubblici delle diverse regioni, con l'auspicio di riallineare anche i volumi di attività, le modalità di erogazione e gli impatti sulla salute dei cittadini. Questo obiettivo di politica sanitaria si scontra però con alcune contraddizioni. Da un lato, né il PNRR, né il DM 77/2022, né i documenti regionali di recepimento di tali standard individuano un ruolo per i privati accreditati. Dall'altro, i dati nazionali dell'Annuario Statistico del Ministero della Salute (2021) indicano che oltre il 60% di ambulatori e laboratori SSN sono privati accreditati, con valori superiori al 70% in grandi regioni del Mezzogiorno come Campania e Sicilia. È dunque irrealistico ridisegnare l'assistenza territoriale di queste regioni senza il coinvolgimento del privato accreditato. Per lo stesso privato accreditato, una maggiore integrazione con l'offerta pubblica potrebbe condurre ad alcuni significativi vantaggi in un periodo di grandi incertezze: dalla stabilizzazione, se non aumento, dei budget, fino alla crescita delle competenze e della reputazione. A questa impasse contribuisce la sostanziale mancanza di analisi riguardanti il profilo dell'offerta territoriale che vadano al di là del mero conteggio dei punti di erogazione pubblici e privati nelle diverse

regioni. Del resto, è nota la scarsità dei flussi amministrativi e delle reportistiche nazionali. Per superare tale gap informativo, un primo passo può essere rappresentato dai dati messi a disposizione dai portali Open data di alcune regioni di particolare rilievo.

Obiettivi La ricerca intende confrontare le conformazioni dell'offerta ambulatoriale pubblica e privata accreditata in Lombardia ed Emilia Romagna: due grandi regioni contraddistinte, da un lato, da differenti assetti di governance, e dall'altro, da una buona granularità del dato amministrativo pubblicamente accessibile. Nello specifico, si intende rispondere alle seguenti domande.

- All'interno del regime SSN, quali sono le branche e le attività maggiormente presidiate dal pubblico e quali dal privato?
- Si osservano differenze in termini di distribuzione dell'offerta, ad esempio, tra aree ad alta e bassa urbanizzazione?
- L'erogazione delle prestazioni avviene principalmente in setting ospedaliero oppure ambulatoriale?
- Ci sono scostamenti rilevanti tra i case mix erogati dal pubblico e dal privato accreditato?

Metodologia La ricerca adotta un metodo di analisi quantitativo basato sulla raccolta e rielaborazione di database amministrativi. Per questo approfondimento sono utilizzati i dati di attività e di valorizzazione economica messi a disposizione dai portali regionali della Lombardia e dell'Emilia Romagna.

Principali risultati Dalle prime analisi condotte, appare particolarmente importante l'analisi dei volumi erogati per branca e per erogatore, perché permette di valutare più solidamente il ruolo dei privati nei contesti territoriali urbani e rurali e i relativi ambiti di complementarietà del pubblico. Inoltre, emerge la rilevanza dei volumi di specialistica ambulatoriale erogati in strutture ospedaliere (pubbliche e private): questo aspetto rilancia la necessità di curare l'integrazione tra dipartimenti ospedalieri e distretti territoriali anche per lo sviluppo effettivo dei nuovi setting previsti dal PNRR.

Title

Il processo di digitalizzazione delle misure di performance di soddisfazione dei pazienti

Author

Christian Di Falco, Guido Noto, Gustavo Barresi

Abstract

Background Il Performance Management (PM) definisce un'area di interesse scientifico ed applicativo che mira alla progettazione e implementazione di strumenti idonei alla misurazione, monitoraggio e valutazione dei risultati aziendali ed i metodi sottostanti (ossia i mezzi) utilizzati per raggiungere gli stessi (Anthony, 1965; Otley, 1980; Lebas, 1995; Bititci et al., 2012; Bianchi, 2016). Il PM è stato introdotto nelle aziende del settore sanitario con le riforme del cd. New Public Management (NPM) (Nuti et al., 2018; Vainieri et al., 2020). I sistemi di PM implementati nelle aziende sanitarie in questo primo periodo erano prevalentemente orientati al miglioramento delle prestazioni in termini di risultati finanziari, di produttività (ovvero gli output), e a identificare le responsabilità all'interno della struttura organizzativa (Ballantine et al., 1998; Head & Alford, 2015). Nei primi decenni dall'adozione di questi strumenti, un numero sempre maggiore sistemi sanitari e di organizzazione non-governative hanno sottolineato l'importanza di misurare la performance delle aziende sanitarie concentrandosi sulle molteplici dimensioni della stessa (es. qualità delle cure, rischio clinico, appropriatezza, ecc), includendo anche indicatori di esito collegati all'esperienza e alla soddisfazione degli utenti (Vainieri et al., 2020). In una prospettiva strettamente aziendale, infatti, gli utenti del servizio sanitario rappresentano una delle principali categorie di stakeholder e il soddisfacimento dei bisogni degli stessi rappresenta il fine ultimo delle aziende sanitarie. I primi studi sulla soddisfazione del paziente sono stati sviluppati negli anni '60, con un progredire della ricerca sull'argomento alla fine degli anni '70 e all'inizio degli anni '80 (Sitzia & Wood, 1997). Secondo la tassonomia di Donabedian (1966) la soddisfazione del paziente è un aspetto efficace al fine valutare la qualità delle cure. Infatti, la misurazione della soddisfazione dei pazienti con riferimento alla loro esperienza e agli esiti può fornire informazioni cruciali per comprendere i punti di forza e di debolezza nell'erogazione delle cure, e dunque stimolare il miglioramento della qualità e del valore prodotto per i pazienti (De Rosis

et al., 2020). È tuttavia necessario che queste informazioni siano rilevate tempestivamente ed in modo sistematico attraverso flussi informativi adeguati e digitalizzati (De Rosis et al., 2020, 2022). Gli ultimi decenni sono stati caratterizzati dall'introduzione di nuove tecnologie digitali (DT) volte a migliorare i processi e la raccolta, l'analisi e la gestione dei dati (Laurenza et al., 2018). Di conseguenza, molti studiosi hanno iniziato a concentrarsi sul contributo che queste tecnologie stanno avendo sul PM e sui flussi informativi nelle aziende e nei sistemi sanitari.

Obiettivi L'obiettivo di questa ricerca riguarda il processo di digitalizzazione delle misure di performance relative alla soddisfazione dei pazienti. In particolare, il lavoro mira a comprendere quali siano le barriere e le determinanti del processo sopra-richiamato al fine di fornire alla ricerca e alle aziende sanitarie nuove conoscenze in ambito di trasformazione digitale.

Metodologia Per fare ciò, gli autori stanno realizzando una ricerca interventista (Dumay, 2010) seguendo direttamente il processo di digitalizzazione in un'azienda ospedaliera privata che opera in regime di accreditamento con il Servizio Sanitario Nazionale. In particolare, gli autori stanno portando avanti la digitalizzazione di uno strumento di rilevazione e misurazione di soddisfazione dei pazienti.

Risultati attesi I risultati attesi sono relativi all'identificazione delle determinanti (ovvero i fattori abilitanti e le barriere) che influenzano l'implementazione di tale processo.

Title

Do France, Germany, and Italy agree on the added therapeutic value of medicines?

Author

Giorgio Casilli, Dario Lidonnici, Claudio Jommi, Marika De Nigris, Armando Genazzani

Abstract

Background Once the European Medicines Agency (EMA) approves new medicinal products based on their absolute benefit-risk, the drug will be available in all countries of the European Union. Yet, whether it will be reimbursed will depend on assessments and appraisals done at the national level and on P&R (price and reimbursement) negotiations. National parallel assessments allow each Member State to evaluate the technologies considering critical assessment of the clinical value, local needs, available alternatives, and organizational issues. However, parallel value assessments of new medicinal products can lead to a disparity in patient access to treatments across Europe, and inefficiencies in the management of HTA. The new European HTA regulation, and the Joint Clinical Assessment (JCA) in particular (1), aims at facing the challenges posed by national parallel assessment, i.e. unequal market access and duplication of work for national HTA organisations. Our aim is scrutinising the level of concordance of the appraisals (ranking) of the added therapeutic value (ATV) by HTA organisations in the three largest European markets (France, Haute Autorité de Santé HAS; Italy, Agenzia Italiana del Farmaco AIFA; Germany Gemeinsamer Bundesausschuss GBA), that have implemented P&R (price and reimbursement) systems strongly focused on the ATV. A high level of concordance would make the JCA easier to implement. To our best knowledge, this is the first study comparing assessments among the three countries, although recent analyses have made binary comparisons: Italy vs. France (2) and France vs Germany (3, 4).

Methods A database was created collecting all information on drugs with innovativeness status request in Italy from July 2017 to December 2022 (in Italy appraisal documents are published only if the innovativeness status is requested) and populated with the corresponding HAS and G-BA ATV appraisal. The primary comparative analysis was conducted by grouping the ATV ratings into “higher added value / more benefit” and “lower or no added value / less benefit”, while a secondary analysis was focused on those medicines that have got an innovativeness

status in Italy, where the quality of the evidence is appraised separately from the ATV (5), whereas in the other two countries it is embedded into the ATV appraisal. Subgroup analyses were conducted according to orphan status and first-level of Anatomical Therapeutic Chemical Classification System (ATC). The concordance between ATV appraisals was investigated through percentage agreement and unweighted Cohen kvalue, ranging from 0 (no concordance) to 1 (perfect concordance).

Results 189 medicinal products/indications were retrieved, but for some drugs the assessment of the evidence and the appraisal (ranking) was not available or the ATV was "non-quantifiable". The concordance between AIFA and HAS, AIFA and G-BA, HAS and G-BA was evaluated on 159, 101 and 101 medicinal products/therapeutic indications respectively. The greatest percentage agreement was found when comparing G-BA vs. HAS (82 percent agreement; k=0.61, substantial agreement). Lower levels of agreements were observed for AIFA vs. HAS and AIFA vs. G-BA (respectively 52 percent; k=0.117 and 57 percent, k=0.25). The secondary analysis led to a reconciliation to moderate agreement for AIFA vs. HAS (72 percent; k=0.45) and AIFA vs. G-BA (74 percent; k=0.47). Similar results were found for subgroup analyses per ATC and orphan status. A higher degree of concordance between HTA organisations is reached for innovative products in Italy, i.e. when considering jointly ATV and quality of evidence, suggesting that the system is extensively mature to make a Joint Clinical Assessment (JCA), thus avoiding duplication of assessments and, possibly, reducing access inequalities.

Title

Impact of new therapeutic indications on price and reimbursement negotiation: The Italian Case

Author

Elvio Rossini, Carlotta Galeone, Chiara Lucchetti, Claudio Jommi

Abstract

Background New indications for existing medicines are increasing over time (1). In most countries, drug pricing and reimbursement (P&R) conditions should be renegotiated every time a new indication is approved. There is a growing interest in price regulation of the indications and in the pros and cons of different pricing models (indication-based versus blended approach (1-5), but all contributions remarked on the paucity of empirical evidence on the impact of new indications. A recent paper examined the impact for 100 new indications, approved between 2009 and 2019, for 25 cancer drugs in seven countries (6). The paper highlighted that, when the P&R is negotiated for new indications, public prices are cut in France and Germany, whereas in the United States prices are increased by the relevant company. However, neither the effects on net prices nor the impact of new indications on P&R complexity have been investigated so far and no evidence is available for Italy. We aimed at covering this information gap, measuring the impact of P&R negotiation of new indications on the negotiation timelines, used as a proxy of its complexity, and discounts (i.e. actual prices). The analysis refers to Italy, where the indication-based approach was gradually substituted by a blended price one.

Methods Drugs whose indication extension was requested through a European centralized procedure, that received the first Marketing Authorization in the European Union from January 2013 to March 2022 and for which the price ad reimbursed status was approved in Italy between January 2015 and March 2022 were included. We analysed 52 extensions of indications between 2015 and 2022. The assessment and P&R (price and reimbursement) process was divided into 7 procedural STEPs (from EMA – European Medicines Agency – approval to the publication on the P&R decision on the Gazzetta Ufficiale), while the net prices pre/post renegotiation were compared to calculate the increased discounts. The Mann-

Whitney test was used to calculate p-values, while STATA 17 software was used to set up multiple regression models and test correlations between negotiation time and the characteristics of the medicines (orphan designation, rare vs non-rare indication; oncologyimmunomodulatory vs others, innovativeness status, existence of a Managed Entry Agreement - MEA, requirement of a Monitoring Drug Registry, reimbursement status). For every line extension procedure, the net prices have been tracked through regional tenders.

Results The mean time to complete the process is 603 days, compared to 583 days for the first launch (p=0.025). However, P&R negotiation is on average longer for extension than for 1st indication procedures (186 vs 119 days; p=0.01), whereas the scientific assessment is shorter (but the difference not significant). The P&R negotiation is more complex since additional discounts are generally required, whereas the scientific evaluation is likely to be easier due to pre-existing knowledge of the drug. P&R negotiation was longer for rare diseases, cancer drugs, and in case of therapies with minor added therapeutic value (all significant from a statistical viewpoint). The additional discount was 13% on average, and significantly lower than the mean discount for the first indication (25%). Discounts increment was lower (and significantly different), but the negotiation was longer, if the final agreement was accompanied by a MEA (7.2% with MEA vs 14.2% without MEA. This was expected since a MEA was often used as a partial substitute of hidden discounts. Discounts increments raised over time and, since new negotiations moved from an indication-based pricing to a blended pricing model, were applied to all indications. Despite our findings should be carefully interpreted due to a limited number of observations, they have interesting policy implications. The increase over time of additional discounts and their application to all indications are a signal that budget impact considerations prevailed over a valuebased approach in the last negotiations. It would be important better incorporating value considerations in the new blended model or come back to an indication-based pricing that is internationally recognised as the best way of applying a value-based approach.

Title

Oncology and oncohematology drugs prices in Italy: asking versus selling price

Author

Pietro Brambilla, Andrea Marcellusi, Claudio Jommi, Armando Genazzani

Abstract

BACKGROUND: Market access for drugs in Italy is regulated by AIFA, that negotiates drugs price and reimbursement. In principle, the negotiation aims at ensuring the allocative efficiency of resources, promoting greater price competition for drugs with a similar risk-benefit profile and awarding a premium price for those products that can demonstrate an added therapeutic value [1]). Underlying this idea lies the concept of value-based pricing (VBP), an approach that requires that prices are set identifying, measuring, and evaluating benefits of a new therapy [2] [3]). While this allows for a more fine-tuned assessment of the technology under application, it also means that there might be a mismatch between the Company's value proposition and the actual value perceived by the payer. Indeed, on one hand, manufacturers aim to return on investment and ensure remuneration in order to finance future innovation; on the other hand, payers aim to keep treatment costs consistent with the cost of alternative treatments in clinical practice [4]. Unless premium prices are not rigidly linked with threshold over incremental cost-effectiveness ratio or there is a clear pathway to convert an added therapeutic value into a reasonable price (i.e. value-based pricing is pre-determined), the risk is to outlining a scenario whereby the Companies (not properly knowing the criteria on which the Agency's price/discount request is based) will propose a much higher price as a precautionary measure; and where the Agency knowing the Company's "upward" approach, will tend to increase the requested discount percentages, so that the increase in expenditure can be maintained acceptable to payers.

OBJECTIVES: Starting from the observation and analysis of previously published papers in 2019 by Trotta et al. and Villa et al. [5] [6] and in 2021 by Russo et al. [7], the analysis set out to evaluate in an aggregated form items including: the extent of negotiated HD in the oncology treatment setting, possible correlations between efficacy outcomes and price and how those would possible influence the outcome of the P&R process. Furthermore, contextualizing and

updating the results to the mandate of the latest AIFA committees. The study therefore aimed to evaluate for the most recent oncology therapies:

- the difference between the price requested by the Company at P&R Dossier submission time (asking-price) and the actual value granted by AIFA (net-price);
- the existence of any possible correlation among the efficacy measure included in the analysis and one or more variables such as hidden discount [HD] or asking/net prices.

METODOLOGY: The analysis included all new drugs for cancer and oncohematology therapy evaluated and reimbursed by AIFA in the 55 months period between October 2018 and April 2023. Only new drugs (new active substances or new combinations of active substances and not any indication extensions, renegotiations, or revisions of negotiated conditions) were considered. For each single drug, through the use of public and open-access documents (EPARs, RCTs, SmPCs, OJ, CTS/CPR committee outcomes, and regional or local supply tenders) information was collected including: descriptive (categorical) variables as disease rarity, orphan designation, recognition of innovativeness, application of any MEA; and numeric (continuous) variables as posology, progression free survival (PFS; recognized as an efficacy surrogate endpoint, since hard-endpoints such as Overall Survival is hardly ever considered in pivotal trials) and its hazard ratio (HR), duration of treatment (DoT),Ex-factory price (assumed to be equal to the asking price indicated by companies within the P&R Dossiers), and maximum NHS selling price (net of AIFA's mandatory discounts and confidential discounts negotiated, collected from local and regional tender allocation documents).From the information collected, it was then also possible to populate the database with different cost inputs for each drug. Thus, drug price per milligram (mg), monthly cost per therapy (price per mg x mg/month needed), treatment cost (monthly cost x DoT value), and treatment cost per unit of PFS were calculated. Univariate analyses were performed to test the association between gross and net treatment costs and categorical and continuous variables and a linear regression analysis was also conducted in order to assess possible correlations or lack of correlations among the above-mentioned variables. For categorical covariates, a between-group comparison of mean values was conducted using Student's t test while for continuous covariates, Spearman's correlation coefficients were calculated.

MAIN RESULTS: Thirty-nine new drugs were identified, of which twenty-five were included within the analysis. The overall average cost for a new oncologic or oncohematologic therapy was € 82.520 when calculated on the Ex-factory price and € 43.745 when calculated on the maximum NHS selling price. The cost per month of therapy was € 8.508 and € 4.509 respectively, while the average DoT was 11,7 months. The average confidential HD resulted in 44,6 %. No correlation was observed between HD values and efficacy variables such as PFS (p=0.544) or HR (p=0.358). Instead, it is possible to appreciate a negative correlation between cost per month of therapy and PFS values (p=0.005 whether considered Ex-factory cost and p=0.014 if considered maximum NHS selling price) and a positive correlation between total therapy cost and PFS values (p=0.008 and p=0.029 respectively). Our findings were mostly counter-intuitive, since they suggest that neither the HD nor the monthly cost is correlated with efficacy, whereas the cost of treatment was found, ad it was expected, positively correlated, with PFS, which is a proxy of duration of treatment.

Title

The role of reproductive and maternal health in promoting gender equality: A narrative review

Author

Aleksandra Torbica, Yuxi Wang

Abstract

Background & Objectives

As witnessed by the global pandemic, threats to population health can in turn paralyze the whole economy, and different departments of the government need to work together to create an intersectoral response in the name of health. Although the social and economic determinants of health are widely explored, little attention is paid to the effect in the reverse direction – the co-benefits of health and health systems in contributing to many other sectors of society, such as social affairs, internal affairs, and education. In this paper, we provide a critical review of how improved reproductive and maternal health outcomes, whether due to general improvement of healthcare services or specific interventions, can benefit the broader Sustainable Development Goal of gender equality Sustainable Development Goals (SDG5).

Method We conduct a narrative review of the literature on the influence of health status or policies on gender equality. We focus on research that draws causal inference from the direction of health status and policies to indicators of gender equality such economic empowerment and education, accounting for all possible intermediary stages. The review pays particular attention to the different types of outcomes investigated across countries with different economic and social contexts.

Result We identified a multitude of studies that cover low-, middle-, and high-income countries. We categorize the studies by the different impact mechanisms, from health or health interventions to gender equality outcomes. We observe both the direct and indirect impact of better maternal health on labor participation, with educational return and fertility decision as intermediary factors. Interventions, including contraception, family planning, and abortion bills, have visible long-term effects beyond health itself after changes in reproductive decisions. However, the types of interventions vary greatly across the development levels of the countries. Very few studies have looked at the wage gap as an outcome of gender equality, while some

health policies investigated directly facilitate universal access to reproductive health and rights, the end goal of SDG5.

Discussion As one of the first papers to investigate the co-benefits of health in other sectors, we gave a critical overview of the different mechanisms through which better health can advance gender equality. However, we also identified a lack of longitudinal studies that track women over their life course, which can allow for the observation of important outcomes such as wage gaps and participation in political and economic leadership roles. Moreover, the role of men in the family, fertility decisions, and maternal labor participation was not discussed in most studies.

Title

Tricky choices between brief or long financial sustainability. Empirical evidence on cost allocation for medical malpractice claims in Italy.

Author

Milena Vainieri Andrea Vandelli, Davide Trinchese

Abstract

Background and aim of the study In the last few years, the number of medical malpractice claims (MMC) has increased dramatically worldwide (Mello et al., 2010; Vetrugno et al., 2023; Zweifel & Breuer, 2006). Italian regulation establishes that healthcare liability for adverse events for organizations is governed according to the rules of contractual liability: in case of the occurrence of adverse events in healthcare, facilities are directly liable, including for errors committed directly by their healthcare professionals during practice. Hence, it is mandatory for healthcare organizations to have insurance coverage or other similar measures for third-party and employee liability. In the last ten years, some organizations and Regions have determined whether to pay insurance or be directly self-insured for MMC also empowering the role of clinical risk managers (Agenas, 2013; Candido et al., 2023; Vainieri et al., 2014). The choice of self-retention came from different positions: i) increasing costs for premiums; ii) low control on MMC; iii) cases of Italian insurance failures. Ten years ago, the insurance association warned about the potential trap of short-term financial balance. Indeed, the decision of how much money to invest in MMC is found to be very tricky because inadequate coverage would expose regions and healthcare authorities to a higher number of extraordinary costs, while too much exposure in insurance or self-insurance could mean taking away economic resources to be allocated to care and a potential inquiry of the Court of Auditors (Corte dei Conti). Whilst there is a wide discussion on what is happening in MMC from a legal perspective or from a clinical perspective, the financial and managerial perspective is under-investigated. This study discusses the risk and opportunities of the different MMC governance models and their implementation in Italy through both a brief excursus of grey literature and press scandals related to claims management and the classification of regional and healthcare organizations'

choices on MMC. The study will also estimate the impact on the financial viability of homogenous choices using scenarios of low, mid, and high risk of financial exposure.

Method Firstly, a documental analysis will be conducted on legal aspects that will affect the amount of compensation, with a specific focus also on the main reference tables. The classification of regional and healthcare organizations will be done using the approach applied in a recent study based on the average cost per provision and premium per capita, identified four scenarios: (i) Regions with a predominantly insurance model; (ii) Regions with a predominantly self-insurance model; (iii) Regions with mixed models and iv) Regions with a potential risk of uncovering MMC (Vainieri & Vandelli, 2023). The source of data will be the accounting information coming from financial statements and assets and liability statements. Empirical findings were then compared with regional resolutions and acts on the governance choice of medical malpractice compensation models, and also with interviews given by managers of some regions retrieved from the web to understand how the regions are reacting to the potential tsunami coming from the MMC requiring very high compensations.

Expected results. The analyses will provide not only a classification of regional approaches to MMC but also an estimation of their poor or high financial exposure and their potential impact on the financial sustainability of the national and regional health services. There will be also a discussion on the aspects related to good MMC management and the readiness of the regions to internalize the control of activities that can be done in or out of the public organizations. Finally, environmental, and regulatory insights will be provided related to the impact of the pandemic on MMC and the potential impact of legal changes in the MMC.

Title

Health professionals' attitude towards information technologies to enhance process efficiency and effectiveness

Author

Vagnoni E, Oppi C.

Abstract

Background A common challenge addressed by the healthcare providers all over the world is the need to improve patient outcomes while containing costs. The recent pandemic highlighted the need to increase the countries budget for healthcare and adopt cost-effective solutions to provide services. To this regard the scientific research provides rich health data foundation and integration technologies as key components to tackle the challenge; that process has been clearly recognized as digital transformation (Kraus et al., 2021). As argued by Vial (2019; p. 118) digital transformation refers to "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies". Recently, in their review of 45 years of literature about digital transformation in healthcare, Marques and Ferreira (2020) identified seven technology-related areas of research: 1) Integrated Management of Information Technology in Health; 2) Medical Images; 3) Electronic Medical Records; 4) Information Technology and Portable Devices in Health; 5) Access to E-Health; 6) Telemedicine; and 7) Privacy of Medical Data. The authors focus on the breadth of the digitalisation process and acknowledge the Information Technology (IT) as a key dimension to align the healthcare organisation's management to the expected improvements. Recent literature has emphasized the crucial role of IT to improve the patient care pathways (Dugstad et al., 2019), the relation between patient and clinician (Warraich et al, 2018), the management of internal processes, empowering care givers to use an evidence-based approach to improve clinical decisions. Furthermore, the IT provides real time data, promoting real-time interactions; these allow at both speeding the clinician-patient relation and the managerial process. Although the benefits from IT implementations are well known, its adoption in the healthcare organisations is slow and struggles to pervade the different dimensions of the organisation. Given Verhoef et al.

(2019) research, the change of internal organizational structure and processes is one of the main aspects affected by the digital transformation. The introduction of IT requires systematic changes of "working, roles and business offering" (Parviainen et al., 2017, p.64). The IT is becoming a vital part of the workplace of healthcare professionals, moving beyond the realm of supporting managers. Some authors studied what motivates the professionals in making technology acceptance decisions (Mun et al, 2006); likewise, recently a stream of literature developed about the professionals' acceptance of digital solutions (Hossain et al. 2019; Kamal et al. 2020). Considering the complexity of the healthcare organisations, the attitude of health professionals toward the IT plays a relevant role for the achievement of successful performance from both process efficiency and effectiveness, and effectiveness of treatment perspectives.

Aim The aim of the study is twofold: by one hand, the study aims at identifying the factors that affect the health professionals' attitude towards IT; on the other hand, the patterns that impact on the success of the IT in terms of process efficiency and effectiveness are defined.

Methodology A Northern Italian Hospital has been chosen as the study setting given the key role of the digital transformation to enhance the strategic goals of the organisation. During the last couple of years, the hospital top management has developed a digitalisation plan that is meant to change the organisation's processes for both healthcare professionals and patients. More in details, the researchers identified the ambulatory care organisation process as the area to address the study. To carry on the study's aim, a questionnaire was distributed to 737 health professionals involved in the ambulatory care (e.g. clinicians, nurses, etc.). The questionnaire was designed to assess the following variables trough a 6-points Likerts scale questionnaire based on validated constructs (Franke et al., 2018; Rosen et al., 2013; Dykes et al., 2007) concerning: the attitude on IT; the perception of the IT; the effectiveness of IT to enhance the clinical process; the IT support for an effective collaboration and communication; the ability of IT to enhance process efficiency (facility management, resources allocation, etc); the ability of IT to enhance process effectiveness. The survey was conducted online during the first quarter of 2023, using Qualtrics software, and a total of 196 questionnaires, of which 190 questionnaires were considered usable, leading to a final response rate of 27. The statistical analysis of the data was conducted using structural equation models (SEM) with IBM AMOS

Graphics 24 software. SEM was chosen as it allows for simultaneous analysis of multiple variables and investigation of the overall functioning of the model. Model fit indices in the measurement and structural model resulted satisfactory.

Results The negative perception of IT affects professionals' attitudes on IT (β = -0.524, p <0.001), which slightly affects the perception of IT ability to enhance process efficiency (β = 0.109, p <0.10). This latter is highly impacted by IT support for an effective collaboration and communication (β = 0.956, p <0.001), which also affects the process effectiveness (β = 0.952, p <0.001). Conversely, IT contribution to enhance clinical processes does not have a role on the dependent variables. Healthcare organisations should both pay attention to the workplace environment and the professionals' attitude on IT if they want to create a positive atmosphere to improve the response to digitalisation. The study contributes to identify the key patterns that need to be considered for a successful implementation of new technology.

Title

L'innovazione negli acquisti attraverso il value based procurement (VBP): il caso degli acquisti dei servizi di diagnostica

Author

Fabio Amatucci, Manuela Brusoni

Abstract

Background Gli acquisti di beni e servizi nel settore sanitario costituiscono una fase rilevante nell'intero processo di realizzazione dei servizi sanitari. Il veloce percorso innovativo e di ricerca nel mondo scientifico e clinico sta oggi rivoluzionando le possibili alternative ai percorsi terapeutici e aprendo opportunità di scelta di trattamento dei pazienti così "disruptive" da richiedere un ripensamento dell'intero assetto di offerta dei servizi. In questo scenario, il ruolo degli acquisti richiede non solo un riposizionamento ma anche una possibile valorizzazione come fase cruciale dell'intero processo di i) analisi dei fabbisogni, ii) progettazione delle caratteristiche sostanziali e formali dell'acquisto iii) definizione di modalità di valutazione degli effetti prodotti secondo metriche coerenti con le finalità attese e iv) monitoraggio "ongoing", per osservare e apprendere. Un approccio innovativo è fornito dal cosiddetto Value Based Procurement Process (VBPP), che concepisce l'intero ciclo degli acquisti non come mera funzione operativa, ma come funzione altamente strategica, in quanto strettamente funzionale a perseguire gli obiettivi strategici dell'azienda sanitaria, e, per esteso, del sistema nel suo complesso, anche per il suo ruolo di antenna costantemente sintonizzata sul mercato per catturare proposte e dialogare con gli operatori economici. In campo sanitario, negli ultimi anni è emersa una potenziale rivoluzione in campo medico-sanitario legato alla genomica ad alta prestazione: la medicina personalizzata (definita anche medicina di precisione) è un modello di medicina che si caratterizza per la possibilità di misurare la suscettibilità di ogni singola persona alle malattie (attività preventiva), di misurarne il livello di rischio (attività predittiva) e di formulare la terapia più adatta per quella persona (terapia personalizzata), in base alla costituzione genetica e alla mutazione associata alla malattia sviluppata. La medicina di precisione deriva dal rivoluzionario progetto di sequenziamento genomico, che ha rappresentato una vera rivoluzione sotto il punto di vista tecnologico. Il progetto delle tecniche

di seconda generazione (NGS – Next Generation Sequencing) ha notevolmente ridotto le tempistiche ed i costi dei test genetici. Queste innovazioni hanno comportato un cambiamento radicale di approccio al trattamento soprattutto dei tumori, utilizzando le caratteristiche principali di due modelli oggi disponibili, quello attualmente in uso, il modello istologico, e quello che sta emergendo, il modello mutazionale (basatoi sui test diagnostici di tipo NGS). Si tratta di due approcci alla diagnosi e al trattamento del tumore che, pur avendo in termini generali lo stesso obiettivo terapeutico, differiscono sostanzialmente nella loro applicazione ab origine, in termini di scelte cliniche nelle mani dei patologi e degli oncologi, ma anche, e in modo sostanziale, nel successivo percorso di attuazione del percorso diagnostico-terapeutico ai diversi livelli decisionali.

Obiettivi del lavoro L'oggetto di osservazione, scelto per un primo assessment metodologico dell'applicazione di Value Based Procurement a un'innovazione di mercato, riguarda l'acquisto di un servizio di diagnosi per tumore polmonare. Obiettivo del lavoro è la costruzione di un modello che permetta di comprendere gli effetti dell'introduzione di questi elementi innovativi innanzitutto nella gestione della diagnostica. Da quanto sopra esposto, emerge un quadro complessivo in evoluzione e con forti elementi innovativi, che tuttavia devono ancora trovare consolidamento e relazioni reciproche di connessione. Tra questi: i) lo stato attuale riguardo alla disponibilità e all'approvazione dei farmaci per il trattamento delle alterazioni genomiche, ii) i criteri di selezione dei pazienti, iii) la ridefinizione di un'architettura di offerta, tra cui la rete dei Molecular Tumor Board e i requisiti di esperienza dei centri/ laboratori convolti, iv) una piattaforma condivisa per la raccolta e l'analisi dei dati a fini di ricerca e di appropriatezza di cura, gestita da AIFA, e v) le procedure regolatorie che definiscano l'accesso ai percorsi diagnostico terapeutici a carico del SSN. Lo sviluppo del progetto richiede, in primo luogo, una ricerca bibliografica desk per inquadrare lo stato dell'arte che, incrociando molteplici fattori, variabili e attori, consenta di delineare possibili scenari a cui collegare approcci e strategie di azione. La fase successiva, condotta attraverso interviste semi-strutturate, si propone di verificare sul campo l'esperienza e il punto di vista dei vari attori coinvolti, direttamente o indirettamente, nei processi di acquisto e nella gestione dei servizi di diagnostica (provveditori e patologi clinici).

Principali risultati Il presente lavoro si pone l'obiettivo di definire un modello articolato di valutazione dell'impatto del Value Based Procurement sui servizi di diagnostica, siano essi gestiti internamente, o attraverso un processo di esternalizzazione. Dalla disamina precedente emergono, in maniera evidente, i punti essenziali su cui si dovrebbe concentrare un acquisto basato sul valore. In primo luogo, gli obiettivi da perseguire (ad esempio):

- realizzare un servizio di diagnosi allround che includa anatomia patologica, molecolare, genomica, con supporto di soluzioni digitali e consulenza organizzativa;
- collegarsi, per il controllo della corretta esecuzione del servizio, al Molecolar Tumor Board, quale organo esecutivo della profilazione/ scelta terapeutica dei pazienti oncologici

In secondo luogo, definire gli indicatori chiave per valutare gli effetti dell'innovazione (ad esempio):

- il tempo di diagnosi (migliorativo vs storico);
- il tempo di accesso alla terapia (migliorativo vs storico);
- un detection rate, definito rispetto al valore storico/ medio degli ultimi anni, se disponibile, o rispetto ai valori reperibili in letteratura;
- la valorizzazione dei costi evitati o di più efficiente allocazione delle risorse economiche.

Infine, ma non meno importante, la focalizzazione specifica del valore generato per i diversi attori in gioco.

Title

The impact of a training programme to improve the quality of Antenatal and Postnatal care in Kenya – a cost-consequence analysis

Author

Federici Carlo, Lucia Fiestas, Viviana Mangiaterra, Aleksandra Torbica, Uzochukwu Eger, Charles Ameh

Abstract

Introduction Kenya is contributing to the high maternal and neonatal mortality that characterizes the sub-Saharan region to date. Antenatal care (ANC) and post-natal care (PNC) have long served as effective platforms for providing a range of health services for conditions like HIV, tuberculosis (TB), and malaria, which can reduce the risk of complications during pregnancy and childbirth, resulting in improved health outcomes. In September 2021, with the aim to improve the quality of integrated HIV, TB and malaria services in ANC/PNC, a series of live training sessions was delivered to health care workers (HCWs), including training on 52 essential practices for reproductive, maternal, new-born and child health (RMNCH). The aim of this study is to evaluate the cost the ANC and PNC training intervention and the consequences in terms of improved delivery of care services in Kenya.

Methods A cost-consequence analysis was conducted reporting the costs of implementing and deploying the training package as well as its impact on routinely collected quality indicators for ANC and PNC care in Kenya. An ingredient approach was used to calculate the full economic cost of designing and deploying the intervention. Both the perspectives of the implementers of the training and the costs of the recipients of the course were considered. All costs were converted from local currencies to 2021 USD. Data on ANC quality indicators were derived from the Kenya Aggregated Health Information system (KHIS) which contained monthly data at facility level on several ANC/PNC indicators. A difference in difference design, using data from intervention and control facilities from the same counties was adopted to estimate the potential impact of the training on a number of indicators related to HIV, TB and Malaria services as well as other ANC quality indicators.

Results By December 2022, 13 Facilities had reached 80% training saturation. In total, 30 healthcare workers received the treatment. The cost of designing the training package was estimated at USD 21,261, mostly determined by labour costs for the design of course contents and coordinating meetings for the roll-out of the BL training. Deployment costs of the ANC/PNC training in Kenya were estimated at USD 860 per participant. The implementation of the training was associated with an increase in quality indicators related to ANC/PNC care such as ANC attendance, the number of women tested for HIV, and the number of pregnant woman who know their HIV status.

Conclusions Training provided to healthcare workers has the potential to improve the quality of ANC and PNC services at a limited cost per facility. More research is needed to explore whether final health outcomes can be impacted by training interventions, and whether this effect is sustained over time.

Title

The costs of deploying and maintaining digital health interventions to improve immunization and vaccine logistics data management in low- and middle- income countries. A multi-country study in Guinea, Honduras, Rwanda and Tanzania.

Author

Carlo Federici, Maria Verykiou, Marianna Cavazza, Flaminia Sabatucci, Claudio Jommi, Claire Hugo, Stefano Malvolti, Carsten Mantel, Viviana Mangiaterra, Aleksandra Torbica

Abstract

Background Evidence-based healthcare requires high-quality and readily-accessible data. Recent years have seen a proliferation of projects in low- and middle-income countries promoting the deployment of Digital health interventions (DHIs) to improve the management and utilization of health information. Electronic immunization registries (eIRs) and electronic logistics management information systems (eLMIS) have been implemented in several countries to support better immunization services within the Expanded Programme for Immunization. Yet, few of these systems have been evaluated to date and evidence is still sparse on their cost of implementation or their impact on national or external budgets. This study contributes to filling this gap by estimating the initial expenditures and routine operational costs for one integrated eIR-eLMIS in Tanzania, the eIRs in place in Rwanda and Honduras, as well as an eLMIS of Guinea.

Methods The analysis took the perspective of the third-party payer, including both national governments and external donors. The cost of deploying the DHIs was estimated by collecting financial reports from the implementers and other secondary sources. Routine operational costs were estimated using activity-based costing and tracing direct and indirect costs to a set of pre-specified activities related to the management of immunization and vaccine logistics data. Primary data were collected through questionnaires in all countries from a total of 281 health centers. Comparisons with paper-based registries were done using a cross-sectional design whenever possible or a pre-post comparison alternatively.

Results: Honduras, Tanzania and Rwanda implemented the eIR in 2012, 2017 and 2019 respectively, whereas Guinea implemented the eLMIS in 2018. The context, timeline and

strategy of implementation of the systems varied across the countries, with upfront implementation expenditures between USD 45K and 12.6M covered almost entirely by external donors. Most of the initial expenditures were related to training of healthcare staff and purchasing of equipment. The yearly routine cost per health facility of managing immunization or vaccine-logistics data was estimated between USD 200 and 1,850. Compared to paper-based systems, savings were observed in Tanzania (USD -1,307), but not elsewhere. The continued operation of paper registries after the implementation of the DHIs, and the limited use of the electronic data for reporting or decision-making, were two of the main factors contributing to higher costs. Several shortcomings in terms of human resources, trainings, IT infrastructure, and equipment were observed which hampered the widespread adoption of the DHIs and negatively impacted the perceived trust in the quality of the electronic data.

Conclusions By improving the quality and accessibility of data, eIR and eLMIS systems have the potential to optimize healthcare worker performance and provision of care, and to lower costs. Nonetheless, savings are unlikely to be generated unless the switch to electronic registries is complete, eliminating duplication of work, and the electronic data is incorporated into decision-making processes. Further investments are required to ensure an enabling environment for the continued use of the systems, all of which need to be considered by countries when deciding on the adoption of these solutions.