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MANAGEMENT & POLICY SECTION

Title

Understanding productivity in maternity wards

Authors

M. Di Giacomo, M. Piacenza, L. Salmasi, G. Turati

Abstract

In this paper we estimate health personnel productivity in causal terms. We exploit a discontinuity in health personnel presence induced by the Italian law that defines maternity care units' staffing according to the yearly number of births (below 500, 500-999, over 1000). We use this exogenous variation to build our instruments and to estimate the causal effect of different health care teams of professionals during delivery on newborns and maternal health status. We use detailed patient-level data on natural childbirths. We find that maternity units with a number of yearly births above the thresholds increase the probability of a full team of professionals during delivery by almost thirty percent points. In turn, the presence of a full team has significant effects on health outcomes, as the probabilities of resuscitation, obstetric lacerations, or meconium (which may cause fetal distress) decrease. Heterogeneous effects are investigated across day of week, time of day, congestion level, and maternal characteristics.

Title

Tackling wicked issues in performance management and governance of health prevention: an empirical analysis of vaccination strategies in Italy

Authors

G. Noto, A. Prenestini, F. Cosenz, G. Barresi

Abstract

Performance management (PM) in the public sector is a research stream that grasped much of the attention of public administration and management scholars in the last decade (Bouckaert & Halligan, 2007; Hall, 2017; Douglas & Ansell, 2020). This is mainly related to the ever-evolving context in which PM regimes apply. Our society and its current challenges are indeed growing in complexity so that these last have been defined by modern literature as “wicked” (Rittel & Weber, 1973; Head & Alford, 2015). Wicked does not mean “evil” but it refers to the impossibility to share an understanding of societal problems and their definition. According to Head & Alford (2015),“wickedness” depends on three key factors i.e., social pluralism, institutional complexity, and scientific uncertainty. The first one is related to the presence of multiple interests and values of stakeholders; institutional complexity refers to the horizontal fragmentation and multilevel governance characterizing the public administration; while scientific uncertainty describes the existence of gaps in reliable knowledge. To deal with wickedness and foster performance, one key solution proposed by the literature refers to the implementation of collaborative arrangements (Cristofoli et al., 2017; Bianchi, 2021). This solution has been proved to be successful in addressing the source of complexity deriving from institutional fragmentation and social pluralism. However, few scholars proposed solutions tackling also scientific uncertainty. Based on this gap, the article aims at exploring the contribution that simulation, and in particular System Dynamics (SD), may provide to performance management in wicked public contexts.SD is a methodological approach that allows analysts to model and simulate complex systems and to experiment with the models to design strategies for management and change (Forrester, 1958).The adoption of SD to tackle wicked problems finds its foundation in the methodological opportunity to explore with simulation and engage with stakeholders, thus providing more robust decision support to inter-institutional settings through the so-called Dynamic Performance Management (DPM) approach (Bianchi, 2016). As such, SD allows analysts to adopt a holistic perspective to frame social pluralism, institutional complexity and scientific uncertainty as the key factors characterizing wicked contexts and, as a result, to support collaborative PM systems fostering a shared understanding of their operating principles and processes. To explore and analyse the suggested solution, the research focuses on health prevention. Recently, health prevention is being considered fundamental in tackling the COVID-19 emergency. In particular, the process of planning and implementing vaccination campaigns in western Countries represents one of the most challenging wicked problems in the current era. In vaccination activities, we can find the three sources of wickedness. First, vaccination campaigns embrace multiple interests and values (social pluralism),e.g., this pandemic created trade-offs between public health and the competitiveness of economic activities due to lockdowns and restrictions. The prioritization of population targets, for instance, has specific impacts on the restart of productive activities. Second, health prevention services are provided through the collaboration of multiple public and private organizations (institutional complexity),e.g., vaccinations activities are delivered through the collaboration of supranational institutions (i.e. European Commission), regulatory agencies (i.e. FDA, EMA, national regulation agencies), national and regional governments, local health authorities, hospitals, private health providers, general practitioners, national armies, pharmaceutical companies, etc. Last, health prevention results are usually

obtained in the long term and it is not possible to univocally attribute these results to activities executed in the past (scientific uncertainty).Thus, it appears almost impossible to assess ex-ante the effectiveness of certain measures (i.e. vaccination strategy) as it depends on the behavior of the other actors involved (virus–and its variants –included).Therefore, policymakers and managers in the public healthcare sector can find more effective decision support by applying systemic approaches and simulation techniques for improving inter-institutional coordination, collaborative governance and performance. For the above purpose, the research process begins with the review of the literature on wicked problems and performance management in the public sector. This review is combined with an analysis of SD modelling principles aimed at explaining the practical and theoretical contribution of this approach to deal with social pluralism, institutional complexity and scientific uncertainty. Building on this literature review, the paper proposes and illustrates the DPM approach (Bianchi, 2016, 2021) as a systemic method to performance management and governance in wicked contexts. Then, the approach is tested on two case studies exploring the vaccination campaign in two different Italian regional health systems selected based on their performances and characteristics. The cases are developed through the collection of empirical data, active engagement and discussion with the experts involved. In the last section of the paper, the case study results enable us to discuss the main advantages and limitations of the proposed approach in comparison with the gaps found in the literature. Eventually, the paper outlines critical implications for theory and practice and concludes with future research perspectives.

Title

An Experimental Assessment of National Health Guidelines as Soft Regulatory Instrument.

Authors

M. Finocchiaro Castro, D. Romeo

Abstract

A highly debated topic among economists is the effect of regulation on social welfare. Although some contradictory studies exist (see e.g., Turner et al., 2014), a considerable literature shows how regulation can be welfare enhancing in several contexts (see e.g., Toner, 2010). A relevant context where regulation plays a relevant role is clearly the health sector. In this regard, practice guidelines can be seen as soft regulatory tools adopted in the healthcare sector to achieve the hospitals' desired outcomes, improving patient's health, and saving resources while providing care (Shekelle et al., 1999). Physicians agree that not only guidelines improve quality of care, but they could foster coordination (Carrier et al., 2012). Specifically, relational coordination, which refers to communicating and relating for the purpose of task integration and is strengthened by the sharing of codes of conduct and procedure among health professionals (Gittell, 2000), has been shown to improve some dimensions of performance, including emergency and intensity care (Fargason and Haddock, 1992). Moreover, the average length of hospital stay is significantly shortened by the frequency of communication among care providers and, coordination in hospital emergency units improves promptness and quality of care and reduces mortality rates (Shortell et al., 1994).

Even though guidelines are not actual norms but soft law instruments, they assist and uniform practitioners' actions, by identifying recommended courses of actions under certain circumstances. Thus, assessing coordination level among physicians working in the same hospital and investigating whether and to what extent national guidelines may be seen as a soft regulatory tool to foster coordination appear as crucial issues. Hence, the purpose of this study is twofold. First, we measure the level of coordination among healthcare providers developing a simple, portable, and incentive-compatible tool, based on the Krupka and Weber (2013) norm elicitation task (Gaechter et al., 2013; Barr et al., 2018), which has been proved to be powerful when a clear social norm exists (Fallucchi and Nosenzo, 2021). Second, we test whether national guidelines can be adopted as almost costless means to regulate health care provision enhancing coordination among physicians. In our experiment, coordination is achieved when physician's appropriateness rating matches the modal valuation for the specific action considered, which, in turn, corresponds to the judgment given by most participants. For, we have designed a framed field experiment composed by two treatments: The Coordination treatment (CT) and the Information treatment (IT), namely. The CT is divided into two stages. In the first stage, physicians rate the appropriateness of each of the proposed actions to heal a specific disease on a scale of one to four and attempt to match the modal rating reached in the session to gather monetary reward. In the second stage, physicians can request to know which action, among those proposed, correspond to the national guideline about that specific situation. The IT differs from the CT only in the second stage of the treatment. In the IT, thus, if a physician asks to know guideline contents, then, she can change her rating of the actions given in the first stage. Doing so, we can assess the factors leading to changes in the chosen appropriateness and if coordination level increases because of such afterthoughts.

To the best of our knowledge, this is the first work experimentally assessing coordination among physicians and the regulatory role of national guidelines to reach high levels of coordination in an experimental setting. Second, whereas other artefactual field and laboratory experiments have already involved physicians (see e.g., Brosig et al., 2016), this is the first framed field experiment conducted in a hospital (their real working environment) employing a remarkable set of 52 physicians. In fact, to the best of our knowledge, Wang et al., (2020) is the only work, although being a controlled laboratory experiment, involving a higher number of physicians than our paper. Our results show that the average

frequency of coordination across the experiment is 52% and that coordination increases when physicians exchange opinions and share positive feedbacks with colleagues. In addition, the presence of a leader in the medical ward facilitates coordination. Moreover, results suggest that the longer a physician has been working for the same hospital, more likely she is to implement the outcomes prescribed by the guidelines. Interestingly, in the Information treatment, only 8% of the physicians have decided to ignore national guidelines content, and 23% of the physicians who have not rated national guidelines as the most appropriate action in one or two scenarios, decided to change their ratings. Although the focus on national guidelines slightly improves both the level of conformity (i.e., the average frequency of rating national guidelines as the most appropriate action to take) and coordination, such increases are not statistically significant. Notwithstanding the positive effect on physicians' choices, national guidelines alone, as soft regulatory tool, are not able to boost coordination among physicians. Hence, governments should, for instance, increase the number of physicians involved in the clinical recommendation designing process to obtain more flexible and multifaced guidelines than current ones and to increase their rate of adoption (Hayward, 1997).

Title

Determinants of price for orphan medicines in Italy

Authors

C. Jommi, E. Listorti, F. Villa, S. Ghislandi, A. Genazzani, A. Cangini, F. Trotta

Abstract

Background. The assessment and appraisal process for orphan drugs has been deeply investigated by the literature (1), and peculiarities and commonalties with other medicines discussed (2). Price regulation has been also analysed from a regulatory viewpoint and in one paper (3) pricing criteria for orphan drugs were suggested, including the prevalence and disease severity, level of unmet need, quality of the evidence at market launch, level of uncertainty of effectiveness, level of impact on condition / disease modification. There is also some evidence on the trade-off between orphan drugs prices and volumes / dimension of the target population (4, 5). However, empirical studies of the determinants of orphan drugs prices are still very few (6) and no evidence exists for Italy. Objectives. The objective of this paper is to investigate the determinants of the price of orphan medicines in Italy. **Methodology**. Drugs with a European orphan designation reimbursed in Italy in the last 6 years (2014-2019) were considered. Univariate, cluster analysis and multiple regression models were used to investigate the correlation between the annual treatment cost and, as explanatory variables, the dimension of the target population, the existence of Randomized Clinical Trials as a proxy of the quality of the pivotal studies, and the added therapeutic value. The annual unit cost was computed net of (hidden) discounts and/or the effects of managed entry agreements. The prevalence of the disease as it was reported by the pharmaceutical companies in the price and reimbursement (P&R) Dossier was included in the model as Boolean variable (high/low prevalence if over/below the median value), with a hypothesis of negative correlation (4, 5). The added therapeutic value was included as it was graded by the French Transparency Commission (ASMR): a higher added value (lower ASMR ranking) was expected to bring higher prices. We could not rely on the Italian evaluation of the added therapeutic value, since it is appraised, graded and reported only for medicines which marketing authorisation holder has applied for innovativeness status (7). **Results**. Orphan drugs that concluded the P&R process in Italy in 2014-2019 are 69 (35 are immune-modulating agents). 58 obtained a favourable opinion for reimbursement and concluded the price negotiation. In the univariate analysis, the prevalence and the ASMR rank have, as expected, a negative relation with the annual treatment cost and these results are significant from a statistical viewpoint. The correlation with RCT is not significant. In the multivariate model, coefficients for prevalence and ASMR are confirmed even if the ASMR does not appear to be significant anymore. The same regression shows a positive, but not significant from a statistical viewpoint, correlation between RCT and costs. Interesting insights can be gained when an interaction term between the prevalence and RCT was added. Results show that when the prevalence is below the median value, costs are higher for RCT-driven orphan drugs. It seems that the RCTs may have a major impact within medicines targeting low prevalence disease. The inclusion of this interaction resulted in statistically significant results for RCT, and an important increase of R2. Discussion: Our results suggest that both value-based pricing and sustainability issues are considered: the former is supported by a positive association between the added therapeutic value (negative correlation with ASMR rank) and the annual treatment cost, the latter by a negative association of annual treatment costs with the dimension of the target population. The study has three main limitations: we could rely on a limited number of observations which drove our choice to consider a limited set of explanatory variables; annual cost estimates may underestimate the cost of chronic treatments; we relied on the added therapeutic value graded on the French grades for

ASMR, but we have checked that ranking of added therapeutic value is quite similar in Italy and France for those medicines which marketing authorisation holder has applied for innovativeness status. Notwithstanding we have shed lights on orphan drugs pricing, showing that (added) value and budget impact (dimension of the target population) counted.

Title

The economic impact of compassionate use of medicines

Authors

C. Jommi, F. Pantellini, L. Stagi, M. Verykiou, M. Cavazza

Abstract

Background. Compassionate use programs (CUP) for medicines respond to the ethical imperative of providing earlier access to medicines to patients not recruited in trials. While the economic impact of clinical trials has been already investigated (cited reference includes a not exhaustive review of the existing literature), no evidence on the net economic benefit of CUP exists. This research aims to fill the information gap by estimating the economic consequences of 11 CUP in Italy conducted between May 2015 and December 2020 from the perspective of health care payers. Eight programs concern cancer treatments, two refer to drugs for spinal muscular atrophy, and one is indicated for multiple sclerosis.

Method. The net economic benefit includes the avoided costs from the Standard of Care (SoC) the patients would have received if they had not joined the CUP, and costs not covered by the pharmaceutical industry but instead sustained by payers, such as those associated to adverse events (only severe sides effects resulting in hospitalisation and attributed to CUP medicines), and costs for combination therapies and diagnostic procedures not used with the SoC. The SoC costing relied on publicly available data. Information on adverse events and diagnostic procedures was retrieved from the CUP and monetized using the relevant fee for episode or service. One CUP was excluded since a SoC was not identified.

Results. 2,712 patients were treated in the 11 CUP, where SoC was identified. The SoC mean cost per patient ranges from €11,415 to €20,2 99. The total cost of the SoC ranged between €31.0 and €55.1 million. The mean cost per patient covered by hospitals hosting CUP was equal to €1,646, with a total cost of €4.5 million. The net economic benefit ranged from €26.5 million to €50.6 million (€17.8 million - €42.0 million for cancer treatments).

Conclusions. Despite research limitations, this paper illustrates for the first time the net economic impact of CUP in oncology patients from a payer perspective. It would be important to integrate these estimates with the prospective effects of CUP implementation, i.e., the economic value of the comparative benefit profile of medicines used in CUP versus the SoC, including effects from a societal perspective.

Title

Dealing with COVID-19 vaccination hesitancy: an exploration of the Italian NHS online communication from a citizens' perspectives

Authors

L. Pirrotta, E. Guidotti, G. Venturi, S. De Rosis

Abstract

Background. Despite the chance of an innovative and safe vaccine, nowadays vaccine hesitancy is still widespread. Communication of clear and accurate information represents a key element to increase COVID-19 vaccination uptake, since it plays a fundamental role in increasing access to health services. The Internet is emerging as a privileged channel for the citizens when looking for health-related information, especially for lower educated, who are the most hesitant towards vaccination. The Internet thus represents a key channel to inform the citizen's on COVID-19 vaccination and could play a significant role both in overcoming vaccine hesitancy and in ensuring greater equity in healthcare access. Considering this perspective, it is clear the need to improve the design of an easily, understandable, and readable health information for all the citizens. Effective communication, along with appropriate logistics and efficiency and professionalism in the delivery process represent key processes for the success of the vaccination campaign.

Objective. The aim of this study was twofold: (i) to investigate the variation both between and within Italian Regions and Local Health Authorities (LHAs)regarding online communication of COVID-19vaccination information; (ii)the readability of such information.

Methods. Between March and April 2021, an observational analysis of129 Italian regional and LHAs was performed. A common grid was developed to analyze vaccination information on the Internet. While conducting the analyses, texts onCOVID-19 vaccination were collected and analyzed. The focus of the investigation was the quality and linguistic complexity of the texts to understand if and how much the websites were understandable for citizens. Two well-established indexes were adopted to assess texts quality, the Gulp Ease and the READ-IT. Lastly, the distribution of words contained in the New Basic Italian Vocabulary (NBIV)was assessed to catch the lexical complexity of those texts. Descriptive statistics and statistical tests were performed to carry out analysis and test hypothesis comparing regions and geographical areas.

Results. Exhaustive information referred to the categories of users eligible for vaccination were found in more than 80% of regional websites, whileatLHAs'level54% reported partial or no information. As regard the place for vaccination 57%
of the regional websites provided exhaustive information, 9% indicated only the type of facility where the service was provided, while 34% reported no information. High variability was observed across the websites as regard he presence of information on the side effects of COVID-19 vaccine, both among regions (p=0.001) and areas (p=0.001). 11 regional websites(52%)did not inform about side effects. Among the 10 websites(48%)reporting the risks of vaccination, just 6 (28%) provided exhaustive information. As for the readability analysis, specifically the Gulp ease Index, COVID-19 vaccination regional websites texts scored between 68 and 44. Similarly, LHA's websites scored between 61 and 46.Accordingly, our results show that the COVID-19 texts are mainly not easy to read for people with low educational level, with some regions with a higher percentage of low educated people performing worse. Relating to the READ-IT Index, regional websites COVID-19 vaccination texts scores ranged from 55 to99, while LHAs texts from 53 to 99 with a higher variability across territories. As concern the lexical aspect, the use of NBIV words in the regional websites texts ranges from 73% to 51%, while LHAs registered a slightly better performance.

Conclusions. A high variability in the communication about active vaccination pointsforCOVID-19 vaccination was found both between different Regions and LHAs. It would be useful to explain more clearly the places dedicated to vaccination, perhaps through the creation of a regional infographic reporting the active administration points. The communication of the side effects associated with COVID-19 vaccines worth attention. A clear communication of the side effects can be considered a fundamental lever to increase the propensity of citizens to vaccination, therefore, it would be strategic to define a shared that allows citizens to find this information easily when browsing sites. Also, a dedicated focus should be posted on texts' readability. Texts concerning COVID-19 vaccination emerged as averagely difficult to read. Literature shows that the most reluctant to vaccination are those citizens with lower education levels, so it is clear the need for targeting the communication by considering the people vocabulary, health literacy and level of education.

Title

Nudging hand hygiene in residential homes: a pilot study among health workers in Northern Italy

Authors

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Abstract

The SARS-CoV-2 pandemic exacerbated the need for infection prevention in long term care facilities (LTCFs). Many measures have been taken to control COVID-19 infection in LTCFs, and among them, good hand hygiene practices are key and here to stay even after the epidemic. Surprisingly, hand hygiene compliance in LTCFs has been little studied in the literature and this is one of the first study to test a behavioral intervention to improve it. The aim of this work is to assess levels of hand hygiene compliance among health workers, design an intervention to improve hand hygiene compliance, and test the effectiveness of the intervention. We used a field experiment with a cross-sectional design. The study took place between June and July 2021in one long term facility in the Turin province, Piedmont, Italy and involved two wards –each of which placed on a separate floor and with separate staff. The focus was on the morning cleaning routine of guests, which we identified as the most critical phase for healthcare-associated infections transmission in LTCFs . To assess levels of hand hygiene compliance we used the WHO observation tool, a diffused and validated method of data collection. We defined an aggregate measure for hand hygiene which includes any attempt at hand hygiene (hand rubbing with gel with bare or gloved hands or hand washing with soap and water). One independent observer was stationed in the facility over 20 days and observed continuously between 6AM and 10AM every morning. The observer attempted to capture an equal amount of observation hours per ward. We set up a cross-over design to evaluate the effectiveness of the intervention. After the baseline measurement, one ward (Ward1) received the intervention first (8 days) and then the intervention's materials were removed from the ward. Then the other ward(Ward2) then received the intervention (7 days). The intervention was based on previous unstructured observation and discussions with the facilities' stakeholders where we identified key barriers to hand hygiene: lack of knowledge and awareness of the importance of the issue, and physical difficulties to access to the materials to practice the hygiene. The intervention components that aimed to increase knowledge, facilitate access and raise salience are respectively: an informative briefing and the diffusion of summary infographics, the introduction of a basket to facilitate the transportation of the alcoholic gel next to the patient zone; visual cues to delimit the patient zone where hand hygiene has to happen. As a first result we found that hand hygiene compliance was extremely low (~1%) during the baseline measurements. During the respective control periods compliance was between 7 and 10% –highlighting a possible spillover effect from one ward to the other, but a reaction to the presence of an intervention dedicated to this topic in the LTCF. In the ward which received the intervention first, compliance was 28% during the intervention and then fell to 8% when the intervention was removed (control period).Whilst, in the ward where control precede the intervention, compliance went from 10% to 15%.We carried out a logistic regression model to assess the effect of the intervention compared to the control on total hand hygiene compliance. We carried out two separate models for each ward, to account for the order effect of the intervention period. We also account for ward units. Workload was stable during the study period and hence we do not account for this in the models. The adjusted models suggest that the intervention was effective in Ward1, where health workers had five times the odds of washing hands during the intervention compared to when the intervention was removed. Even if we have to remark that this was a pilot study, hand hygiene compliance was alarmingly low and therefore we believe our study can already provide useful insights. The presence of the intervention team obviously raised the profile of the issue and in itself instigated some change, suggesting a lack of awareness and attention to the issue. The intervention was able to leverage substantial hand hygiene improvement in one ward, but not the other, probably due to order effect but also to the different prior beliefs of the ward manager. Since the intervention was successful in the ward where the intervention was removed, this provides some evidence that «access» and «salience» can achieve temporary behavior change in themselves, and independently of knowledge and information. We are confident that these results suggest that the intervention is feasible and potentially effective, but we are conscious that it needs to be tested with a rigorous large-scale study, and for a longer period of time.

Title

Anziani e demenze: stato di implementazione dei Piani Regionali Demenze e legame con la rete socio-sanitaria

Authors

S. Berloto, F. Longo, E. Notarnicola, E. Perobelli, A. Rotolo

Abstract

Background: In Italia si stima (Vanacore et al., 2019) che gli anziani affetti da demenza siano circa 1,1 milioni, di cui oltre 600.000 condemenza di Alzheimer. La demenza si presenta come una tra le sfide maggiori legate all'invecchiamento, sia in termini di prevalenza nella popolazione, che rispetto alle ricadute sociali(1 ultra ottantenne con demenza su quattro soffre di ansia o depressione cronica, Istat)ed economiche (i costi socio-sanitari annuali annessi alla demenza oscillino tra i 10 e il 12 miliardi di euro, ISS) connesse alla malattia. A questo si aggiunge il disallineamento tra la configurazione dell'attuale rete di offerta socio-sanitaria e la prevalenza della malattia: i gestori dei servizi riportano (OLTC, 2021)che la presenza di anziani con demenze ha raggiunto tra il 60 e 80% nei Centri Diurni Integrati (CDI) e nelle Residenze Sanitarie Assistenziali (RSA).Questa distribuzione impone una revisione dell'idea di nuclei Alzheimer circoscritti, in quanto questo target di utenti è diventato ormai quello prevalente nei servizi. Infine, la sperimentazione di farmaci e terapie per gli stadi lievi della malattia (MCI, Mild Cognitive Impairment) potrebbe portare all'interno dei servizi pubblici un numero senza precedenti di pazienti.

Obiettivi: Alla luce della rilevanza del fenomeno demenza per il sistema sociale, socio-sanitario e sanitario italiano, lo scopo del lavoro è di approfondire criticamente lo stato di implementazione a livello regionale del Piano Nazionale Demenze, la fonte nazionale più completa di riferimento sul tema, selezionando contesti in cui l'applicazione è a uno stadio avanzato per trarre lezioni utili per il policy maker circa la gestione della demenza a livello locale.

Metodologia: L'analisi dello stato di implementazione del Piano Nazionale Demenze (PND) si fonda su due pilastri: 1.Analisi desk dei contenuti del Piano Nazionale e dei conseguenti Piani Regionali, classificando i contenuti rispetto ai quattro obiettivi del PND. Per le sole regioni che hanno recepito il PND, è seguita un'analisi che ha incluso tutti i documenti istituzionali (leggi, delibere, atti di indirizzo, etc....) che ne sono conseguiti per ottenere una mappatura aggiornata e strutturata dello stato di implementazione del PND a livello regionale. Complessivamente sono stati analizzati 38 atti. 2. Individuazione di due casi studio di approfondimento (Regione Emilia-Romagna e P.A. di Trento), scelti per la loro peculiarità: Regione Emilia-Romagna perché più di altri ha investito e regolato la rete locale dei servizi per le demenze; P.A. di Trento poiché ha maggiormente presidiato il tema del rapporto con i familiari caregiver. Le evidenze preliminari sono state discusse in due interviste semi-strutturate con i referenti regionali sul tema, per validare le informazioni e inquadrare le sfide per il futuro.

Infine, le evidenze sono state discusse in due interviste semi-strutturate con key informants a livello nazionale sul tema demenze.

Risultati: Rispetto alla mappatura normativa, a luglio 2021 erano solo 12 le regioni ad aver recepito il PND, di cui solo sette hanno utilizzato la recezione del Piano come momento di riflessione e revisione dell'approccio regionale complessivo alle demenze. Tra queste, è emerso come le regioni si siano concentrate prevalentemente sulla ri-organizzazione della rete integrata di offerta e sulla razionalizzazione dell'offerta, obiettivi profondamente collegati. Meno diffusi sono invece i riferimenti all'adozione di sistemi informativi e di conoscenza che permettano di acquisire una migliore consapevolezza e rappresentazione del fenomeno delle demenze sul territorio. L'altro obiettivo meno presente negli atti di recepimento del PND è quello relativo alle iniziative finalizzate ad accrescere la consapevolezza e l’empowerment dei caregiver. I casi studio analizzati rafforzano queste evidenze, proponendo importanti lezioni e buone pratiche che possono essere estese ad altri territori. Complessivamente i dati epidemiologici mostrano che le demenze non possono più essere considerate un «sotto –insieme» nell’alveo delle strategie di settore, poiché diventeranno la condizione maggior diffusa. Il PNRR dà la possibilità a RSA di individuare una diversa specializzazione in sinergia con sanità, opportunità da cogliere per adeguare l’offerta dei servizi.

Title
Gli ospedali di comunità in Italia: passato, presente e futuro

Authors
G. Fattore, F. Meda, M. Meregaglia

Abstract

Background. In base alla recente normativa nazionale, l’ospedale di comunità (OdC) si qualifica come un presidio sanitario di assistenza primaria a degenza breve destinato ai pazienti che necessitano di interventi sanitari a bassa intensità clinica e di sorveglianza infermieristica continuativa. Il numero di posti letto è di norma compreso tra 15 e 20. Il Piano Nazionale di Ripresa e Resilienza (PNRR), approvato dal Governo nell’aprile 2021, ha stanziato1 Miliardo di euro per l’attivazione di circa 380 OdC in tutta Italia. L’idea da cui muove la ricerca è comprendere, alla luce delle attuali conoscenze sugli OdC in Italia(e all’estero), le opportunità e le sfide che il PNRR può comportare in termini di ampliamento della rete di offerta sul territorio.

Obiettivi. Gli obiettivi specifici dello studio sono quattro: (1) descrivere il contesto internazionale in cui si inseriscono le esperienze di OdC e confrontarlo con ciò che stabilisce la normativa nazionale; (2) individuare, catalogare e caratterizzare(‘mappatura’), tutte le strutture residenziali qualificabili come OdC sul territorio nazionale; (3) identificare e studiare approfonditamente alcune strutture di particolare interesse (‘casi studio’), delineandone il contributo fornito durante la pandemia di Covid-19; (4) proporre alcune riflessioni in relazione alla decisione contenuta nel PNRR di finanziare la creazione di nuovi OdC.

Metodologia. In primo luogo, è stata effettuata una revisione della letteratura internazionale per rilevare le definizioni e i diversi modelli assistenziali degli OdC esistenti in altri Paesi. In secondo luogo, sulla base di uno studio pregresso(a cura della Camera dei Deputati) ed effettuando ricerche mirate della documentazione online (es. siti istituzionali, carte dei servizi, articoli di quotidiani locali), è stato condotto un esercizio di ‘mappatura’ per identificare tutte le strutture qualificabili come OdC in Italia. La tabulazione dei dati è stata effettuata con il supporto di un database con 22 campi articolati in quattro macrocategorie (dati spazio-temporali; dati strutturali; target di utenza; altre informazioni). In terzo luogo, alcuni OdC, identificati come ‘casi-studio’, sono stati analizzati mediante interviste semi-strutturate articolate in dieci domande afferenti a quattro temi più ampi (ruolo del partecipante nell’OdC; funzione dell’OdC e servizi erogati alla comunità; ruolo dell’OdC in relazione ad altri servizi sociosanitari; sfide e opportunità future). Infine, i risultati ottenuti sono stati interpretati e commentati alla luce del recente PNRR.

Risultati. L’analisi del contesto internazionale ha dimostrato l’estrema flessibilità con cui l’OdC è stato interpretato e inserito nella rete complessiva di assistenza, seppur nel contesto europeo, sulla scorta del modello inglese, gli OdC risultano prevalentemente dedicati a servizi di assistenza per i pazienti sub-acuti e post-acuti, cure intermedie, servizi di riabilitazione e, in alcuni casi, anche cure palliative e terapia del dolore. La mappatura ha individuato 177 strutture classificabili come OdC in Italia, di cui 149 già presenti nella relazione della Camera dei Deputati. Oltre la metà degli OdC è ubicato nelle regioni del Nord-Est, mentre il Sud ne conta solo 19. Il Veneto presenta il numero di OdC più elevato sia in termini assoluti che in relazione alla numerosità della popolazione. Il grado di urbanizzazione(Eurostat)è basso in un terzo dei casi, e medio in quasi la metà. La maggior parte delle strutture è stata istituita (o formalmente riconosciuta)nell’ultimo quinquennio (2016-2021). Il 37%degli OdC è localizzato all’interno di un ospedale per acuti, pur mantenendo la propria afferenza alle aziende sanitarie territoriali, e il 35% risulta contiguo a un centro sanitario polivalente (es. “Casa della Salute” in Emilia-Romagna).Il 23% è di natura privata. La media dei posti letto è pari a 18, in linea con i requisiti specificati dalla normativa. La degenza standard, invece, risulta mediamente pari a un mese, e più elevata rispetto ai 15-20 giorni previsti dalla legislazione nazionale. Il 22% degli OdC è contiguo ad un hospice o dispone di posti letto dedicati a pazienti terminali, mentre il 25%, durante la pandemia, ha dedicato(totalmente o parzialmente) i posti letto al ricovero di pazienti Covid in fase post-acuta. Gli otto casi-studio analizzati si collocano in Emilia-Romagna (OdC di Bobbio; OdC di Modigliana), Veneto (OdC di Auronzo; OdC di Trecenta), Piemonte (OdC di Demonte), Toscana (gli OdC della AUSL Toscana Sud-Est), Puglia (l'esperienza regionale dei Presidi Territoriali di Assistenza, PTA)e Molise (Unità di Degenza Infermieristica –UDI –di Laurino).Le informazioni raccolte hanno evidenziato, quale aspetto comune, l'importanza degli OdC nell'offrire, a residenti sempre più anziani, la possibilità di essere ricoverati, e non soltanto assistiti ambulatorialmente, nel proprio contesto abitativo e da personale sanitario spesso a loro già noto. Il rischio, tuttavia, è quello di far intendere l'OdC come una sistemazione permanente, con conseguente allungamento dei tempi di ricovero oltre quelli previsti(da cui nasce, come disincentivo, la compartecipazione alla spesa dopo un certo numero di giornate).Inoltre, le esperienze riportate hanno mostrato diversi modi di affrontare le conseguenze della pandemia: ad esempio, l'OdC di Trecenta è stato interamente e formalmente convertito a Covid hospital, ed altre strutture (es. a Modigliana e Foiano) sono state parzialmente adibite al ricovero di pazienti positivi, con conseguente suddivisione dei posti letto in "sporchi" e "puliti", aumento delle criticità connesse all'attività di cura, stress più elevato in capo al personale, e allungamento dei tempi di degenza, ma anche risvolti positivi come lo sviluppo della telemedicina (a Modigliana); l'OdC di Demonte, invece, per scelta istituzionale, non ha ammesso pazienti Covid. I risultati ottenuti dalla ricerca offrono numerosi spunti di riflessione circa la futura implementazione del PNRR, ma necessitano di essere confermati e integrati da studi futuri su campioni più ampi di OdC, e che prevedano, tra l'altro, un'analisi più rigorosa della domanda di servizi sociosanitarie una raccolta di dati sull'efficacia e la costo-efficacia degli OdC rispetto ad altri modelli assistenziali.

Title

La soddisfazione della popolazione italiana rispetto ai servizi sanitari regionali in epoca pandemica

Authors

A. Da Ros, P. Cantarelli

Abstract

Background. La valutazione della percezione dei pazienti in relazione all'utilizzo dei servizi sanitari durante la pandemia da COVID-19 è un utile strumento che va utilizzato ad integrazione dei dati provenienti da monitoraggi più focalizzati sul funzionamento dei servizi stessi (Gilmore, K. J., De Rosis, S., & Nuti, S. 2020).È molto importante incrociare i classici dati amministrativi con i comportamenti riportati dalla popolazione per fornire strumenti ed evidenze utili per migliorare l'offerta sanitaria e di conseguenza la percezione dei cittadini rispetto ai servizi sanitari a cui hanno accesso e, più in generale, le politiche sanitarie che sono multidimensionali per natura.

Obiettivi. (i) misurare la soddisfazione per i servizi sanitari durante l'emergenza sanitaria da COVID-19; (ii) analizzare la variabilità di soddisfazione ed esperienza riportata da diversi gruppi di utenti intervistati: quelli che sono stati a contatto diretto con il COVID-19 e quelli che non lo sono stati; (iii) osservare l'accesso ai servizi dichiarato dalla popolazione nel 2020;e(iv)le ragioni del mancato utilizzo dei servizi sanitari.

Metodologia. L'indagine ha previsto la somministrazione di un questionario online che ha coinvolto 12.322 rispondenti maggiorenni residenti in tutte le regioni italiane. Il questionario ha prediletto l'uso di metodologie osservazionali attraverso la richiesta ai partecipanti di esprimere il proprio grado di accordo rispetto ad una serie di affermazioni, su una scala Likert, i cui estremi rappresentano un forte disaccordo e un forte accordo. La raccolta dati è avvenuta tra il 22 dicembre 2020 ed il 28 gennaio 2021.

Principali risultati. I dati raccolti testimoniano una sostanziale tenuta dei sistemi sanitari rispetto alla soddisfazione da parte della popolazione italiana riguardo ai servizi sanitari erogati in epoca di pandemia.(i) A livello nazionale(n=10.758)si arriva ad avere quasi la metà di cittadini(47,5%) totalmente d'accordo o comunque soddisfatti del servizio di cui hanno usufruito. C'è poi un 29,6% di popolazione che esprime una valutazione intermedia e il rimanente, il 23%, è insoddisfatto, in particolare il 9,9% lo è in modo totale. (ii)Chi ha avuto un contatto con l'infezione da COVID-19 (n=4.252) si dichiara più soddisfatto del servizio ricevuto rispetto a chi non è stato contagiato(n=6.506). Infatti, a livello nazionale, chi ha avuto un contatto con il COVID-19 è soddisfatto o totalmente sodisfatto nel 49,6% dell'assistenza ricevuta dal servizio sanitario della propria regione contro il 46,1% di chi non ha avuto contatti con il COVID-19. (iii)Emerge poi come, per oltre il 50% dei casi(55,7%), la riduzione degli accessi ai servizi sanitari sia imputabile alla riduzione della domanda dei cittadini e non prettamente ad una riduzione dell'offerta sanitaria. Il periodo di pandemia pare infatti aver cambiato i comportamenti dei cittadini che hanno probabilmente ritenuto prudente rimandare alcune prestazioni sanitarie. (iv) Un altro aspetto indagato nel questionario che può aiutare i servizi sanitari a comprendere il comportamento dichiarato della popolazione anche per future emergenze, è quello relativo alla scelta del cittadino di usufruire o meno dei servizi sanitari. Questi dati mettono in luce il non ricorso ai servizi sanitari nonostante la percezione di bisogno. La misura della popolazione che non ha usufruito dei servizi pur avendone bisogno è il 28% per le visite dal medico di medicina generale, il 35% per le visite specialistiche, il 15% per esami radiologici ed il 19% per esami di laboratorio. Più limitato il mancato ricorso ad esami diagnostici, interventi chirurgici, screening oncologici, e vaccinazioni, inferiori generalmente al 10%. Il 16% dichiara di non essere andato in pronto soccorso pur avendone bisogno. Infine, a livello italiano, il 38% dichiara di non aver avuto problemi nell'accedere ai servizi sanitari. Combinando i dati relativi

al mancato utilizzo dei servizi sanitari con quelli relativi alle ragioni che hanno spinto a tale scelta, è possibile affermare che un cittadino su quattro a livello nazionale non ha usufruito dei servizi sanitari nel 2020 per indisponibilità dei servizi. Questi risultati lasciano spazio a future riflessioni e linee di ricerca nell'ambito dell'over medicalizzazione e dell'over diagnosi, di cui la disponibilità d'accesso ai servizi sanitari potrebbe essere fattore contribuente (Moynihan et al.,2021).

Title

Understanding the long-haul COVID: persistent hospital visits among first wave patients in the Lombardy Region, Italy

Authors

S. Ghislandi, Y. Wang

Abstract

Background. As the pandemic evolves indefinitely, we are only beginning to grasp the true extent of long COVID and its burden on our health system and society. Although a multitude of studies have investigated the consequence of post-COVID-19 syndromes, these studies often focus on restricted pathologies or use outpatient subjective surveys that do not capture the clinical pathways of the patients. Hence, using hospital discharge data and administrative data, we systematically investigate the persistent symptomatology of the first wave patients from the Lombardy region of Italy, one of the first epidemic centres of the world.

Method. We analyse the prevalence, predictor, and pathological categories of one-year rehospitalization and follow-up outpatient visits after COVID-19 discharge for first-wave Lombardy region patients. We divide the 76,380 patients into three broad categories – those who were admitted to intensive-care unit (N=2,610), those who were hospitalized but not in intensive care (N= 19,167), and those who only had outpatient visits (N = 54,603). We run a retrospective case-control study by treating the outpatient group as a control and the other two groups as treatment levels. We consider the probability of rehospitalization (logistics model), the count of rehospitalization (poisson), as well as the number of follow-up outpatient visits (poisson) as the outcome variable, and we control for gender, hospital length-of-stay (if hospitalized) and comorbidities. We further perform a cluster analysis using the demographic group, clinical pathways, and readmission wards to understand the profiles of the long covid patients.

Results. On average, the odds ratio of rehospitalization is 8.253 (CI 8.234 to 8.271) for those who were initially in the intensive care unit (ICU group) and 4.072 (CI 4.068 to 4.076) for those who were hospitalized (inpatient group) compared to those who only had ambulatory services (outpatient group). Females are less likely to revisit the hospital than males (odds ratio 0.870 with CI 0.869 to 0.871). Further subgroup analysis shows that the difference between the two treatment groups and control group is strongest among people aged above 80 years old. The difference in the log of expected count of rehospitalizations is 1.1819 (CI 1.1065 to 1.2573) units higher for the ICU group than the outpatient group, and 1.0917 (CI 1.0421 to 1.1413) times higher for the inpatient group than the outpatient group. Preliminary cluster analysis shows that there is a strong similarity among the older age groups (70+), and among patients who were initially admitted to ICU, as well as those admitted to cardiology and pulmonology wards.

Discussion. We examined the first-wave patients rehospitalization and follow-up visits. Overall, COVID-19 patients who were initially hospitalized are significantly more likely to revisit the hospital than those who only had outpatient visits, and the difference is strongest among elderly patients. There is clear clustering among the patient profiles, which begs further investigations to disentangle the complicated phenomenon of long-haul Covid and to understand the groups that are most vulnerable.

Title

Hospital Closure and Patient Outcomes: Evidence from AMI emergency admissions in Italy

Authors

S. Ghislandi, A. Renner, B. Scotti and N. E. Varghese

Abstract

In the European Union (EU), cost containment strategies have been particularly targeted towards reorganization of hospital networks given that hospitals account for large shares of healthcare budgets. Despite the increasing trend of hospital closures and mergers, few empirical studies have provided credible evidence to resolve the ambiguity regarding the consequences on patient outcomes. This paper uses a difference-in-differences approach to study the causal effect of hospital closures in Italy from 2008-2015 on AMI patient outcomes including in-hospital mortality, 30, 90 and 365-day cardiac and cardiology related readmission and length of stay. Patient outcomes for AMI admissions from municipalities exposed to versus not exposed to a home hospital closure are compared before and after the closure year. Results show that hospital closures increase in-hospital mortality by 1.2% and length of stay by about 0.4 days. There is no statistically significant effect of home hospital closures on readmissions although home hospital closures increase 30-day and 90-day readmission when considering only small municipalities with a population size less than 50k. The effect of hospital closure on in-hospital mortality and readmission is persistent across the post-closure years indicating that adaptation to this negative shock (closure) in the availability of public health care may take a long time. We further check two potential mechanisms, increased travel time and congestion, and show that the former is more relevant in explaining the causal effect of hospital closures on AMI outcomes in the case of Italy.

Title

Healthcare Organizations' Managerial Response to Covid-19 Emergency: Lessons to be Learned from an Empirical Analysis

Authors

M. Marsilio, A. Prenestini, F. Sacchi

Abstract

Background. Many disasters that cause large numbers of injured and casualties have the potential to undermine Healthcare Organizations' ability to keep delivering adequate care, by requiring extreme and sudden levels of surge capacity and capability (Helm and Mills, 2020; Jamros et al., 2019). Hence, whenever an event reaches the proportions of a global and sustained public-health emergency, such as in the case of a pandemic, Healthcare Organizations become increasingly susceptible to experiencing dramatic disruptions in their operations. In early 2020 the first autochthonous European and Western case of Covid-19 positive patient was discovered in Northern Italy, forcing local Public Healthcare Organizations to immediately take action, by upsetting their routine. One peculiarity and insidiousness of Covid-19 as a hazard is that it might be characterized both as a mass casualty incident and as a mass effect incident, the first being defined as "an incident that generates a sufficiently large number of casualties whereby the available healthcare resources, or their management systems, are severely challenged or unable to meet the healthcare needs of the affected population" (U.S. Department of Health and Human Services, 2009); and the second as "an incident that primarily affects the ability of an organization to continue its normal operations. For healthcare organizations, this can disrupt the delivery of routine healthcare services and hinder their ability to provide needed surge capacity" (U.S. Department of Health and Human Services, 2009).Since a comprehensive study on the solutions adopted by Healthcare Organizations when dealing with such events was lacking, a survey regarding the first wave of Covid-19 pandemic was conducted among Italian Public Healthcare Organizations.

Objectives. The aims of the study are twofold: •investigating and comparing managerial and organizational solutions adopted by the Healthcare Organizations in order to handle Covid-19 first wave; •verifying whether such solutions had already been implemented to face previous epidemic events, or whether they were instead ad hoc developed for the current pandemic; trying to understand if there are lessons to be learned for future pandemic and/or the return to the normal.

Methodology. The adoption of a pre-existing framework allowed the research to be conducted focusing on the six main drivers that affect the operations of Healthcare Organizations: (i) Task Force and Decision Support Systems, (ii)Network Management, (iii) Asset Management and Patient Flow Logistics, (iv) Supply Chain Management, (v) Clinical Competence and (vi) Digital Innovation (Marsilio and Prenestini,2020).In order to address the first objective of the study, a survey among Public Healthcare Organizations located in Northern and Central Italy was conducted, between October 2020 and February 2021.It consisted of 78questions, variously assorted with factual and non-factual ones, organized following the 6-driver framework. The question types were varied and adapted to the content of each question, so as to allow the Organizations to effectively narrate their own experience of managing the pandemic. Among others, we used open-ended questions; multiple choice questions, either with single or multiple answer; Likert scales; numerical response questions and date questions. Final Response Rate of the survey was 27.5%(36 organizations). As for the second aim, an extensive literature review was carried out. Eligible papers included studies regarding management and rearrangement solutions enforced by Healthcare Organizations during past crisis times and the current pandemic. Said solutions were later contextualized within the abovementioned framework.

Main Results. Quantitative and qualitative analysis on the Healthcare Organizations responses were performed. Most of the solutions adopted by Italian Public Healthcare. Organizations appeared to be both consistent with literature and effective in containing some of the adverse effects on operations produced by such high-impact event. Nonetheless, the overall response turned out to be sub-optimal. A general lack of preparedness was observed within Healthcare Organizations during the first wave of the pandemic, as solutions were often the result of impelling necessity, rather than structured strategies.

In light of this, useful lessons could be drawn for the management of possible subsequent waves of Covid-19, future pandemics, but also for the return to a new and more aware normality.

Title

Valutazione economica di un sistema di sanificazione a base di probiotici per la riduzione delle infezioni correlate all’assistenza e delle antibiotico-resistenze

Authors

R. Tarricone, C. Rognoni, L. Arnoldo, S. Mazzacane, E. Caselli

Abstract

Background. In tempi di COVID-19, è d’obbligo parlare di malattie infettive e resistenza antimicrobica (antimicrobial resistance - AMR), che è motivo di grave preoccupazione per impatto clinico, economico e sociale. L’AMR si verifica quando i microrganismi diventano resistenti ai farmaci antimicrobici, di conseguenza, i farmaci diventano inefficaci e aumentano il rischio di diffusione delle infezioni e di morte. L'utilizzo eccessivo e inappropriato di antibiotici causa AMR nei patogeni umani. In ospedale, a causa di un maggiore utilizzo di agenti antimicrobici, aumenta la probabilità che i batteri sviluppino meccanismi che permettano loro di sopravvivere nonostante la presenza di antibiotici. Un'importante conseguenza della AMR è rappresentata dalle infezioni correlate all'assistenza sanitaria (ICA), contratte durante la degenza in ospedale. Le ICA colpiscono ogni anno 3.2 milioni di pazienti in Europa, causando circa 37000 decessi come conseguenza diretta, con un ruolo prevalente e crescente di agenti patogeni multi-resistenti.

Obiettivi. In questo contesto, il Probiotic Cleaning Hygiene System (PCHS®), basato su detergenti ecologicamente sostenibili contenenti spore di probiotici Bacillus, ha dimostrato di ridurre i patogeni presenti sulle superfici ospedaliere fino al 90% rispetto alla disinfezione chimica tradizionale (DCT). Il presente studio ha confrontato il PCHS verso la DCT in termini di riduzione delle ICA, considerando anche la loro gravità, le relative resistenze agli antibiotici e i costi.

Metodologia. Uno studio è stato condotto da gennaio 2016 a giugno 2017 in 5 ospedali italiani; una fase di 6 mesi, in cui gli ospedali hanno mantenuto le procedure di DCT, è stata confrontata con una fase di 6 mesi di utilizzo del sistema PCHS. Al fine di ottenere un campione di pazienti omogenei per l’analisi, sono stati considerati i reparti di medicina interna/geriatria e neurologia. Un totale di 5930 e 5531 pazienti sono stati arruolati rispettivamente nelle 2 fasi. Un propensity score matching (PSM) è stato eseguito al fine di rendere comparabili i pazienti nei 2 gruppi.

Gli “outcomes” valutati nei 2 periodi sono stati: incidenza cumulativa e esiti delle ICA, consumo di farmaci per il trattamento delle ICA e relativi costi, identificazione dei casi di antibiotico-resistenza e stima dei relativi costi di trattamento. L’analisi non ha considerato il costo della sanificazione degli ambienti ospedalieri, in quanto equivalente per PCHS e DCT.

Le antibiotico-resistenze sono state identificate ipotizzando l'insorgenza di una resistenza in caso di cambio di terapia, coerentemente con quanto riportato in letteratura. Gli esiti delle ICA sono stati valutati in termini di gravità secondo l'Australian Incident Monitoring System.

Infine, un'analisi di impatto sul budget ha confrontato lo scenario attuale di utilizzo della DCT verso scenari futuri che considerano un aumentato utilizzo del PCHS, dal 5% al 50% nei prossimi 5 anni, nella prospettiva ospedaliera in Italia. Il modello applica le variazioni delle quote di mercato alla coorte dei pazienti incidenti considerando 1288000 dimissioni ospedaliere annuali nei reparti di medicina interna/geriatria e neurologia (Ministero della Salute).

Principali risultati. Il PSM ha prodotto un campione di 4160 pazienti per gruppo con caratteristiche cliniche identiche.

L'incidenza cumulativa delle ICA è risultata del 4.6% per la DCT e del 2.4% per il PCHS ($p < 0.0001$) (OR = 0.47, IC 95% 0.37-0.60), con ICA severe pari a 1.57% vs 1% e resistenze antibiotiche rispettivamente dell'1.13% contro lo 0.53%.

Complessivamente, il costo dei farmaci associati ai trattamenti delle ICA è risultato pari a 52004€ nella fase DCT e pari a 10954€ nella fase PCHS, dimostrando che il sistema PCHS riduce i costi totali dei farmaci del 78.9%; il costo del trattamento delle ICA resistenti agli antibiotici è risultato pari a 40419€ e 6341€ rispettivamente nei 2 periodi, evidenziando un risparmio dell'84% con il PCHS.
Un incremento (dal 5% al 50%) dell'utilizzo del PCHS verso la DCT nei reparti di medicina interna/geriatria e neurologia nei prossimi 5 anni in Italia consentirebbe di evitare almeno 31000 ICA e 8500 antibiotico-resistenze e di risparmiare almeno 14 milioni di €, di cui 11.6 per il trattamento di ICA resistenti. I risparmi potrebbero arrivare a 457.5 milioni di € nei prossimi 5 anni considerando il totale dei ricoveri annuali in Italia (6502529), il possibile indennizzo per ICA gravi (stimato in circa 44000€ per caso) e un utilizzo al 100% del PCHS.
Nonostante gli sforzi compiuti finora, come la promozione dell'uso appropriato degli antibiotici e gli interventi per il controllo delle infezioni, in Europa l'indice di resistenza antimicrobica negli ospedali per acuti è del 31.6%. L'utilizzo di sistemi di sanificazione ambientale sostenibili, come il PCHS, potrebbe ridurre drasticamente i tassi di ICA e AMR senza costi aggiuntivi per i sistemi sanitari.

Title

Including the patients' voice in performance evaluation systems: healthcare systems towards a performance governance model.

Authors

S. De Rosis, F. Pennucci, F. Ferré

Abstract

Background. The evolution of performance measurement systems(PMs)in public administration has encompassed a gradual shift from spending and input monitoring and process compliance as well (first phase),to integrated and multidimensional systems, increasingly including the evaluation of results and outcomes(second phase)(Bititci et al 2012). The third phase aims at overcoming the silo-vision of single settings and services, in order to measure the value produced along the entire value production chain. A similar process interested the PMs in the public healthcare sector. A focus is emerging on how providers and settings together contribute to producing outcomes and generating value (Nuti et al 2017).The systematic integration of the patient perspective in the performance evaluation (Berwick, 2016) is functional to move from performance management to performance governance models(Bouckaert and Halligan, 2008). Additionally, user involvement is key for maintaining high quality care and for a collaborative and resilient care system since patients are actively involved in healthcare (they move between care levels and settings), and they adapt thus providing adaptive capacity to the system (Wiing et al 2020). According to Donabedian's framework (1980, 1988), the outcomes of healthcare can be measured in terms of patient-reported experience(PRE)and outcomes(PRO). Patients can provide information that are otherwise not measurable(Halligan et al, 2012); and can contribute in assessing the interrelated work of the different actors providing services along care pathway (Donabedian 1988, Kodner and Spreeuwenberg 2002, De Rosis et al,. 2019). In Italy, the Inter-Regional Performance Evaluation System (IRPES) isa multidimensional performance measurement and evaluation system shared by 12regional healthcare systems. It is characterized by systematic benchmarking, public disclosure of data, integration with regional governance mechanisms, which have supported a balanced and sustained improvement of the healthcare systems(Nuti et al. 2016).The IRPES encompasses a systematic involvement of clinicians and managers in the improvement process informed by the performance results. Recently, Tuscany which has the longest-running experience with PRE and PRO collection and use, has started to include performance measures collected from the patients in selected care pathways (e.g., maternal care) and the patients 'voice has been integrated as a dimension of the regional performance evaluation, in terms of indicators of care experience (Nuti et al.2017).Moreover, patient's perspective inspired a new representation of performance that follows the patient care pathway (Nuti et al.2018), considering the plurality of providers, stakeholders and settings. An improvement in this direction is the introduction of new patient-reported indicators on performance(OECD, 2019). Patient measures are widely and increasingly used for assessing service quality and quality of care, as well as for benchmarking and accreditation purposes (Donabedian, 2005; Coulter, 2006; Coulter, Ray Fitzpatrick and Cornwell, 2009).

Objective. A case-study is used to provide preliminary evidence that the integration of PRE and PRO measures can contribute to performance measurement and evaluation, and impact the re-organisation of public healthcare services at different levels(De Rosis et al., 2020; Nuti et al. 2017; Bradley et al. 2015; Van Der Wees et al. 2014).In the light of the need for more resilient healthcare systems, patients and their caregivers provide unique insights about how they handle disruption (discontinuity in care) contributing to improving system organization, service provision and professional collaboration.

Main Results. The case study describes how patients can be engaged along their care pathway, as governance becomes more externally focused.1.The identification of measures and the design of evaluation mechanisms encompassed the systematic involvement of professionals. Frequent workshops and on-site visits were organized to trying embed these measures into the institutional culture of managers and professionals.2.Process and output indicators have been integrated into the Tuscan IRPES, for monitoring PRE and PRO measures, and push their deployment, as well as participation rates. An agreement on the definition of measurement and evaluation mechanisms has not been achieved on PRO indicators. 3.Targets on achievement of process and output indicators reported by patients have been introduced into the regional governance system linked to top management incentives. These have been given at meso and micro levels, with a “cascade effect”. The integration of patient measures in the Tuscan IRPES is still in an evolution phase and entails greater complexity in the performance system and less direct control by healthcare organizations. Nevertheless, the systematic collection and reporting of PRO and PRE is a concrete step forward in the third era of performance measurement, evaluation, and management systems (Berwick, 2016). Discussion on and experiences of possible uses of patient-data is ongoing: evaluation of organizational models (De Rosis et al. 2021); measure of system resilience (O’Hara et al 2018; Wiig et al, 2020); international benchmarking (OECD 2021); integration and continuity of care(Olde Rikkertet al 2018;Pennucci et al 2019);patient contribution to value creation (Gilmore et al 2019).Furthermore, the performance measurement and evaluation of PRO could be more immediately associated with the mission and intrinsic motivation of professionals: to well take care of people. This could make performance evaluation systems most effectively work in producing positive change, as Muller notes (2018).To this end, the use of these measures, particularly individual level data from PROMs, for the care of the single patient is essential (i.e., PROMs in the electronic medical records of patients)(Pennucci et al. 2020).

Title

Accounting for the crisis: the case of the healthcare sector

Authors

C. Cavicchi, C. Oppi, E. Vagnoni

Abstract

Background and objectives. Information systems are key to support clinicians and healthcare providers in decision making, allowing them to provide better services and treatments (Nyland and Pettersen, 2004; Adinolfi, 2014). Proper information also supports clinicians to address the issues associated to new diseases and to be more confident in their decisions. The Covid-19 outbreak impacted clinicians' capability to assume evidence-based medicine, due to lack of time, workload, difficulties in sharing experiences with colleagues or to read scientific papers, while issue were also related to a lack of adequate information systems (Ashrafi-Rzi and Kazempour, 2020). As accessing information is key to ensure effective decision-making and prompt response to treat Covid-19 patients, the role of health information systems (HIS) has been discussed by literature, which reported the need to investigate information systems contribution to clinicians' decision making during the Covid-19 outbreak (Tonetto et al., 2021), and emphasized the weaknesses of HIS in Covid-19 times (Schmidt et al., 2021). Conversely, literature is scant related to the role of accounting information systems (AISs) to support responses to Covid-19, while its investigation is highly recommended (Grossi et al., 2020; Rinaldi et al., 2020). Research is particularly warranted considering the role of accounting in supporting government responses to the pandemic, as well as concerning how accounting practices can contribute to decision making at organizational level (Leoni et al., 2020). Recent literature focused on the first issue and investigated countries' capability to develop proper accounting practices to deal with and respond to the pandemic (Falconer et al., 2021; Ahmad et al., 2021; Ahrens and Ferry, 2021; Joyce and Prabowo, 2021; Andrew et al., 2021). Conversely, research investigating AISs role at organizational level is warranted, especially focusing on healthcare organizations (HCOs), given the extreme pressures such organizations have experienced since Covid-19 outbreak. In this sense, some authors focused on the critical role of accounting in managing supply chain (Velajutham et al., 2021; Free and Hecimovic, 2020), but literature also emphasized the importance of exploring how the challenges posed by the pandemic affected the demand for information and a revision of accounting practices in organizations (Rinaldi et al., 2020). The investigation of contribution of AISs to clinicians' activity in treating Covid-19 patients is of particular interest in this sense. Therefore, the research aimed to answer the following research question: *Which role accounting information systems played in supporting clinicians' decision making in treating Covid-19 patients?*

Design of the study and methodology. This research presents a case study (Yin, 2013) that wants to analyse whether and to what extent AISs supported clinicians' decision-making in treating Covid-19 patients. The study is centered on an intensive care unit of the emergency department of a North-Italian university hospital. Interviews (Mahama and Khalifa, 2017) were then conducted with the unit director and the clinicians of the intensive care unit, the management accountants in the management control unit and those who track for drugs and medical devices consumption, focusing on AISs and data provision during the first (April 2020) and second (November 2020) wave of Covid-19 pandemic. Consistent with the research questions, interview protocols were set; interviews with clinicians explored the characteristics of the accounting information received for treating patients; whether their information needs were fulfilled also through interaction with the controllers; their approach to and use of accounting data; and the changes AISs underwent between the first and the second wave of the pandemic. Interviews with management accountants focused on their interactions with clinicians to address their information needs; whether and how they managed to modify the AISs; the possible

contrasting information requests from clinicians for decision-making and the regional government for accountability purposes; and controllers' perceptions concerning the extent to what clinicians used the accounting information provided. Data were inductively coded (Elo and Kyngäs, 2007) in order to identify major themes leading the subsequent discussion of results.

Results. Clinicians resulted not to rely on AISs for decision-making during the pandemic, due to the need to make urgent choices and the limited information pool available, especially during the first wave. Later, the easing of the pressure linked to the management of the Covid-19 emergency and a greater awareness gained in the treatment of Covid-19 patients has highlighted the need for clinicians to justify their decision-making also from the point of view of resource consumption. Therefore, after the second wave of the pandemic clinicians started to ask for accounting data to analyze how the costs related to the intensive care unit have varied during the two waves of the pandemic period. In this regard, clinicians' information needs were mainly oriented to analyze the cost of the intensive care unit and in particular to estimate the average daily cost of treatment per Covid-19 patient. AISs could partially provide these costs data, urging for its major modification to allow the collection of data for the above-cited estimation. In this sense, clinicians' requests find partial satisfaction, due to the role AISs had been originally attributed from controllers. Specifically, from controllers' side, AISs were mainly exploited to fulfill the HCOs' accountability needs to the Region, rather than being employed for internal decision-making. Interaction between clinicians and controllers led to the implementation of ad hoc AISs, specifically realized to address such information need, rather than in the establishment of a structured process able to continuously support intensive care unit activity in the light of possible worsening of the pandemic spread (as it happened in the period between the end of 2020 and the beginning of 2021). Investigating the role AISs played during the pandemic could help drawing some future recommendation about the possibility to align accounting practices during health emergency such as the one of the Covid-19 pandemic. One of the major criticalities emerging from the interviews was related to the crisis management: indeed, the crisis has prioritized activities related to Covid-19 patients' treatment and the resolution of critical issues related to the acquisition of protection devices, overshadowing the use of accounting information for internal decision-making. The study also provide indication of whether and how the modification of AISs could be routinized to allow the constant monitoring of the costs of patients in health-related emergencies and enhance clinicians' decision-making.

Title

Investigating suitability of real-world data for cost and outcome analysis of medical devices: the case of administrative data in Lombardy Region

Authors

B. Pongiglione, A. Torbica

Abstract

Rationale and objectives. The proliferation of real-world data is providing researchers with new opportunities to study clinical and economic outcomes of innovative health technologies. Randomized controlled clinical trials, although universally recognized as the most robust "evidence generators", are insufficient for guiding the decision-making process in that they are intrinsically unsuited to capture the impact of treatments in routine clinical practice. Complexity of treatment regimens, demographic and clinical heterogeneity of patients receiving treatments, and the long-time frame of many treatments, explain the gap between the evidence generated in the controlled, but artificial, setting of RCTs and its actual impact in the real world. It is well known that medical interventions perform differently in experimental clinical trials versus real-world clinical practice, reflecting a phenomenon known as the "efficacy-effectiveness gap." This gap is particularly evident for medical devices, due to their intrinsic characteristics according to which their outcomes (both clinical and economic) are largely influenced by the context in which they are applied. However, while RWD studies have great potential to study once-unattainable questions, they also pose numerous methodological challenges in assessing causality. Typical concerns with RWD use include confounding biases and limitations from measurement errors, selection bias, time-related bias, reverse causality, etc.

We use the administrative databases of the Lombardy region (largest and most affluent region in Italy) to assess the feasibility and appropriateness of such data source for cost and outcome analysis of medical devices (MDs). We focus on one specific case (drug eluting stents (DES)vs. bare metal stents (BMS)) to reach this objective.

Data source and sample identification. We gained access to hospital discharge records ('Scheda di dimissione ospedaliera' (SDO)) which includes a special appendix for the endoprostheses implanted during the admission, called "SDO4", ambulatory records, pharmaceutical flow and vital statistics. Reimbursement to healthcare providers is based in the DRG ICD9-CM (Diagnosis Related Groups—International Classification of Diseases, 9th Revision, Clinical Modification) version for hospitalizations, and on a specific list of services and drugs for outpatient care.

Our sample consisted of patients admitted to hospital for the first time between 2013 and 2019 for a stent implantation (i.e., we considered as baseline the first admission since 2013, either it was the first hospital admission at all or since observation time). Based on the patient anonymized ID, we merged SDO4 data to the corresponding hospital discharge record of the same admission and retrieve patient's demographic and clinical characteristics.

The three clinical endpoints of interest for our study were time-to-event in nature, and consisted in all-cause and cardiac mortality within 30 days, 1 year, 2 and 5 years after discharge in the index procedure and the occurrence of myocardial infarction (MI) during the same time frame. Costs were estimated from National Health System's perspective and were reported in Euro. The resource utilization included baseline costs, consisting in cost of first hospital admission and cost of implanted device(s); follow-up costs up to 5 years included heart disease-related health care costs (inpatient and outpatient admissions and costs of coronary stents implanted subsequently), general and heart disease-related medications since first admission.

Data analysis. We first used Cox proportional hazards regression models to provide adjusted hazard ratios (HRs) with 95% confidence intervals (CIs) of the indicator variable denoting stent treatment status for all-cause mortality and MI, adjusting for a set of baseline covariates. Multivariable regression (Cox Model). To estimate marginal effects we used different propensity score methods (i.e. propensity score matching; stratification on the propensity score; inverse probability of treatment weighting (IPTW) using the propensity score).

Results. Between 2013 and 2019, the endoprosthesis flow (SDO4) included 257,907 coronary stents implanted on 113,912 unique patients. For all health outcomes and follow up times, and across all methods, patients receiving DES presented lower risk of all-cause mortality, cardiovascular mortality and myocardial infarction. For all-cause mortality, the DES patient advantage over BMS patients declined over time, but remaining significant even 5 years after the baseline implantation. For myocardial infarction endpoint, the lower hazard of DES patients stayed quite stable, with the lower HR observed in the medium term (1 and 2 years follow-up). Overall, hazard ratios estimated from PSM 1:2 were the closest to one and those obtained from IPTW the closest to zero. . The DES group resulted to have lower cumulative total costs, according to all methods (as lower as 3,435 Euro according to AS, or 2,879 based on CC method).

Conclusions. To our knowledge this is the first study to explore the feasibility of using a large administrative dataset to conduct cost and outcome analysis of medical devices, more specifically DES in comparison to its less innovative technology BMS. Our result confirm the consolidated evidence of the benefits, in terms of health outcomes of DES patients compared to BMS patients in all endpoints and follow-up times, across all methods applied. The strong consistency of results across methods suggests internal validity of the study. Routinely collected, administrative data yield great potential to perform effectiveness and cost-effectiveness analysis of medical devices provided certain conditions are met.

Title

L’impatto dell’emergenza da COVID-19 sull’attività ospedaliera della AOU Città della Salute e della Scienza di Torino.

Authors

P. Sciattella, E. Caiazza, D. Barilà, F. Mennini, F. Cattel

Abstract

Background. La gestione della pandemia di COVID-19 ha comportato la riorganizzazione delle strutture ospedaliere e dell’assistenza fornita ai pazienti: nelle fasi critiche dell’emergenza, ad esempio, alcuni ricoveri sono stati riprogrammati per garantire assistenza immediata ai pazienti affetti da COVID-19.Tali cambiamenti hanno creato un forte impatto sia dal punto di vista clinico, sia dal punto di vista economico, analizzabili in parte grazie a specifici indicatori legati al flusso dei ricoveri e ai costi ad esso associati.

Obiettivi. L’obiettivo del presente lavoro consiste nel valutare se e quanto l’emergenza da COVID-19 abbia impattato sull’attività ospedaliera dell’AOU Città della Salute e della Scienza, analizzando i ricoveri acuti mediante l’utilizzo del flusso della Scheda di Dimissione Ospedaliera (SDO).

Metodologia. I dati sono stati ricavati dal flusso SDO della AOU Città della Salute e della Scienza di Torino, relativo al periodo 2017-2020, nel quale sono riportate tutte le ospedalizzazioni in regime ordinario o diurno effettuate presso la struttura. Sono stati selezionati tutti i ricoveri acuti in regime ordinario, day hospital e day surgery, con data di dimissione compresa tra il 1 gennaio 2017 e il 31 dicembre 2020. La valorizzazione dei ricoveri è stata effettuata considerando le tariffe DRG per la remunerazione delle prestazioni di assistenza ospedaliera per acuti regionali. L’impatto dell’emergenza da COVID-19 è stato valutato calcolando le variazioni percentuali del numero e del valore dei ricoveri osservati nel 2020 rispetto al 2019 e rispetto alla media del triennio 2017-2019. Le analisi sono state stratificate per regime di ricovero e MDC, al fine di evidenziare le aree terapeutiche maggiormente interessate dalla pandemia. Successivamente è stata effettuata un’analisi specifica dei DRG relativi all’MDC “malattie e disturbi dell’apparato respiratorio”, individuando quelli maggiormente ascrivibili alla Malattia da SARS-CoV-2.

Risultati. I ricoveri acuti nel 2020 sono stati 72.681, per un valore economico di €277,7 milioni. Rispetto al 2019 è stata osservata una riduzione dell’attività del 18% (16.000 ricoveri), corrispondente a una contrazione del valore economico di circa € 37 milioni (-11,8%). La variazione maggiore è stata osservata per i ricoveri in regime diurno (-38,9% per il day surgery e -20,6% per il day hospital) e per i DRG chirurgici (-24%). Il dato è confermato dall’analisi effettuata raffrontando i dati 2020 con la media del triennio precedente. Analizzando i valori correlati all’MDC 4 “Malattie e disturbi dell'apparato respiratorio”, si è potuta riscontrare una riduzione del numero di ricoveri (-5%), a fronte, però, di un incremento in termini di valore economico pari a circa € 1,7 milioni (+10,2%) rispetto al 2019. Dettagliando la valutazione per singolo DRG, ed estrapolando quelli di maggior interesse per la nostra analisi in relazione all’impatto dell’emergenza da COVID-19, si può notare come nel 2020, rispetto al 2019, siano triplicati il numero di ricoveri relativi ai DRG 079 e 080 “infezioni e infiammazioni respiratorie con e senza CC” (+ 269% DRG 079, + 387,8% DRG 080) e più che raddoppiati i ricoveri relativi al DRG 565 “Diagnosi relative all'apparato respiratorio con respirazione assistita ≥ 96 ore” (+ 180,5%). Le dimissioni relative a questi 3 DRG hanno generato un incremento in termini economici di circa €4,5 milioni rispetto al 2019 (+265,1%), in particolare: €2,5 milioni (+296,7%) il DRG 079, €0,8 milioni (+457,3%) il DRG 080 e €1,2 milioni (+174,6%) il DRG 565. Anche in questo caso i risultati vengono confermati confrontando i dati 2020 con quelli del triennio 2017-2019.

Title

Piano Operativo Regionale (POR) Recupero Liste di Attesa Ricoveri Chirurgici: premesse, pianificazione, risultati.

Authors

A. Da Ros

Abstract

Background. A seguito della sospensione di tutte le attività programmate (ricovero, screening e prestazioni ambulatoriali) nella seconda e terza ondata pandemica (ottobre 2020-aprile 2021) e alla luce del nuovo quadro normativo, la Regione Veneto, già recepito il DL 104 di 08.2020 con DGR 1329 del 09.2020, rivede il POR fissando alcuni criteri generali sulla base dei quali ciascuna ULSS deve elaborare le proposte per le prestazioni non erogate (DGR 759 del 15.06.2021). Le azioni di suddetta proposta sono finalizzate al raggiungimento dei volumi di produzione dell'anno 2019, nonché al recupero del sospeso e dell'incremento della domanda, mantenendo i vincoli per il controllo della diffusione del CoViD-19 (distanziamento e disinfezione) e della ricollocazione del personale del comparto sui centri tampone e sui centri vaccinali provinciali (CVP). Per quantificare l'attività da recuperare, sia come produttività rispetto al 2019, sia in termini di recupero dei ricoveri sospesi, sono stati analizzati i dati forniti dalla Regione Veneto e l'elaborazione degli stessi da parte del C. di G.; per l'intera ULSS 9 Scaligera , al 30.04.2021, sono 3126 ricoveri chirurgici da recuperare, di cui 1963 RO e 1163 DS (DGR 1061 del 03.08.2021). Nel dettaglio, i ricoveri chirurgici da recuperare a tale data presso l' Ospedale di Legnago sono 793, di cui 421 RO e 372 DS.

Obiettivi. Sono sostanzialmente 2: 1. il recupero pressoché totale, entro dicembre 2021, del volume di attività erogato dei ricoveri chirurgici programmati (non urgenti) non solo in regime di Ricovero Ordinario e Diurno, ma anche Ambulatoriale a pacchetto, rispetto al 2019 e di soddisfacimento dell'incremento della domanda; 2. mantenere la fidelizzazione dell'utenza, sia territoriale che extra territoriale.

Metodologia. Il piano operativo propone criteri generali: riorganizzazione e ottimizzazione delle risorse interne a favore dell'attività di recupero delle prestazioni di ricovero; processi di efficientamento nella gestione delle liste di attesa e dell'ottimizzazione dell'informatizzazione delle stesse; un ampliamento dell'offerta erogativa e, se necessario, una stipula di accordi interaziendali con altre Aziende Sanitarie, sia pubbliche che private, in grado di far fronte ad un aumento della richiesta. Declina inoltre anche criteri specifici per i ricoveri ospedalieri: recupero di prestazioni non erogate tenendo conto della data di inserimento più lontana nel tempo e della classe di priorità, quest'ultima rivedibile e quindi riattribuibile da parte dello specialista; efficientamento delle sale operatorie. In ottemperanza alla normativa regionale, la Direzione Strategica, con il C. di G., le DMO e la DPS ha formulato una revisione funzionale del piano operativo, che per i ricoveri chirurgici necessariamente è stato declinato sui 3 presidi ospedalieri costituenti l'ULSS 9. Per l'ospedale di Legnago, la DMO con il Coordinatore del Gruppo operatorio, con la D.P.S. e con il dipartimento chirurgico ha elaborato un programma attuativo per il recupero della produttività del 2019 che comprende ed enfatizza tutti i criteri sopracitati. In particolare: a. miglioramento della appropriatezza erogativa setting assistenziale: settimanalmente la DMO analizza le liste operatorie e ne valuta l'appropriatezza erogativa; inoltre la programmazione delle sedute operatorie settimanali tiene conto della distribuzione e dei tassi di occupazione dei PL ordinari e di DS; b. efficientamento del processo di revisione delle liste di attesa (pulizia delle liste): attività affidata dapprima al servizio amministrativo di Day Care, e poi conclusa dalla Coordinatrice della DMO con i singoli professionisti; c. efficientamento produttività di sala operatoria : analisi dei tempi di sala operatoria, con ottimizzazione dei quelli non a valore aggiunto (inizio anticipato, attivazione della sala risveglio); d. ampliamento dell'offerta erogativa: grazie all' azione di recruitment tra il personale del comparto del gruppo operatorio è stato possibile implementare la programmazione operatoria mensile di 15 sedute pomeridiane (prestazioni aggiuntive - art 26 del D.L. 73/2021) oltre a circa 30 sedute antimeridiane, in orario istituzionale (reintegro di personale assegnato a reparti COVID o nuovi inserimenti). Sono stati coinvolti anche infermieri con precedenti hard skills chirurgiche, assegnati a reparti differenti; e. riapertura del DS (chiuso in corso di pandemia) con 10 PL e 4 poltrone aperto dalle 7 alle 19, dal lunedì a venerdì; f. scheda di budget come leva organizzativa: inserimento nelle schede di budget delle UOC chirurgiche un obiettivo di recupero della produttività del 2019.

Risultati. Da settembre a dicembre 2021 è stato possibile implementare di circa 180 sedute operatorie, antimeridiane in regime istituzionale e pomeridiane in prestazioni aggiuntive. Prevedendo in media circa 5 casi operatori per seduta, si stimano 900 casi operabili. Tale cifra eccede di un centinaio i ricoveri chirurgici da recuperare rispetto al 2019 e soddisfa in parte anche l’incremento della domanda 2020-2021. Il recupero riguarda interventi in RO, DS e Ambulatoriale a pacchetto. Lo sforzo per il recupero della produttività del 2019 ci ha permesso di garantire un alto grado di fidelizzazione dell’utente all’ Ospedale di Legnago per la patologia chirurgica non neoplastica.

Title

Well-being in Europe over the course of the COVID-19 pandemic and the role of government stringency

Authors

S. Himmler, J. van Exel, W. Brouwer

Abstract

Background. The COVID-19 pandemic has challenged healthcare systems and societies worldwide. With the introduction of vaccines and increasing vaccination rates, the impact of COVID-19 on population health is now increasingly mitigated. However, less is known about the impact of the pandemic on the wellbeing of populations. For a considerable period, governments have implemented intrusive measures to contain the pandemic, with substantial social and economic consequences. One of the concerns in this context was that the health risks from the pandemic and the effects of the measures on well-being were unevenly distributed among subgroups in the population, for example between older and younger generations or between vulnerable and healthy people. The magnitude of these differences is potentially associated with the stringency of the measures. Obtaining a clearer picture on the well-being trajectories and the impact of the stringency of governmental measures is important for informing government responses to both the ongoing pandemic and potential future health crises.

Objectives. The objective of this study was two-fold. First, to shed light on the development of well-being across the pandemic and relevant subgroups within countries in Europe. Second, attempt to estimate what role the stringency of government measures played for well-being.

Methodology. The analysis is based on data from the ECOS survey, a multi-country survey designed for examining COVID-related societal issues. Data from the first seven waves of ECOS (April 2020 to July 2021) is used. Each wave included representative samples of around 1,000 citizens from Denmark, France, Germany, Italy, Portugal, the Netherlands, and the UK. As measure for well-being, the survey included the ICEpop CAPability measure for Adults (ICECAP-A), an instrument measuring capability well-being across five well-being dimensions. Country-level data on COVID cases and deaths, and government stringency, using the Oxford Covid-19 Government Response Tracker (OxCGRT), was added to the ECOS data. The analysis sample consisted of 49,767 observations with 39,027 observations stemming from individuals, who participated at least twice. In a first step, average scores and mean score differences compared to the first wave in the five wellbeing dimensions of the ICECAP-A (attachment, stability, achievement, enjoyment, and autonomy) were calculated for all countries and waves and graphically analysed. This was repeated for relevant subgroups. In a second step, the ICECAP-A dimension scores and the overall ICECAP-A score were regressed on the government stringency index using the panel sample. Pooled OLS models were calculated, including country and wave fixed effects, and controlling for COVID deaths at time of survey participation.

Main results. Mean ICECAP-A dimension scores (ranging from 1, best, to 4, worst) showed large variation in absolute levels across countries and waves in the security, achievement, and enjoyment dimensions (security: 1.83 (DK) – 2.31 (IT), achievement: 1.98 (DK) – 2.28 (PT), enjoyment: 1.77 (DK) – 2.27 (GER)). Most striking were the comparatively very low levels in the security dimension in Italy and Portugal (2.31 and 2.26 compared to 1.85 in NL or 1.83 in DK) across the pandemic and the low level in the enjoyment dimension in Germany, hitting bottom in the spring of 2021 (2.45). Changes in well-being compared to the first wave in April 2020 were most pronounced in the security and the enjoyment dimension, with the former generally improving (up to 0.22 in Italy) and the latter generally worsening (up to -0.25 in France). Well-being generally improved among individuals aged 65 and above, while well-being decreased among individuals aged 18 to 34, with largest decreases observed in the enjoyment dimension. More affluent individuals did generally not experience large changes, while the well-being of less affluent individuals decreased in all dimensions except the security dimension. Results from the regression analysis on the full panel sample indicate that government stringency negatively impacted the enjoyment dimension. A 10-point change in government stringency (ranging from 0 to 100) was estimated to affect the enjoyment dimension score by 0.016 points. Regressions on the other dimensions and the composite ICECAP-A score, combining all dimensions, lead to smaller and insignificant coefficients of the stringency index variable. These small estimates are likely a result of the diverging patterns of the subdimensions and the stringency index across all waves and countries. Therefore, this analysis warrants further exploration and refinement, but eventually, estimates could be used to quantify the well-being impact of the stringency of government measures to contain the pandemic in Europe. Furthermore, as monetary values for the ICECAP-A exist, the well-being impact could be translated into monetary equivalents, which in turn could be used in a broad cost-benefit analysis of governmental measures against COVID-19 or other future health crises.

Title

Risposta all'emergenza covid-19, percezione del rischio e comunicazione - L'indice "ks" per la preventiva valutazione delle differenze nella percezione di rischio a livello territoriale

Authors

G. Signorino

Abstract

Background. L'esperienza della pandemia da Covid-19 ha mostrato che l'efficacia delle strategie comportamentali e terapeutiche per la prevenzione del contagio e il contrasto della sua diffusione sono crucialmente legate alla percezione del rischio da parte delle popolazioni e che differenti gradi di percezione del rischio a livello territoriale portano a differenti comportamenti sociali fra regioni e territori. La comunicazione è un aspetto cruciale nelle politiche di prevenzione, contrasto e terapia, ma il risultato delle strategie di comunicazione (nei loro contenuti, come nel modello implementato) dipende dalla percezione del rischio delle popolazioni cui le stesse sono dirette.

La relazione fra percezione del rischio e comunicazione ai fini della più adeguata risposta individuale e sociale in situazioni di incertezza e di pericolo è ampiamente riconosciuta e studiata in letteratura (Fishoff et al.; 1993; Fishoff, 1995; Rohrmann, 2008), con particolare riferimento al rischio sanitario e alla salute pubblica (Johnson & Slovic, 1995; Aakko, 2004, *Risk communication, risk perception, and public health*, WMJ : Official Publication of the State Medical Society of Wisconsin, 01 Jan 2004, 103(1):25-27; Renner et al., 2008).

Oltre alle basi biologiche per la percezione soggettiva del rischio (Schmaelzle et al., 2017) sono state approfondite le sue determinanti socio-economiche con riferimento a varie tipologie di rischio: dall'inquinamento atmosferico (Cori et al., 2020.a per una rassegna sistematica), o a rischi specifici, (es.: tifoni (Shen, 2020), sicurezza alimentare (Dosman et al., 2020)).

Fin dall'avvio dell'epidemia del Coronavirus Sars_Cov2, e ancor prima della dichiarazione di pandemia, la comunità scientifica internazionale ha riconosciuto la centralità del coinvolgimento delle popolazioni ai fini di una adeguata e corretta risposta comportamentale ai fini del contenimento del contagio e della limitazione delle vittime. Ancora nel gennaio 2020, l'Organizzazione Mondiale della Sanità richiamava la necessità di facilitare risposte collaborative da parte delle popolazioni, affermando: "*One of the major lessons learned during public health events of the 21st Century – including outbreaks of severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), influenza A(H1N1) and Ebola – is that RCCE is integral to the success of responses to health emergencies*" (World Health Organization, *Risk communication and community engagement (RCCE) readiness and response to the 2019 novel coronavirus (2019-nCoV) Interim guidance*, 26 January 2020). Sempre nel caso dell'infezione da Sars-Cov2 una strategia di comunicazione opportunamente definita in funzione della percezione del rischio è considerata centrale anche nelle strategie del settore privato per mitigare l'impatto negativo della pandemia su alcuni settori di attività economica particolarmente sensibili, come il turismo sanitario (Cheng et al., 2021, *The effects of community safety support on COVID-19 event strength perception, risk perception, and health tourism intention: The moderating role of risk communication*, Manage Decis. Econ. 2021; 1-14). Molti studi hanno approfondito il rapporto fra percezione del rischio, comunicazione e risposta sociale nella pandemia di COVID-19 (tra gli altri: Cori et al., 2020.b).

Obiettivi. Differenti contesti regionali possono generare diversi livelli e modalità sociale di percezione del rischio, col risultato che ai fini dell'efficacia delle misure di prevenzione occorre opportunamente differenziare i piani di comunicazione a livello territoriale. Sarebbe dunque necessario conoscere le differenti caratteristiche della percezione del rischio nei differenti ambiti per calibrare strategie di comunicazione efficientemente definite in base al contesto locale. Le indagini sulla percezione del rischio sono tuttavia costose in termini sia economici che di tempo, mentre l'efficacia della comunicazione ha necessità di tempestività.

Secondo quanto evidenziato dalla letteratura citata nel paragrafo di background è possibile individuare alcune determinanti socio-economiche della percezione del rischio, sia in generale che in riferimento ad alcuni rischi specifici. È dunque possibile trattare queste determinanti quali "predittori" della percezione del rischio Obiettivo di questo paper è presentare una metodologia di stima preventiva della percezione del rischio basata sull'analisi dei suoi "predittori" che consenta di valutarne le differenze a livello territoriale, con lo scopo di individuare le più opportune modalità di comunicazione.

Metodologia. Partendo dall'analisi visuale multivariata del "Diagramma di Kiviat" (Kolence, 1973; Kolence & Kiviat, 1973) verrà introdotto un indice sintetico basato sul calcolo dell'area del poligono irregolare ottenuto dalla rappresentazione grafica (Pulejo e Signorino, 2020; Signorino, 2021). I "predittori", infatti, sono variabili aggregate di facile reperimento presso le fonti statistiche ufficiali (genere, età, condizione lavorativa, presenza di figli in famiglia, ecc.); lavorando opportunamente sulle osservazioni reperibili in modo da renderle positivamente collegate alla percezione del rischio, l'area dei poligoni irregolari definita dal diagramma ne costituirà una proxy in grado di comparare il grado di percezione del rischio nei differenti territori studiati, consentendo così di differenziare piani e strategie di comunicazione opportunamente calibrandoli alle esigenze dei singoli territori. Nella rappresentazione grafica del diagramma, la molteplicità di n "predittori" rappresentati su più assi partenti dalla medesima origine dà luogo a un poligono irregolare con n-1 lati eterni. Il poligono è suddiviso in n-1 triangoli e di ciascun triangolo sono noti due lati (i valori di coordinata dei predittori rappresentati sui due relativi assi) e l'apertura dell'angolo che li separa; sono invece incogniti l'altezza e la lunghezza del terzo lato (ossia del lati esterni, che definiscono gli n-1 lati perimetrali del poligono). Applicando il teorema di Carnot (o la "regola del coseno") e la formula di Erone è possibile calcolare l'area degli n-1 triangoli e, sommando queste aree, la superficie complessiva del poligono irregolare, che costituirà l'indice "KS" per i confronti interterritoriali. Ogni contesto, in funzione del valore dei "descrittori", darà luogo a una stima sintetica e preventiva della locale percezione del rischio.

Risultati. Dopo aver introdotto il tema della relazione fra percezione del rischio, comunicazione ed efficacia delle strategie di prevenzione e aver presentato la costruzione dell'indice, ne proporrà un'applicazione alle regioni Italiane con lo scopo di apprezzare le differenze nella percezione del rischio di COVID-19.

Una opportuna e preventiva conoscenza di questa variabile avrebbe consentito di definire strategie di comunicazione maggiormente differenziate e adeguate ai diversi contesti territoriali, in modo da rendere più efficaci le politiche di mitigazione della diffusione del virus e da sostenere le misure prevenzione (sia comportamentali che farmacologiche) o una più rapida efficacia delle campagne vaccinali.

Title

Doctor managers managerial attitude scale- an updating process

Authors

F. Morandi, F. Di Vincenzo, A. Cicchetti

Abstract

Background. In the accountable care era organizational models and workforce skills have been profoundly changed. More specifically doctor-managers, who are physicians tasked with a managerial role (Kirkpatrick et al., 2017), have been enrolled into decisional positions, acting as a link between the operational and the strategic levels of hospitals (Llewellyn, 2001). They are asked to daily deal with both clinical and managerial tasks (Lega et al., 2013). In playing the double role, doctor managers frequently face difficulties (Kippist and Fitzgerald, 2009): lack of managerial skills and interest in managerial issues (Lee and Cosgrove, 2014), time pressures (Kirkpatrick et al., 2013). Empirical evidence suggests that despite professional competencies, technical knowledge and expertise play pivotal roles (Braithwaite and Westbrook, 2004; Fulop, 2012), individual traits such as the managerial attitude is an important driver in the transition of professionals into managerial positions (Vera and Hucke, 2009). Managerial attitude is a useful concept to explain why some doctor-managers are more effective at anticipating, interpreting and responding to challenging environments than others (Cicchetti, 2005). This is a multidimensional concept concerning a bundle of managerial traits such as autonomy, action-orientation, orientation to social interactions. The actual scenario imposes to enlarge the managerial attitude, including a wide number of concepts such as for example resilience, openness to experience, narcissism, since they are becoming very relevant. *Resilience*: In attempting to cope actively with the new challenges, doctor-managers have to make great efforts to balance between managing and withstanding the pressure, continuing to achieve the standard of excellence in patient care. From a behavioral perspective, they can perform the clinical and managerial tasks effectively by developing their resilience. *Openness to experience*: Openness to experience is among the most important Big Five personality characteristics that shapes employees' reaction to novel or changing events (Lepine et al., 2000). Openness to experience captures the general breadth, depth, originality, and complexity of an individual's mental and experiential life, and likely influences job performance and job satisfaction (Srivastava, 1999). Due to their strong intellectual curiosity, high openness to experience individuals are more receptive to change, are more prone to try new situations, and are more able to cope with new and unconventional experiences (Lepine et al., 2000). This is the reason why in a changing and challenging context, such as the healthcare, professionals enrolled into strategic positions, need to be equipped with the right amount of openness to experience (Caldwell and Liu, 2011; Judge, 1999). *Narcissism:* Generally, narcissism is strongly related with the achievement of high organizational successes (Heyssel, 1981). Literature provides several examples about the connection between narcissism and the achievement of challenging managerial tasks (Heyssel et al., 1984), internationalization decisions and earning behaviours (Braithwaite et al., 2004).

Aim of the paper. In order to update the managerial attitude assessment tool, the present work proposes a number of steps aimed at individuate the new concepts composing the managerial attitude trait by taking into consideration the actual healthcare context and the challenges to which healthcare managers have to deal with. Then we will propose a methodological path which will allow to build and test an innovative managerial attitude scale.

Methods. Our process aimed at updating the managerial attitude scale is composed of different steps: 3 1) Starting from the Cicchetti's (2005) work, who developed a 16 items scale concerning the bundle of managerial traits desirable for unit heads, we will perform an extensive literature review useful to individuate other dimensions to be included into the scale; 2) The new items, together with the old

ones, will be submitted to the assessment of a Delphi panel composed by health management experts, as well as health managers, who will be asked to modify / integrate / validate the tool. The process will end once consensus has been reached among the participants. 3) The new scale will be validated on a sample of doctors managers in order to evaluate the validity, the consistency and the stability of the scale.

Results. With the aim to update the doctor managers managerial attitude scale, our work proposes a number of steps useful to adjourn the tool employed to assess this important behavioral dimension. Our results will be useful to help healthcare managers to evaluate their managerial attitude which, in the accountable care era is important to understand how this doctor managers can deal with new and challenging tasks.

Title

Configurazione dell'offerta ospedaliera nazionale: dinamiche evolutive delle principali specialità medico-chirurgiche nel 2010-2020 e prospettive future alla luce del Covid-19

Authors

C. Buongiorno Sottoriva, A. Furnari, A. Ricci

Abstract

Background. La diminuzione delle attività ospedaliere del SSN è un fenomeno consolidato da oltre vent'anni. Allo stesso tempo, un'analisi più attenta mostra come il sistema non sia un monolite: esistono tendenze ben più eterogenee di singole discipline mediche o dei più rilevanti gruppi di prestazioni all'interno delle stesse (Bobini et al. 2019, p. 541; Del Vecchio et al. 20192). Il dibattito di politica sanitaria tende però a tralasciare le peculiarità delle singole discipline ospedaliere, offrendo soluzioni indifferenziate. L'attenzione alle singole specialità ospedaliere è ulteriormente diminuita durante la pandemia Covid-19. Tuttavia, tale vuoto conoscitivo andrebbe colmato rapidamente. Grazie al PNRR, tra 2021 e 2026 la sanità italiana riceverà 15,6 miliardi di euro. Per compiere le scelte di investimento infrastrutturale, di acquisizione di beni e tecnologie, di rafforzamento delle competenze professionali, di integrazione ospedale-territorio, appare fondamentale approfondire il posizionamento produttivo del SSN.

Obiettivi. Il contributo mira a ricostruire e descrivere l'evoluzione dell'offerta ospedaliera, con particolare attenzione alle dinamiche delle principali specialità medico-chirurgiche, analizzando due periodi nettamente distinti: il periodo pre-pandemico (2010-2019) e quello pandemico (2020).Con riferimento al primo, il lavoro intende ricostruirei trend di consistenza, concentrazione, saturazione e case mix. Con riferimento al secondo, l'obiettivo è ricostruire gli interventi regionali emergenziali di riorganizzazione, segnalare eventuali discontinuità e identificare le prospettive future.

Metodologia. Per quanto riguarda il periodo pre-pandemico, lo studio ha adottato un approccio quantitativo di statistica descrittiva, rielaborando i dati di capacità erogativa (posti letto –PL)e attività messi a disposizione dal Ministero della Salute. L'analisi, dopo un inquadramento generale, si è focalizzata sulle prime 10 discipline per numero di PL e sui primi 10 DRG per volume di erogazione. Per indagare il periodo pandemico e le prospettive future, sono stati condotti tre approfondimenti regionali: Lazio, Veneto e Lombardia. I casi sono stati approfonditi attraverso la raccolta della principale normativa riguardante la riorganizzazione della rete di offerta ospedaliera. L'analisi desk è stata seguita da quattro interviste semi-strutturate a key opinion leader con prolungata esperienza al vertice nella programmazione ospedaliera regionale.

Principali risultati. Le dinamiche di offerta 2010-19 evidenziano la crescita dimensionale degli stabilimenti rimasti attivi e la specializzazione dei piccoli ospedali, soprattutto privati, verso un numero minore di discipline. Infine, prosegue la de-ospedalizzazione di molte patologie a presa in carico territoriale. Alla vigilia della pandemia, però, emergevano alcune criticità: l'elevata saturazione dei reparti delle principali specialità mediche; l'utilizzo sub-ottimale dei reparti delle principali discipline chirurgiche; la ridotta dimensione media dei reparti, soprattutto con riferimento alle chirurgie specialistiche; la difficoltà nel diminuire le unità operative, soprattutto chirurgiche, in ospedali rimasti attivi; i rilevanti aumenti (oltre il 30%) dei volumi di alcune prestazioni, come le problematiche pneumologiche, la protesica maggiore, le setticemie. L'analisi dei dati 2015-19 e gli approfondimenti regionali indicano che alcune risposte erano state avviate: un rallentamento della diminuzione di posti letto di Medicina Generale e un'accelerazione della riduzione dei PL di chirurgia generale; la concentrazione dei posti letto diurni ancora attivi nel sistema in reparti ad hoc, e in generale, la diffusione di esperienze di one day surgery e week surgery; lo spostamento sul territorio dei pazienti bed-blockers con problematiche prevalentemente sub-acute indotte dalla cronicità, geriatriche e riabilitative. Il Covid-19 ha talvolta interrotto, in altri casi accelerato queste risposte. La tendenza a ridurre l'offerta chirurgica a favore di quella medica si è accentuata in maniera netta ma ovviamente scevra da qualsiasi programmazione di medio periodo. È maturata ulteriormente la consapevolezza di dover filtrare l'accesso all'ospedale. Il modello Hub & Spoke è stato rafforzato con l'individuazione degli ospedali nodi delle reti tempo-dipendenti e dedicati al Covid. Le tendenze alla multidisciplinarietà, integrazione multi-professionale e alle logiche per intensità di cura si sono rafforzate. In alcuni contesti, come quello laziale e lombardo, la porzione del mondo privato accreditato che ha partecipato attivamente all'emergenza Covid si è integrato maggiormente nella rete regionale.

Title

Impatto e costo efficacia delle strategie di testing di massa per il Covid 19: l’esperienza della ASL dell’Alto Adige

Authors

M. Cavazza, M. Sartirana, Y. Wang

Abstract

Background. Per fronteggiare l’epidemia di Covid 19 vi sono diverse strategie di testing possibili: tra questi il test rapido antigenico è stato adottato per lo screening di elevati volumi di popolazione, inizialmente in scuole, aeroporti, ecc. e successivamente a livello regionale o nazionale. Di fatto numerosi paesi, a partire dall’autunno 2020, hanno adottato strategie di testing di massa, con risultati molto positivi, come ad esempio nel caso della Slovacchia[1] o apparentemente irrilevanti, come nel caso dell’Austria. Negli ultimi mesi sono stati pubblicati vari studi che hanno adottato modelli di valutazione della costo-efficacia di diverse strategie sia di testing sia di intervento ad oggi disponibili. Ad esempio, nella ricerca “Cost-effectiveness of public health strategies for Covid-19 epidemic control in South Africa: a microsimulation modelling study” vengono messe a confronto diverse combinazioni di interventi di salute pubblica come la somministrazione dei tamponi, l’isolamento preventivo e il tracciamento dei contagi, implementando un modello di microsimulazione per sondare la costo efficacia delle diverse strategie. Paltiel et al. hanno, invece, cercato di individuare la frequenza più costo-efficace nella somministrazione del tampone per il Covid-19 per garantire il ritorno sicuro degli studenti nei campus universitari statunitensi, attraverso un modello epidemico compartimentale. I risultati emersi evidenziano come uno screening ripetuto effettuato con un test rapido, economico e anche poco sensibile (>70%), possa contribuire significativamente, insieme a interventi comportamentali, a mantenere sotto controllo il numero di contagi da Covid-19 e permettere un ritorno sicuro degli studenti al campus. Il tema è tuttavia oggetto di ampio dibattito, e fattori di contesto (es Rt) e caratteristiche specifiche della strategia di testing e della sua implementazione (costi del test, tasso di adesione della popolazione, frequenza del retesting, ecc.) possono sostanzialmente influenzare la costo-efficacia di tali iniziative.

Obiettivi. L’articolo intende:

- approfondire l’attuale quadro nazionale e internazionale in termini di strategie di screening adottate per prevenire la diffusione dei contagi da Covid-19, attraverso l’analisi della letteratura pubblicata e grigia disponibile;
- identificare il modello di analisi più idoneo per una valutazione di costo efficacia della strategia di test di massa implementata nel novembre 2020 dall’Azienda Sanitaria dell’Alto Adige;
- effettuare un’analisi degli impatti sul sistema sanitario locale e una valutazione della costo-efficacia di tale iniziativa, anche al fine di poter orientare le strategie di testing future in termini di tipologia di test da adottare, frequenza, estensione, e concrete modalità operative.

Metodologia. Il lavoro fa riferimento alla metodologia adottata da Paltiel *et al*. in un recente contributo del 2021[5] dove propone un modello compartimentale epidemiologico, in genere usato per studiare la diffusione delle infezioni virali, per stimare la trasmissione del COVID con il relativo impatto clinico e il conseguente consumo di risorse nei due possibili scenari con e senza test antigenico.

Per applicare questo modello, abbiamo avuto accesso alle simulazioni di diffusione del COVID nei due scenari, messi a punto dal sistema di monitoraggio COVID Alto – Adige gestito dall’EURAC Research Center, con la relativa stima dell’impatto sulla domanda di ricoveri. Abbiamo, quindi, raccolto le informazioni presso l’Azienda Sanitaria dell’Alto Adige relative sia ai ricoveri per COVID avvenuti nel trimestre ottobre – dicembre 2020 sia al costo medio di una giornata di degenza in terapia intensiva, subintensiva e nei reparti con aree dedicate ai pazienti COVID. Infine, abbiamo utilizzato un approccio

Activity Based Costing (ABC) per rilevare i costi del test di massa organizzato nel novembre 2020 dalla provincia autonoma di Bolzano in collaborazione con l'Azienda Sanitaria dell'Alto Adige, la protezione civile e le amministrazioni comunali sul territorio.

L'insieme di queste informazioni ci consente sia di stimare l'impatto sul sistema sanitario locale dell'iniziativa del test di massa in termini di organizzativi e di impiego di risorse, sia di svolgere una valutazione di costo-efficacia, nella prospettiva dell'Azienda Sanitaria dell'Alto Adige, del test di massa rispetto al suo mancato utilizzo.

Principali risultati. Il lavoro è ancora in corso e verrà completato nel mese di ottobre 2021. Sta venendo ultimata la raccolta e l'elaborazione dei dati relativi - da un lato - ai costi dello screening di massa, e - dall'altro – alla stima del numero di ospedalizzazioni evitate grazie al test di massa e alla loro valorizzazione economica.

Title

Dealing with pluralism: managerial work of CEOs in Italian public healthcare organizations

Authors

F. Lega, A. Rotolo, M. Sartirana

Abstract

Background. Healthcare organizations are extremely complex, and the work of their CEOs is particularly demanding, especially in the public sector. However, we know little about how healthcare executives' managerial work unfolds.

Objectives. Drawing from scholarship on pluralistic organizations and managerial work, we answer the questions: what is the content of managerial work of executives in public healthcare? How do CEOs deal with pressures from internal and external stakeholders while maintaining a strategic agenda?

Methodology. We adopted a mixed method with a survey to measure CEO behaviors, coding CEOs time for four weeks; a questionnaire to understand the strategic dimensions of interactions; interviews of senior CEOs.

Main results. CEOs in Italian public healthcare devote most of their time to interactions, by and large responding to pressures by internal stakeholders. Although half of this time is perceived as occupied in answering operational requests, this is necessary to nurture relations, create networks and develop alliances and consensus, which are functional in achieving CEOs' strategic agenda.

CEOs in public healthcare must deal with enormous contextual pressures and cannot manage *the* complexity but are called to manage *within* the complexity, fostering involvement in decision making, building networks, and establishing alliances. Amidst ambiguity and fragmentation, executives need to find solutions to perform their managerial work without being entrapped by stakeholders' pressures, thanks to effective stakeholder management as well as delegation.

Title

Impact of a telehealth solution for COVID-19 positive patients managed by an Italian Hospital

Authors

R. Di Bidino, F. Lombardi, J. Simonetti, M.R. Andreani, L. Richeldi, G. Arcuri

Abstract

Background. The COVID-19 pandemic created an urgent need to implement Digital Health Solutions (DHS) for remote clinical management of infected patients who could be monitored at home. During the pandemic, the HB-HTA Unit of an Italian Teaching Hospital was involved in the process for the development and management of a telemonitoring solutions for COVID-19 patients. During the first wave, the Hospital supported the Region to monitor at home COVID-19 patients after the discharge from the hospital. While for the second wave, the Hospital adopted a more proactive approach with a partnership with industry.

The working group was composed also by the Pulmonology Unit and representatives of the industry. The final version of the hospital digital health solution for COVID-19 was launched in December 2020.

A digital application and a wireless oximeter are provided to patients. Oxygen saturation, heart rate and body temperature are daily monitored. For oxygen saturation and heart rate it is required to provide data both in the morning and in the afternoon. While for temperature is sufficient one measurement per day. Data could be collected from 6 am to 8 pm.

Clinicians personalized their remote assistance defining specific alerts for each patient and could plan video-consultation with the patient if necessary.

Patients are enrolled after a positive COVID-19 swab test or at discharge from the COVID-19 Unit. The patients´ individual risk is assessed by a pneumologist, who decide if conduct or not a remote monitoring. In this way, it’s possible to avoid hospitalization or plan an early discharge.

At August 2021 an analysis on collected data was performed.

Objectives. To aim of the analysis is to evaluate the clinical and economic impact of the COVID-19 DHS. To cover all involved aspects, primary endpoints are: usability and adherence to the remote monitoring, duration of the remote monitoring, and avoided hospital costs.

Methodology. Data analysis is based on data collected by the COVID-19 DHS and in hospital records. Some patients were hospitalized given clinical data collected remotely. Patients are followed till the end of the monitoring period and/or the end of the following hospitalization.

Usability and adherence are evaluated in terms of days with missing data and duplicate measurement (>1 in the morning or afternoon) for each clinical parameter (saturation, heart rate, temperature).

Estimate of avoided hospital costs is based on the avoided days of hospitalization and mean duration and cost of a COVID-19 hospital stay.

Main results. At the end of August 2021, 107 patients (median age 55 years, 68 male) have been enrolled and followed remotely. Patients were monitored for 16 days (median, IQR 15-18 days, range 5-40 days). In March 2021 was reached the highest number of enrolled patients in a month (n=38).

In the first day of remote monitoring the median saturation rate was 96 (range 90-100), median heart rate was 80 (range 51 – 127) and median temperature was 36°C (range 35-38).

Heart rate was the parameter with the highest adherence (78 patients provided always both daily measurements). While > 65% of patients provided a duplicated measurement at least one for saturation or heart rate.

Analysis on avoided hospital costs in under way.

Title

Nursing Home Staff Experiences During the COVID-19 Pandemic

Authors

S. Barsanti, G. Colombini, V. Sommati

Abstract

Background. Nursing home employees have been greatly affected by the COVID-19 crisis. Many nursing homes were not prepared to deal with a health crisis of this magnitude, and the system was already under strain prior to the pandemic due to reduced staff, precarious contracts, lack of medical equipment, low recognition and low wages (Rada, 2020). Recent studies have shown that working in the COVID-19 pandemic is having a significant psychosocial impact on health professionals, especially those who work in more fragile contexts, with long working hours (Martínez-López et al.,2021), such as nursing homes (Sarabia-Cobo et al., 2021; Zhao et al., 2021). However, other studies have also pointed to the development of positive feelings amongst these workers because of coping with the crisis (Donoso 2020).

Objectives. This article analyses the experiences of professionals working in four nursing homes in the Trentino Alto Adige Region. The themes discussed during the focus group allow us to outline how the emergency was experienced, what changes can be maintained, what values were discovered and rediscovered in terms of organisational well-being and what possible stress factors were perceived. The implications of the current research are therefore central to new policies in the sector.

Methodology. For this work, a focus group with 6 nurses was organized and guided by the researchers, with a moderator and an assistant moderator. The focus group had the aim of investigating the experience of working during the Covid-19 emergency and giving the participants the possibility to compare their experiences. In particular, the focus group was structured to open a discussion on some topics that would allow the exploration of the experience related to the pandemic. The questions that served as an outline during the discussion were: 1) How did you feel as professionals and as a structure? 2) What were the major changes in terms of care and organisation? 3) Find a word that represents your experience during the emergency. Transcript-based analysis of the focus group has done by the researchers, coding the data and presenting emergent themes.

Main Results. Practitioners report that they experienced fatigue, helplessness, stress, anger, fear, constant alertness, and exhaustion, especially during the first phase of the pandemic crisis. After the end of the first phase of the pandemic, nurses experienced a condition of strong psychological fatigue, which caused insecurity and the continuous request for help and support, even in the simplest and most consolidated daily activities among both nurses and OSS. Parallel to this feeling of insecurity, professionals reacted by dedicating themselves to activities not explicitly foreseen by their role. Moreover, an element of stress and frustration for the participants was the excessive attention given by the mass media to infections and deaths in nursing homes, with a sort of stigmatization of these facilities. However, during the second phase, the preparedness of individuals and the collaboration at regional level with new partners who provided support, monitoring, counselling, and training for the nursing homes made people feel safer. In this context, organizational coordination was the tool that made it possible to overcome the uncertainty due to the pandemic.

Work organisation was characterised by the difficulty of organising shifts. The participants underlined on the one hand the general difficulties due to the shortage of personnel and on the other the availability of the operators for the reorganization and for the coverage of the shifts of absent or sick colleagues. However, the continuous dialogue between operators and coordinators was fundamental for making decisions for the management of the pandemic and for assistance to residents. For the participants, teamwork was the positive element that makes the difference in the emergency.

Finally, the analysis allowed identifying some organizational change, such as hand sanitation and greater attention to hygienic measures and a focus on privacy of residents that emerges as positive change or improvement to be maintained.

Title

Incorporating health equity in hospital performance measurement in LMICs: first results using microdata from two sub-Saharan countries

Authors

M. Giannoni, P. Belardi, I. Corazza, N. Borri, C. Seghieri, F. Manenti, M. Vainieri

Abstract

Aim. The objective is to incorporate health equity measurement in the Performance Evaluation System (PES) developed by MES (Scuola Sant'Anna –Pisa -Italy) and CUAMM (Doctors with Africa -Italy) in Ethiopia and Uganda since 2019in a simple way based on locally available hospital administrative data.

Background. Measuring equity is important for improving not only the health system performance but also hospital performance in healthcare delivery. However, it can be difficult to operationalize. The level of Urbanization is considered one of the socioeconomic factors that can generate inequalities in the use of healthcare, comparing, e.g., urban and rural areas. In LMICs access to health care is far lower in rural than in urban areas(Scheil Adlund, 2015). The gap is due to the lack of financial protection and professional health staff needed to deliver quality services, and urbanization levels translate into deep gaps in outcomes, such as maternal and child mortality (Scheil Adlund, 2015).Many efforts are undergoing in order to produce evidence at macro level, e.g. within the UN-SDGs (2021) as well as within several World Bank initiatives, such as the collection of indicators and statistics on global health and development. However, a main issue is to assess the size of the gap due to data scarcity. Particularly at the local level there is a lack of in-dept analyses aiming at estimating the gap. This work therefore aims at producing evidence on the rural/urban gap at local level, trying to operationalize a measurement system that allows equity evaluations within performance evaluation systems in LMICs as a bottom-up part of the broader picture defined by the UN-SDGs concept of health equity. This work aims at further developing the Performance Evaluation System (PES) developed by MES (Scuola Sant'Anna–Pisa -Italy) and CUAMM (Doctors with Africa -Italy) in Ethiopia, Uganda and Tanzania that among all indicators measured, contains also a set of indicators measuring population health status and utilization at the local level (hospital catchment area).The PES included more than 100 indicators for four hospitals and their respective health care districts, through the collection of clinical and administrative data both at hospital and district level (Belardi et al. 2020). Around40% of indicators monitored were used to assess the performance of the hospitals and districts, while the others help to have a snapshot of the health situation in these areas. The system requires some refinements among which, the need for considering the impact of contextual factors in comparing performance, such as the level of urbanization.

Methods and data. We first analyse socio-economic inequalities in the use of hospital care looking at Wolisso (Ethiopia) hospital catchment area, by using hospital records information on the level of urbanization of the patients accessing the hospital. A direct standardization procedure was applied for the estimation of a set of PES-CUAMM indicators in order to obtain age-sex standardized hospitalization rates for 2019.Based on the above considerations, urban and rural areas were compared by calculating crude and age-sex standardized indicators by urbanization levels. We analysed the Wolisso hospital records for which data were available by urbanization level, and estimated a first set of age-sex standardized indicators for 3 groups: urban/rural and total population. Local population data for the Wolisso area were obtained through a linkage procedure (by using region and zone codes) merging microdata from hospital records for 2019 with microdata made available from Statistics Ethiopia and World Bank ELSS Survey for 2018-19(Statistics Ethiopia and World Bank, 2020).

2The analysis is based on sex and 4 age classes (0-1, 2-5, 6-14, >=15) and the population data available from 2011 Ethiopia Census data provided by CUAMM. It is worth noting that this broad age categorization was due to the lack of data for the local Wolisso area population. As we had information on urbanization (rural vs urban) we could estimate the indicators by population groups and for each indicator we compare the rural with the urban rates as well with the overall total rates. We applied direct standardization by using Stata v.15 (2020).The reference population used for standardization is the Ethiopian population. Data were gathered by using Stata software (2020) from microdata provided the World Bank and Ethiopia Statistics survey on living conditions which were merged and analysed by taking into account the sampling distribution structure of the survey1.The same approach is applied to the other hospital for which CUAMM could provide data (Matany-Uganda).

Main results. In Wolisso (Ethiopia) the crude total hospitalization rate is six times lower in the rural than the urban area. The gap persists after taking into account the differences in the age and sex distribution between rural and urban areas. In the case of paediatric rates for the population aged <15 years old, rates are almost four times higher for patients living in urban than for rural areas. The age-sex standardization procedure produced higher rates particularly for the urban rate, with a persisting and higher gap between the two groups. Looking the paediatric rates for the population aged 0-1, comparing crude rates between the urban and the rural population groups there is a wide gap, with the urban showing a more than 4 times higher rate than the rural population). Indicators for heart failure hospitalization rates and for chronic diseases (diabetes, chronic liver diseases, hypertension) for the population aged>15 confirmed the gap favoring the population living in urban areas. For indicators based on the population sub-groups aged<1 or aged >15years old, the standardization did not produce significantly different results, also because due to data limitations, this ended up to be a sex standardization (there were no data for age subgroups within the age group 0-1 and within >15 years old group). Implications of the results for the PES system are discussed from a managerial point of view. In a second ongoing step, we are comparing the indicators obtained for Wolisso (Ethiopia) with those obtained for the Matany hospital, which is in a rural area of Uganda. To our knowledge, this is the first attempt to incorporate equity considerations in hospital performance evaluation system at the local level with a comparison between Sub-Saharan African countries. By applying direct standardization, we improved the comparability of indicators both within and between countries. For Ethiopia, we have been able to partially overcome the lack of updated data at urbanization level by using microdata from World Bank and Ethiopia Statistics survey data (2020). In this way, we found that estimation is suitable for hospitalization rates by urbanization level. Overall, an equity issue emerged: the gap in the general and pediatric hospitalization rates between urban and rural areas is wide and persisting if not increasing after standardization. The gap could reflect the supply characteristics of the hospital catchment area and also differences in the socioeconomic factors (income, education, healthcare financing coverage) characterizing individuals living in urban areas as compared to rural areas, which could not be controlled for in the present analysis due to data limitations. Ongoing work aims at partly overcoming these limitations by, e.g., collecting data on individuals' payments/levels of coverage for hospital care, other contextual factors etc., and by complementing the analysis with indicators measuring equity in health financing.

Title

Sostenibilità economica e appropriatezza della chirurgia robotica: una applicazione alla Regione Liguria

Authors

A. Testi, E. Tanfani, F. Copello, C. Pellicanò, D. Gallo, T. Grillo Ruggieri

Abstract

Background. Negli ultimi anni la chirurgia robotica si è diffusa rapidamente e si è estesa a quasi tutte le specialità chirurgiche. Questo è piuttosto sorprendente perché in letteratura non si riscontrano ancora evidenze così certe e unanimi di efficacia clinica ed evidenze ancora più discutibili sono desumibili da studi di “costo-efficacia”, volti alla valutazione economica. Non è ancora chiaro, di fatto, se la chirurgia robotica sia un buon “investimento” per il Sistema Sanitario Nazionale. I tre principali stakeholder interessati ossia pazienti, chirurghi e decisori aziendali/regionali hanno opinioni diverse: positive i primi due, ma piuttosto perplessi i terzi, considerando soprattutto gli elevatissimi costi per il materiale monouso che rende il costo medio variabile molto al di sotto rispetto alla tariffa DRG di ogni singola procedura. Aumentare la casistica non consente di ridurre i costi anche se, come per qualunque prestazione, ne aumenta la possibilità di successo dal punto di vista clinico. L’unica possibilità per coprire la differenza tariffa /costo unitario è quella di prevedere una integrazione a livello regionale, come alcune Regioni di fatto stanno facendo. Al di là di garantire il pareggio per le Aziende interessate, questa integrazione non risolve comunque il problema di efficienza “allocativa”, perché è evidente che destinare risorse alla chirurgia robotica le sottrae ad altri possibili investimenti che potrebbero creare un maggior “valore” a livello di collettività. D’altra parte non si può negare che esistano potenziali ricadute positive, sia in termini di attrattività regionale, soprattutto per alcuni tipi di interventi, con conseguente riduzione della mobilità passiva, sia in termini di crescita professionale dei chirurghi, oltre che di potenziamento delle reti professionali hub & spoke regionali, in Liguria formalizzate nei Diar (Dipartimenti Interaziendali Regionali) e, infine, del fatto che la chirurgia robotica potrebbe diventare una risorsa strategica per il sistema economico, regionale e nazionale, con ricadute importanti nei settori tecnologici coinvolti.

Objectives. L’obiettivo generale del presente studio è quello di approfondire in quali casi la chirurgia robotica sia più conveniente e quali possano essere gli spazi per il futuro, dal punto di vista del decisore regionale. Il punto di vista quindi non è soltanto l’analisi costo-efficacia del singolo intervento, quanto piuttosto una analisi più ampia della sostenibilità economica e equità nella distribuzione delle risorse dal punto di vista del sistema sanitario regionale. L’analisi è condotta con riferimento, come caso di studio, alla Regione Liguria, con particolare riferimento alla attività dell’IRCCS Policlinico san Martino. L’obiettivo specifico è quello di raccogliere I dati sui costi, ma soprattutto di approfondire a privilegiare lo studio sugli esiti, anche nel medio periodo.

Methodology. Per approfondire lo studio degli esiti, verranno analizzate due coorti di popolazione sottoposte ad intervento chirurgico negli anni 2018 e 2019, la prima con tecnica robotica e la seconda con approccio videolaparoscopico, confrontabili per sesso, età, patologia principale e comorbidità; i confondenti verranno comunque trattati con metodiche di analisi multidimensionale. Per ambedue le coorti verranno valutati i principali indicatori di esito: necessità di ricovero ripetuto per la stessa patologia, necessità di reintervento, uso di farmaci sentinella prima e post-procedura (da individuare con il supporto dei professionisti). A tal fine i dati provenienti dalle SDO vengono integrati con le informazioni desunte dalla Banca Dati Assistito ligure. relative a consumi di altri servizi sanitari. Si metterà a punto anche uno studio preliminare per stimare i Qaly nelle due coorti di popolazione.

Main Results. L’analisi potrebbe dare indicazioni utili per misurare l’appropriatezza della indicazione all’uso del robot in particolari e condizioni e quindi giustificare un maggior investimento specifico di risorse da parte regionale. La conclusione generale è che l'innovazione non debba essere rifiutata, ma piuttosto governata: la domanda corretta non è se la chirurgia robotica abbia un futuro, ma come deve essere gestita e inserita nel governo del sistema sanitario.

Title

L'Ospedale di Comunità nell'era del COVID: l'esperienza di riorganizzazione dei setting di cure intermedie.

Authors

E. Lo Presti, L. Rossi, F. Bellomo, A. Tomei, S. Memmini, L. Lavazza

Abstract

Premessa – Background. La Delibera GRT n.909 del 7 agosto 2017 ha fornito i nuovi indirizzi regionali, rafforzando quanto già normato nel 2013, per l'organizzazione dei *setting* assistenziali di cure intermedie residenziali in fase di dimissione ospedaliera; sono stati individuati tre *setting* differenziati in base alla diversa intensità assistenziale e per ciascun *setting* sono state definite le caratteristiche funzionali e organizzative richieste, oltre che una specifica tariffa di riferimento. Dopo altri atti d'indirizzo verso lo sviluppo delle cure intermedie, il sovraffollamento degli ospedali causato dall'emergenza pandemica ha generato l'esigenza di ampliare lo spettro delle cosiddette cure di transizione con la finalità di avere disponibilità di setting a bassa intensità di cura sia per evitare i ricoveri ospedalieri sia per ridurre la degenza, in modo da potere accogliere i pazienti nei reparti per acuti.

Se prima della pandemia, questo era un obiettivo di appropriatezza ed efficienza perseguito con lentezza, nel 2020 diventa un'urgenza improcrastinabile.

La Delibera n.818 de 29 giugno 2020, *Setting di cure intermedie residenziali: indicazioni alle aziende sanitarie,* ne ha preso atto, ritenendo opportuno, da un lato incrementare l'offerta complessiva di *setting* di cure intermedie, fino al raggiungimento dell'obiettivo di 0,4 posti letto per 1.000 abitanti, dall'altro definire ulteriori soluzioni organizzative, nell'ambito delle post acuzie.

Obiettivi. Gli obiettivi specifici sono:

- incremento dei posti letto di setting 1 e 2
- definizione dei criteri di accesso e dimissione dei pazienti con COVID
- perfezionamento del modello organizzativo delle cure intermedie
- revisione del percorso di cura del paziente e della relativa funzione delle cure intermedie nel sistema delle cure di transizione e ospedaliere

Materiali e metodi. Le cure intermedie setting 1, dette anche "*low care*", nell'organizzazione toscana, hanno come requisito distintivo la presenza del medico costante (24h), per accogliere pazienti in dimissione da reparti per acuti.

Risulta evidente che nelle fasi di picco pandemico, siano state necessarie soprattutto questa tipologia di cure intermedie e, in misura inferiore, quelle di setting 2 che sono caratterizzate dal tutoraggio medico per circa 6 ore al giorno.

Quindi è su queste tipologie che si è concentrato il forte sviluppo, con l'apertura di nuovi moduli.

Si è costituita una rete aziendale di cure intermedie, gestita dalle ACOT (Agenzia di Continuità Ospedale Territorio) che hanno lavorato in stretta integrazione, rendendo disponibili i posti letto a tutti i pazienti residenti nel territorio dell'AUSL Toscana Nord Ovest e in dimissione dal qualsiasi ospedale, superando così il criterio della residenza del paziente nella zona- distretto di pertinenza delle cure intermedie. Lo strumento di gestione operativa è stato un gestionale web con la logica del "*visual*" denominato *Mappa letti*, che ha consentito completa trasparenza.

La rete delle ACOT, con i referenti clinici delle cure intermedie, ha stilato una procedura aziendale per le cure intermedie COVID e sta procedendo a un riordino complessivo, con un regolamento aziendale.

Risultati e commento. Lo sviluppo delle cure intermedie in ASL Toscana Nord Ovest è stato del 104% rispetto all'epoca pre-pandemica, di cui il 68% di setting 1, pari a 0,34/1000 ab.

L'evoluzione delle cure intermedie nel sistema dei servizi sanitari ha avuto diverse direttrici:

- l’innalzamento del livello di complessità dei pazienti
- una relazione molto più stretta con l’ospedale
- l’incremento degli accessi dal territorio
- il superamento del vincolo della residenza
- un percorso di cure definito per i pazienti COVID.

Le criticità di sistema restano:

- chiarezza della funzione del setting “low care”, rispetto all’ospedale per acuti
- valutazione dei bisogni a cui possono rispondere setting a parziale o completa gestione del medico di medicina generale e in quale contesto di servizi integrati
- una nuova umanizzazione delle cure, particolarmente se di prossimità.

Title

Are physicians aware about their preferences when choosing a technology? Evidence from Italian orthopaedists using two different stated preference methods.

Authors

P. Armeni, M. Meregaglia, L. Borsoi, G. Callea, A. Torbica, R. Tarricone

Abstract

Background. Physician preference items (PPIs) are high-cost medical devices, including hip and knee prostheses, on which clinicians express firm preferences with respect to specific manufacturer and product. Understanding physicians' choices for PPIs is of paramount importance, especially in contexts heavily impacted by cost-containment policies and efficiency-related managerial practices. Clinicians' decision-making process for PPIs is expected to be multidimensional, encompassing medical, technological, economic, and experiential elements. The determinants of this choice have been investigated so far using rating scales (e.g. Likert), but never through more complex stated preference techniques.

Objective. The aim of this research was to identify the most important factors considered by orthopaedists in the choice of hip or knee prostheses adoption using two stated preferences techniques, i.e., best-worst scaling (BWS) and discrete-choice experiment (DCE), and to identify potential inconsistencies between physicians' preferences regarding the choice of a medical technology when these are collected with different methods.

Methodology. An online survey including BWS (object case) and DCE was administered to a sample of Italian orthopaedists over a two-month period to investigate which are the most important factors in the choice of a new hip or knee prosthesis. The factors and their respective levels were identified through a systematic literature review, and validated by a clinical expert. BWS data collected through the survey were analysed through descriptive statistics (i.e., best-minus-worst score) and conditional logit model. Mixed logit regression was applied to DCE data, and a willingness-to-pay (WTP) was estimated. Models with interaction terms were run to investigate the heterogeneity of preferences.

Main Results. Overall, we identified six factors, namely clinical evidence, quality of supplier's products, relationship with the supplier's sales representative, previous experience of use, cost of the device and HTA recommendations. A total of 108 orthopaedists (93.5% male; mean age: 52.8) from 85 different hospitals located in 18 regions (out of 21) completed the survey. In BWS, the most important factors were 'clinical evidence' and 'quality of products', while the least relevant items were 'relationship with the sales representative' and 'cost'. DCE results suggested that orthopaedists prefer high-quality products with robust clinical evidence, positive HTA recommendation and affordable cost, and for which they have a consolidated experience of use and a good relationship with the sales representative. The WTP for robust clinical evidence was estimated at €1,829, for a high-quality product at €1,733, and for a good relationship at €2,843. Few participants' characteristics (e.g., number of implants) significantly interacted with the experiment's factors/levels. This is the first study that analysed the multidimensionality of clinician's decision-making process in selecting PPIs in orthopaedics and using stated preference techniques. Diverging results were obtained from BWS and DCE, suggesting perceptive distortions in decision-making priorities.

Title

Technostress: a review in healthcare

Authors

A.Pernice, L.Giorgio, F. Morandi, A. Cicchetti

Abstract

Background. The Covid-19 outbreak has considerably accelerated the digitalization process in the healthcare sector. There has been a rapid increase in projects, implemented independently by individual companies throughout the national territory. After the first weeks of health emergency -in which the focus was mainly on following COVID patients (for example: IMMUNI) –there was an increment in the growth of initiatives dedicated to patients suffering from other chronic pathologies and/or subject to long-term treatments (oncology, neurology, cardiology, diabetology, etc.). The pandemic has been important to boost telemedicine. In fact, we saw the definition of national guidelines and innovations also aimed to non-COVID patients ("ALTEMS Instant Report").Increased use of digital technology poses challenges related to the capabilities and to the possiblecomplicationsconcerningtheadventofnumeroustechnologies.We performed a systematic review of the literature and we found that workers need to develop a new form of relationship with the available technology and its use. According to Agogo and Hess (2018), among the possible challenges in the relationship between workers and technologies three possible phenomena have been identified: computer anxiety, technophobia and technostress. Among those three, we focused our attention on technostress. A first definition of technostress has been provided by Bord in the 1984, affirming that technostress is a "modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner which can manifest as a struggle to accept information technology or an over-identification with information technology". In addition, he emphasizes the importance of being aware about the new technologies impact and about how to control the new machines, finally the author focuses on how to avoid to be influenced from technologies. Another important evidence provided is the discussion about the possible similarities between workers behavior and machines characteristics such as lack of patience, arrogance, and an inability to relate to people. Other authors defined the technostress as "any negative impact on body attitudes, thoughts, behaviors or physiology caused directly or indirectly by technology"(Rosen and Weil, 1997; Tarafdar et al., 2007), while Farrish and Edwards (2019)consider that another cause of technostress is the leadership behaviors which seem to exert a direct impact on workers. Finally, according to Tarafdar and colleagues (2007) there is a relationship between technology and organizational roles, which focus on the possible organizational strategies and managerial approaches useful to implement the adoption of ICTs. Despite, several definitions of technostress has been provided, it seem that scares evidence exists on how to manage the technostress, the development of new training methods and finally the strategies aimed at adapting the health needs capacities of worker tothe use of technologies.

Objectives. Thus, the aim of this paper is to understand the digitalization process limits, with a specific focus on how to manage the technostress. In particular, the objective is to analyze technostress in order to identify its determinants in healthcare sector and more properly in healthcare middle managers. In addition, this paper studies and presents the technostress triggering factors and its determinants in healthcare, thus improving the model of Agogo and Hessb (2018)

Methodology. In order to analyze the technostress and to identify its antecedent factors, we performed a systematic review of literature. The primary source of articles has been identified through Web of science and PubMed. The analysis of the returned articles highlighted a specific model useful to

underline and to analyze the antecedent elements of technostress (Agogo and Hessb, 2018), which will be applied in the healthcare context.

Main results. Some antecedents of technostress have been identified using the Agogo and Hessb model. These antecedents can be classified into three different categories: technological characteristics, organizational characteristics and individual characteristics. With regard to the technological characteristics we have been highlighted the complexity connected to the use of the technologies, the reliability of the technology adopted and the pace to whom the workers adapt to technological changes. About organizational characteristics we identified as antecedents: technical support, literacy development, the engagement. Finally, in terms of individual characteristics we detected that age, gender and attitude may impact differently on manage technostress.

Title

Medicines shortages of COVID-19 relevant medication in Italy, Austria and Spain during the first months of the pandemic

Authors

D. I. Rodríguez Sánchez, S. Vogler

Abstract

Background. The COVID-19 pandemic has had a major impact on several aspects of the society, including the health care system. Among others, it has shown the vulnerability of the supply chain in the provision of health technologies, such as medicines. Especially in the beginning of the pandemic, disruptions in the delivery chain which resulted in stock-outs and thus non-availability of essential medicines were reported and caused high concern.

Objective. The study aimed to investigate shortages of medicines relevant for the COVID-19 treatment in Italy and two further European countries (Austria and Spain) in the period of February till April 2020.

Methodology. The rationale for the country selection was to add as comparator countries to Italy a country that was also hit hard (Spain) and another country that was comparatively hit less in the first COVID-19 wave (Austria).

COVID-19 medication was defined as all medicines recommended for the treatment of symptoms related to COVID-19 based on the state-of-the-art knowledge in early 2020. We considered all pharmacological sub-groups (level 3 of the Anatomic Therapeutic Chemical (ATC) classification of the World Health Organization) that were mentioned in a guidance document on COVID-19 treatment of the Pan American Health Organization (PAHO) of March 2020 as well as in national COVID-19 treatment guidelines in Italy, Austria and Spain. As a result, a total of 28 pharmacological groups were searched to identify any reported shortages of medicines attributable to these groups.

The search was conducted in publicly accessible reporting systems (databases) managed by regulatory authorities (Italy: AIFA; Austria: Austrian Medicines Agency "AGES Medizinmarktaufsicht", Spain: Spanish Medicines Agency AEMPS), and in addition, reports provided by the Spanish Pharmacy Chamber. The first search was performed in February 2020, and it was repeated in March 2020 and in April 2020.

Main results. All three countries were targeted by shortages in the defined pharmacological groups that are relevant for COVID-19 treatment. Overall, 93 active substances were reported to be out of stock in at least one of the three countries during the study period. Variation was found in terms of the countries, the medicines targeted and the timing of the shortage. Spain reported the highest number of shortages (49 active substances), followed by Italy (27 substances) and Austria (23 substances). Esomeprazole, pantoprazole, granisetron, cisatracurium, rocuronium bromide and paracetamol were reported to be out-of-stock in all three countries in the study period. They belong to the therapeutic sub-groups of medicines for acid related disorders, antiemetics and antinauseants, muscle relaxants and analgesics. Usually medicines that were out of stock in Italy also reported a shortage in at least one of the two comparator countries. More than half of the active substances of the studied pharmacological groups subject to a shortage in Italy concerned medicines that were defined as essential medicines by the WHO. Regarding timing it was found that across the three countries an higher number of shortages was identified in March and April 2020 compared to February 2020. Shortages were reported for both originator as well as generic medicines.

The number of shortages might be underestimated since the databases only include reported cases. Still, the findings provide evidence on an important aspect of COVID-19 as the crisis led to disruptions in production and transportation at a time when medication was urgently needed. While policies implemented by the Italian, Austrian and Spanish governments to address or at least mitigate the

problem of shortages may have been considered as insufficient already before the crisis, the pandemic strained the health care systems and confirmed a need for a more collaborative European approach.

Title

Regional organizational response models to covid-19 outbreak: one pandemic, one nation, different disaster management models

Authors

A. Cicchetti, C. Cristofaro, L. Giorgio, R. Laurita, A. Pernice, R. Reina, M. Ventura, W. Vesperi

Abstract

Background. The COVID-19 pandemic has undoubtedly been the most significant shock that the Italian National Health Service (NHS) faced since its establishment in 1978. Up to September, more than 131,000 people had died, and more than 4 million people had been infected with the virus that causes COVID-19 SARS-COV-2. The Italian institutional model allows the Government to centralize the power in case of national emergencies, but its federal healthcare system (Ferré et al., 2014) enabled every Region to manage the situation. Starting from mid-March 2020, a multidisciplinary research team has been gathered thanks to the collaboration between the Graduated School of Health Economics and Management of Università Cattolica del Sacro Cuore (Rome) and the Department of Management Studies of the University of Magna Graecia (Catanzaro).

Objectives. Main aim of the analysis is to compare institutional, organizational, and managerial approaches to respond to different phases of Sars-Cov 2 out-brake at Health Regional Systems Level. In particular, the research focuses on a comparison of models of response adopted by the 21 Italian Regions and autonomous Provinces of the emergency that has been monitored, from the 1st of March 2020 to the 5th of March 2021.

Methodology. The study is based on the analysis of data coming from different sources (Italian Civil Protection, Ministry of Health, National Institute of Health (ISS), Italian national statistical institute (ISTAT), National Agency for Regional Healthcare Services (Agenas) and on the elaboration presented within different volume of "ALTEMS Instant Report". From these sources 9indicators have been developed and different data have been collected to better explore and describe many aspects related to the regional response to pandemic health crisis. Indicators were measured at regional level and belong to the four analyzed phases: (i) Preparedness;(ii) Response;(iii) Recovery and (iv) Mitigation and Prevention.

The indicators were used are: the presence of a pandemic plan; the increasing of intensive care beds; the increasing of medical personnel; the coverage of Domiciliary care units for Covid-19 (USCA);the days used for the resumption of outpatient activities and the days used for the restart of the elective surgical activities; days used for the restart of the elective surgery activities; screening cases/total cases; total administrations (1stand 2nddose) / resident population (x100 inhabitants) that has been considered including two main peak, March 2021 and May 2021. Once the indicators have been computed we identified a score for each phase and the total score for each region.

Main results. The analysis of the regional scores allows to identify similar regional approaches. In particular, we identify 5 cluster of homogenous regions, based on their score in each of the phases of the disaster management model. Those clusters are: resilient, reactive, static, static and non-resilient and finally, unprepared and non-resilient.

Resilient: resilient regions had a pandemic plan and they responded better at the emergency. In these regions the increase of intensive care beds is over the average and, furthermore, they registered adequate level of Domiciliary care units for Covid-19 (USCA) increasing the medical personnel compared to other regional health system. *Reactive*: reactive regions are characterized by the presence of a pandemic plan but not all of these regions have been able to respond promptly to the pandemic. They generally registered an increase of Intensive care beds that is below the average, but on the contrary, they were able to provide an adequate regional coverage of Domiciliary care

units for Covid-19 (USCA). Furthermore, for what concern the increase of medical personnel, this is above the average for the majority of these regions. *Unprepared*: unprepared regions have not a pandemic plan. In these regions the pandemic plan was not implemented before the emergency, and they are characterized by the fact that the increase of intensive care beds are below the average as well as the regional coverage of domiciliary care units for Covid-19 (USCA). Clinicians have not been hired as in other regional health system. Moreover, they were not able to respond effectively to the emergency. Furthermore, days needed for the resumption of outpatient activities and elective surgical activities are both below the average. Mitigation and prevention phase is also characterized by a low score. Concluding, unprepared regions were not ready to face the emergency, but they tried to react to the Covid-19 pandemic. *Static and non-resilient*: static and non-resilient region are characterized by the presence of a pandemic plan. The increase of intensive care beds is below the average, on the contrary the implementation of Domiciliary care units for Covid-19 (USCA) registered higher percentage compared to the average of the other regional health systems. Most of these regions did not hire many physicians. Days used for the resumption of outpatient activities and elective surgical activities are higher compared to other regions while screening cases registered lower percentage as the spreading of a vaccination program, vaccine administration is below the average. *Unprepared and non-resilient:* unprepared and non-resilient regions are characterized by a 0 score for the preparedness phase as well as for the recovery phase. The increase of intensive care beds is below the average as the implementation of domiciliary care units for Covid-19 (USCA). The intake of new medical personnel is lower compared to other regional health systems and days to restart elective surgical and outpatients activities are higher than the average. The mitigation and prevention phase are characterized by a relatively high score although a lower number of screening cases.

Title

Impact of COVID-19 lockdowns on mental health: evidence from a quasi-natural experiment in England and Scotland

Authors

M. Serrano-Alarcón, A. Kentikelenis, M. Mckee, D. Stuckler

Abstract

Objective. The COVID-19 pandemic has been associated with worsening mental health but it is unclear whether this is a direct consequence of containment measures, like 'Stay at Home' orders, or due to other considerations, such as fear and uncertainty about becoming infected. It is also unclear how responsive mental health is to a changing situation. We aim to study the causal effect of lockdown measures on mental health. Additionally, we identify which socioeconomic groups are the most affected by containment measures.

Methods. To disentangle the effect of lockdown measures from the impact of the pandemic itself we exploit different policy responses to COVID-19 in England and Scotland and using a difference-in-difference analysis and pre and post-lockdown survey data (UK Household Longitudinal Survey). Our final sample is formed by 9,078 individuals, observed during 6waves, yielding a total of 54,468 observations. Mental health was measured by the General Health Questionnaire (GHQ-12).

Results. Results show that easing restrictions, by ending the Stay at Home order, rapidly improved mental health. The results were driven by individuals with lower socio-economic position, in terms of education or financial situation, who benefited more from the end of the strict lockdown, whereas they suffered a larger decline in mental health where the lockdown was extended.

Conclusions. Overall, mental health appears to be more sensitive to the imposition of containment policies than to the evolution of the pandemic itself. As lockdown measures may continue to be necessary in the future, further efforts (both financial and mental health support) are required to minimize the consequences of COVID-19 containment policies for mental health.

Title

La vaccinazione anti-Hpv dell’adolescente: l’impatto della pandemia da COVID-19 e proposte organizzative per la “ripartenza”

Authors

F.S. Mennini, A. Marcellusi, M. Conversano, A. Silenzi

Abstract

Obiettivi. L’Italia è stata il primo paese europeo a introdurre la vaccinazione universale dell’adolescente, femmine e maschi, contro il Papilloma virus (HPV). Tuttavia, vi è un quadro generalizzato di precario decollo di questa vaccinazione a cui si è aggiunto nel 2020 l’impatto della pandemia COVID-19. Obiettivo di questo lavoro è stato quello di fare il punto sulle coperture vaccinali anti-HPV alla luce dei dati ministeriali e di tentare di stimare gli impatti della pandemia sulle generazioni che hanno mancato l’appuntamento vaccinale.

Metodo. Attraverso l’utilizzo delle coperture vaccinali riportate dai report ministeriali più aggiornati, è stato sviluppato un modello di stima delle generazioni di 12enni maschi e femmine che non sono state vaccinate contro l’HPV nel corso del 2016-2021. In particolare, attraverso una analisi di scenario, il modello ha stimato gli impatti epidemiologici ed economici della mancata vaccinazione in termini di mancato raggiungimento dei target vaccinali previsti dal Piano Nazionale della Prevenzione (PNPV). Per le stime prospettiche di impatto epidemiologico ed economico sull’evoluzione delle condizioni HPV-correlate è stato utilizzato un modello già pubblicato in letteratura.

Risultati. Il modello ha stimato come per le coorti di maschi e femmine nate tra il 2004 ed il 2007 non siano stati raggiunti i target previsti dal PNPV (95% per ragazze e ragazzi) generando una coorte di oltre 910 mila soggetti non vaccinati. A questi si aggiungono le coorti 2008-2009 che, a causa della pandemia COVID potrebbero raggiungere coperture vaccinali ancora più scarse (Best-case 55% nei maschi e 61% per le femmine Worst-case: 32% nei maschi e 42% nelle femmine). Seguendo questi trend, potremmo ritrovarci oggi con oltre 1,47 milioni di ragazzi e ragazze che non hanno avuto la possibilità di essere immunizzati contro l’HPV a causa del mancato raggiungimento dei target previsti. Questo vorrebbe dire per il 26-43% dei ragazzi delle coorti vaccinabili rimarrà invariato il rischio di contrarre le patologie HPV-correlate. Il mancato raggiungimento dei target potrebbe generare nel corso della vita delle coorti considerate, oltre 86 mila casi di malattia che si sarebbero potuti evitare grazie alla vaccinazione. L’analisi economica stima un costo, in caso di non vaccinazione, di oltre 1,1 miliardi di euro per le 6 coorti analizzate. La vaccinazione stimata ad oggi consentirebbe di ridurre solo il 25% di questa spesa se le coperture nel 2019 si attesteranno ai livelli simulati nello scenario worst-case. Il raggiungimento dei target del 95% per ambo i generi potrebbe garantire, invece, una riduzione di oltre 662 milioni di euro rispetto alla non vaccinazione, al netto dei costi sostenuti per implementare il programma di vaccinazione.

Conclusioni. Il PNPV 2017-19 ancora in vigore, definisce un diagramma di flusso propedeutico al raggiungimento di elevate coperture tramite un sistema di ‘invite and remind’ ripetuto e attentamente monitorato anche nella gestione dei rifiuti, presenta le modalità operative per promuovere l’offerta attiva e gratuita delle vaccinazioni. L’implementazione di strategie che prevedano, tra i vari interventi, l’effettuazione della vaccinazione in ambito scolastico, si sono dimostrate efficaci in diversi contesti pur riscontrando difficoltà organizzative a livello locale. Stante la situazione di coperture carenti e del rischio concreto di non vaccinare più della metà dei ragazzi e ragazze nati dopo il 2004, appare speculativo fermarsi all’evidenze di letteratura e alla loro trasferibilità al contesto italiano: valutare setting vaccinali e informativi alternativi diventa un imperativo in questa circostanza.

Title

Technology and innovation adoption in healthcare and management literature: a shared or different vision?

Authors

F. De Domenico, M.C. Cinici, A. Marino, D. Baglieri

Abstract

Background. As the healthcare industry has grown in size and complexity, management and organizational theory scholars have devoted increasing attention to analyzing its traits and qualities (e.g., Sharma et al. 2016; May et al., 2021). Specifically, those interested in innovation have highlighted that due to its size, differentiation, and articulation, healthcare most requires the development and implementation of technological transformations that can simplify operational processes, decrease costs and enhance performance (Naranjo-Gil, 2009; Sheng et al., 2013).

These arguments have been reinforced by the COVID-19 pandemic that has made it clear how the vulnerability of health systems in terms of innovation adoption and implementation might have profound implications for the health of citizens (OECD, 2020). The global pandemic has emphasized the fundamental role of technological innovation, such as telemedicine, video consultations, electronic medical records, and new medical devices that, thanks to the Internet of things (IoT) and artificial intelligence (AI), might raise the efficiency of health systems (Thakur et al., 2011).

Objectives. The debate concerning the innovation adoption and implementation within the healthcare industry has interested both health-related and generic management journals. Based on these premises, this paper aims to understand the development of innovation studies in the two streams of literature through a bibliometric analysis. Our final intention is to compare and integrate them to provide researchers who wish to contribute to this scientific field with coalescent findings.

Methodology. We gathered data from Isi Web of Science by entering as author keywords "innovat* OR technolog*" to be searched in the manuscripts published from 2000 to 2021. On the ground of Chartered Association of Business Schools ranking, we selected only the manuscripts published by the most critical journals. We obtained a sample of 315 papers.

Firstly, we constructed, analyzed and visualized the bibliographic network of the sampled papers by using the Vosviewer software. Specifically, we used different techniques (namely, co-citation, bibliographic coupling, and keyword co-occurrence) and noted that most of the manuscripts were concerned with the "adopting innovation" theme.

Secondly, based on the previous stage's results, we performed a further bibliometric analysis made of co-citation, bibliographic coupling, and keyword co-occurrence, using a sample of papers explicitly concerned with the issue of adoption, thus obtaining a final selection of 74 articles out of 315.

Thirdly, we analyzed the issues related to the adoption of innovation in healthcare within the management literature. In line with the previous two steps, we constructed our sample by using the ISI Web of Science database and entering as keywords "(innovat* OR technolog*) AND (health* OR physician*) AND (adoption)". Additionally, we used the same period of publication, i.e., 2000 to 2021, and to avoid having repeated papers, we excluded all those included in the previous search. We obtained a final sample of 350 articles to be treated through the co-citation, bibliographic coupling, and keyword co-occurrence analyses.

Main results and Conclusion. Our preliminary findings suggest that while management journals are focused mainly on developing generalizable innovation theories, research published in health care journals is primarily focused on solving contextualized problems of health care organizations.

More specifically, the bibliographic analysis reveals that several author keywords appear in both pieces of literature, first of all of course "innovation" followed by "hospital", "health information technology",

“adoption”, “diffusion", “electronic health records”. Actually, many keywords, although present in both kinds of literature, are linked with different keywords: more precisely, in the healthcare literature, “innovation” is linked with “adoption”, “electronic medical records”, “health care”, “implementation”, “managed care”, “perceptions” and “technology”, while in the management literature it is linked with “diffusion of innovation”, “ehealth”, “health care”, “hospitals”, “institutional theory”, “market access”, “social networks” and “sustainability”.

Differences also exist among the theoretical roots upon which the two pieces of literature have developed. The co-citation analysis reveals that in the healthcare literature, the most cited papers are Hillestad et al. (2005) and Greenhalgh et al. (2004) which can also be found in the management literature among the most cited papers, another paper written by Kimberly et al., in 1981, and “Diffusion of innovation” (Rogers, 2003) (paper also found in management literature).

In the management literature we find among the most cited papers Davis, 1989, Venkatesh et al., 2003, then we find Fornell and Larcker (1981), Venkatesh and Davis (2000) and “Systematic review: impact of health information technology on quality, efficiency, and costs of medical care” (Chaudhry et al., 2006), also included in the healthcare literature.

Title

Estimating medical device recall-related costs from the perspective of the healthcare provider

Authors

C. Falivena, G. Callea, A. Furnari, O. Ciani, R. Tarricone

Abstract

Background and objectives. Field safety corrective actions (FSCA), communicated through field safety notices (FSN), are actions taken by manufacturers to reduce risk of death or serious deterioration in the state of health associated with use of medical devices (MD) that are already placed on the market. These may include return of the MD to manufacturer or its representative. As the European Medical Device Regulation has tightened up requirements to effectively guarantee safety after marketing, there is a need to identify a methodology to estimate administrative and clinical costs borne by healthcare providers and healthcare systems in case of MDs recalls. The goal of this work was to identify standard methods to use for this purpose.

Methodology. We conducted a review of scientific literature and court sentences. We interviewed Italian regional and hospital MDs vigilance managers asking (i) how FSCA are managed and FSN are collected by public providers; (ii) how the various actors (competent authority, regions, healthcare providers, and manufacturers) communicate and share information; (iii) whether, and according to which methodologies, expenses incurred by providers, as a consequence of MDs recalls, are estimated and refunded.

Main results. MDs post-marketing surveillance appeared as fragmented across the country, with Northern regions characterized by higher maturity and capacity of implementing best practices to manage FSN. All respondents, instead, underlined a weak attitude to report adverse events by physicians due to scarce culture of FSN. No standardized methods to deal with FSCA legal and economic implications have been identified in the literature or in the jurisprudence. Italian regions and hospitals have never quantified the amount of administrative costs related to MDs recalls nor developed a structured methodology to estimate them.

Conclusions. A theoretical framework, based on Time-Driven Activity-Based Costing, to estimate costs related to MDs recalls is under development. Empirical analyses, collaboration among stakeholders and training of healthcare professionals are warranted.

Title
Health care systems under stress-test: lessons learned and implications for research and policy

Authors
M. Bobini, G. Cinelli, F. Longo

Abstract

Background. Negli ultimi due decenni è stata sviluppata un'ampia analisi sulla governance dei sistemi sanitari. I diversi studi si sono focalizzati su aspetti dei sistemi sanitari molto diversi, a causa della difficoltà di definire, valutare e operazionalizzare il concetti governance (Barbazza e Tello 2014).
Una classificazione ampiamente diffusa distingue tre diversi sistemi di governance: i) gerarchici; ii) di mercato; iii) network (Rhodes, 1997). I sistemi gerarchici presuppongo che il centro della rete (il governo o le regioni nel caso del SSN) stabilisca, attraverso direttive o autorizzazioni, le priorità strategiche e le modalità di esecuzione e che agli attori periferici (le aziende sanitarie) sia affidato il compito di implementare le decisioni prese dai livelli sovraordinati. Al contrario, nei sistemi di mercato il centro si limita a stabilire delle norme di funzionamento e dei vincoli e le aziende perseguono le rispettive finalità istituzionali nel rispetto di esse. In ultimo, i network si contraddistinguono per il fatto che il centro e la periferia instaurano un rapporto maggiormente dialettico e, nel caso dei SSR, le aziende sanitarie partecipano attivamente nella definizione delle priorità strategiche regionali.
Alcuni studi hanno analizzato l'associazione fra i modelli di governance e l'efficacia dei sistemi sanitari in temi ordinari. Una ricerca di Nuti et al. (2014) ha investigato la correlazione fra i differenti modelli di governance e i livelli di performance di alcune regioni italiane. Lo studio conclude che il sistema "choice and competion", adottato dalla sola Lombardia, è associato a performance migliori.
Altri studi hanno provato ad analizzare il tema del decentramento nei periodi di emergenza (*Crisis governance)*, investigando come dovrebbero cambiare i sistemi di *governance* durante rari eventi, come nel caso della diffusione di pandemie. Secondo Aoki (1986), sistemi di *governance* centralizzati (o gerarchici) sono preferibili durante periodi emergenziali: in contesti in cui le condizioni dell'ambiente cambiano velocemente forme di *governance* meno decentrate facilitano il coordinamento fra attori differenti. Schwartz (2012) ritiene che sistemi gerarchici possano favorire risposte efficaci alle pandemie perché garantiscono una maggiore velocità nei processi decisionali e una comunicazione uniforme.
Questo filone della letteratura ha avuto un rinnovato interesse dopo la diffusione della pandemia COVID-19. La diffusione della pandemia ha indotto diversi sistemi sanitari ad accentrare alcune funzioni. Negli ultimi due anni sono stati sviluppati diversi articoli che hanno analizzato la relazione fra i sistemi di *governance* e la pandemia. In particolare, tali studi hanno classificato i sistemi di governance dei sistemi sanitari di diversi paesi come "centralizzati" o "decentralizzati" e successivamente analizzato empiricamente l'esistenza di differenze statisticamente significative negli outcome di salute fra le due tipologie di sistemi di governance (Bailey et al, 2020, Doods et al., 2020). Secondo Sharma e Borah (2021), sistemi di governance centralizzati hanno favorito delle strategie di risposta "reattive" (misure di distanziamento sociale, limitazioni agli spostamenti) al COVID-19 ma non sono stati altrettanto efficaci nel garantire risposte "proattive". Secondo Angelici e Berta (2021), i sistemi di governance decentralizzati sono stati maggiormente efficaci perché hanno permesso di sviluppare politiche sanitarie – in particolare misure di distanziamento sociale – specifiche dei diversi contesti locali.

Obiettivo di ricerca. L'obiettivo dello studino è investigare se sistemi di governance gerarchici, di mercato o a network possono avere un'efficacia differente durante la diffusione delle pandemie.

L’efficacia dei tre diversi modelli di governance è investigato attraverso l’analisi degli strumenti manageriali impiegati, e della capacità di produrre processi decisionali che generino soluzioni: i) veloci; ii) con un basso livello di incertezza; iii) adatte alle caratteristiche dei diversi contesti.

Sono analizzate tre regioni come casi studio: i) Veneto, come esempio di modello di governance gerarchico; ii) Lombardia, come esempio di modello di governance di mercato;; iii) Emilia Romagna, come esempio di modello di governance a network.

Metodologia. Al proposito sono state adottate tre diverse metodologie di indagine. Inizialmente è analizzato la letteratura disponibile sui sistemi di governance. In un secondo momento è stata compiuta un’analisi desk sia sulle norme che disciplinano i tre diversi SSR che sulle delibere prodotte per fronteggiare l’emergenza sanitaria innescata dalla diffusione del Covid-19. Infine, sulla base delle evidenze emerse dalle due indagini iniziali, sono state realizzate delle interviste semi-strutturate a otto key informant.

Principali risultati. I principali risultati della ricerca suggeriscono che modelli di governance differenti impiegano modalità di coordinamento differenti che hanno un’efficacia diversa durante periodi di emergenza. Ad esempio, in Lombardia, dove prevale un modello di governance di mercato, il coordinamento tra il centro e la periferia del sistema avviene prevalentemente attraverso la definizione di un sistema di regole (la cosiddetta “delibera delle regole” annuale). Tale modalità di coordinamento, risulta poco efficace in periodi di elevata incertezza – in cui risulta difficile stabilire delle regole – e può creare lentezza nel processo decisionale e impedire un’implementazione efficace ed uniforme delle diverse unità periferiche del sistema. Al contrario, in Veneto, prevale un a modello di governance gerarchico e il coordinamento tra il centro e la periferia del sistema avviene prevalentemente attraverso un insieme di direttive (gli incontri del board dei direttori generali) e autorizzazioni (le tre Commissioni Regionali per l'Investimento in Tecnologia ed Edilizia). In periodi di pandemia, il modello appare efficace in termini di tempestività delle decisioni, omogeneità di implementazione e assenza di incertezza per gli attori dei sistemi.

Title

Could Next Generation EU strategy innovate European Healthcare Systems? A documental analysis of National Recovery and Resilience Plans

Authors

M. Giancotti, M. Mauro

Abstract

Introduction. The worldwide crisis due to COVID-19 pandemic had a significant impact on our economy and society. The European Union responded to the pandemic crisis with the Next Generation EU, a more than € 800 billion temporary recovery instrument to help repair the immediate economic and social damage brought about by the coronavirus pandemic1. Next Generation EU is a program of unprecedented scope and ambition, which includes investments and reforms to accelerate the ecological and digital transition, modernize and promote the digital transformation of public administration and healthcare systems, strengthen the production system and intensify efforts in the fight against poverty, social exclusion and inequality. At the heart of the Next Generation EU lies the Recovery and Resilience Facility, with € 723.8 billion available to European countries in loans and grants, in order to support reforms and investments to undertake for the period 2021-2027. To access the funds under the Recovery and Resilience Facility, starting from 2021, member states approved their Recovery and Resilience Plans (RRPs), which foresees reforms and investments for the next six years2. The EU4Health Programme represents a fraction of the funding available at European level applied to invest in health and well-being and to strengthen European healthcare systems3. Eu4Health is aimed at promoting improvement of health and quality of care, strengthening European health systems, their resilience and a more efficient resources allocation. Indeed, the Covid-19 pandemic has underlined some criticisms of National health systems and, in particular, the increasing levels of the national disparities, the excessive dependence on large hospitals for some European countries and, on the other hand, a shortage of several key professional figures. In this context, the objective of the RRPs is to address these issues, by promoting new strategies to enhance efficiency of national healthcare systems, including and supporting investments in digitalisation and training of staff and the establishment of new forms of cooperation within the healthcare systems.

Objective. The aim of this research is to analyse innovations and opportunities for European healthcare systems in the light of the newest tendencies promoted by the EU Next Generation. The objective is mapping the main innovation strategies within the National RRPs and their impact on national healthcare systems.

Method. Using a qualitative research methodology such as documental analysis, we review and evaluate electronic documents collected by the European Commission on its website4. This list includes the final plans of the Member states. We selected and retrieved all documents published in English and Italian language. Specifically, 25 National RRPs are available. The document analysis was carried out on published English written plans (Bulgaria, Cyprus, Denmark, Finland, Ireland, Italy, Malta, Romania, and Slovenia).

Expected results. We compare RRPs, drawing a map of the initiative and innovations for healthcare systems put in place by European countries, providing a critical reading of the cases examined. The results of the research are useful and interesting for the governments of the EU member states, which should have a unitary and coherent strategy to avoid economic, public health and social imbalances.

Title

Il ricorso all’accordo-quadro per gli acquisti in emergenza Covid. Flessibilità dello strumento e aspetti di criticità

Authors

F. Amatucci, G. Callea

Abstract

Background. Tra le principali criticità emerse in maniera significativa nel periodo di pandemia, di grande rilievo è la crisi nell’approvvigionamento del materiale sanitario anti-Covid 19, caratterizzato da ritardi, mancate forniture, prezzi fuori controllo, difficoltà di reperimento di materiale uniforme, non solo a livello nazionale, ma anche locale.

Tali disagi sono testimonianza di una carente capacità di governance che ha caratterizzato complessivamente i processi di acquisto di materiale sanitario e che ha caratterizzato anche i modelli di accentramento prescelti per la gestione della pandemia. In seguito, superata la prima fase emergenziale, sono emerse ancora di più le difficoltà di programmazione, di costruzione di fabbisogni corretti e reali, di scarsa flessibilità degli strumenti di acquisto adottati.

Superata la primissima fase emergenziale, gestita soprattutto dalla Protezione civile, le Centrali di acquisto regionali hanno ripreso appieno la propria attività di committenza, soprattutto attraverso lo strumento dell’accordo-quadro, che presenta caratteristiche di flessibilità e ampia apertura al mercato. L’accordo quadro consiste, infatti, in un contratto con cui uno o più fornitori, che si impegnano ad accettare ordini dalle amministrazioni di riferimento, secondo le esigenze specifiche che mergono nel corso del contratto, fino al raggiungimento di un massimale contrattuale. Il modello di funzionamento si basa su un rapporto trilaterale, reso disponibile dalla centrale di committenza e che si perfeziona direttamente tra fornitore e amministrazione richiedente. La durata dell’accordo quadro non può superare i quattro anni, al fine di evitare meccanismi distorsivi della concorrenza. La scelta del contraente attraverso lo strumento dell’accordo quadro si articola in due fasi. Nella prima, l’amministrazione provvede all’indizione della gara, secondo le procedure ordinarie previste dalla normativa; tale fase si conclude con l’individuazione degli operatori economici idonei e la sottoscrizione del contratto. La seconda fase prevede una scelta, tra i diversi fornitori aggiudicatari, per l’assegnazione dei contratti relativi ai singoli ordinativi, al termine del quale l’amministrazione aggiudicatrice e i fornitori concludono i singoli contratti applicativi dell’accordo.

L’accordo quadro è lo strumento contrattuale maggiormente utilizzato dalle centrali di committenza, proprio per le descritte caratteristiche di flessibilità e di risposta rapida ai fabbisogni che emergono nel periodo di durata contrattuale.

Obiettivi del lavoro. La presente ricerca si pone l’obiettivo di analizzare la totalità degli accordi-quadro stipulati dalle Centrali di Committenza, a partire dal 2010, soffermandosi in particolare su quelli stipulati nel periodo di emergenza Covid-19, soprattutto con riferimento alle forniture sanitarie anti Covid.

Si vuole indagare il modello utilizzato dalle Centrali e verificare se le forniture in emergenza hanno comportato modifiche significative nella gestione operativa degli accordi-quadro, con riferimento ai principali elementi di interesse:

- durata dell’accordo-quadro;
- procedura utilizzata per la scelta del contraente privato;
- presenza di meccanismi di pre-selezione o pre-qualifica dei fornitori;
- tempi di aggiudicazione;
- numero di fornitori con cui è stato siglato l’accordo;
- modalità di gestione della seconda fase (scelta motivata; percentuali prestabilite; ulteriore procedura competitiva);

- presenza di percentuali di assegnazione dei contratti a valle;
- percentuali attribuite al primo in graduatoria.

Metodologia. Per rispondere alle domande di ricerca, sono stati raccolti dati ufficiali e capitolati di gara pubblicati sui siti istituzionali (es. centrali regionali di committenza e soggetti aggregatori, Portale della Trasparenza ANAC, Portale Tenders Electronic Daily - TED), analizzati report e documenti di recente pubblicazione e condotte interviste semi-strutturate a rappresentanti di centrali e imprese aderenti alla community dell'Osservatorio sul Management degli Acquisti e dei Contratti in Sanità di Cergas SDA Bocconi.

L'estrazione delle informazioni rilevanti dai capitolati di gara è avvenuta secondo un protocollo predefinito.

Principali risultati. L'accordo quadro è uno strumento di crescente interesse per le Centrali di committenza: il numero di procedure di gara che lo ha utilizzato mostra, infatti, un andamento crescente nel tempo a partire da 2 nel 2010 a circa 80 nel 2020. A fronte di tale rilevanza, i risultati dello studio, le cui analisi sono ancora in corso, si propongono di fornire una visione critica e formulare raccomandazioni ai soggetti deputati agli acquisti di beni e servizi per la sanità. In particolare, verrà svolta una comparazione tra il ricorso ordinario allo strumento dell'accordo-quadro e il suo crescente utilizzo per gli acquisti di materiale sanitario legato alla pandemia, al fine di evidenziare margini di flessibilità dello strumento in condizioni di difficile programmabilità degli acquisti e di gestione emergenziale.

Title

Recommendations for the design and implementation of an Early Feasibility Studies program for medical devices in Italy

Authors

G. Callea, C. Federici, R. Freddi, R. Tarricone

Abstract

Background: Between 2004 and 2009 clinical studies for MDs conducted in the US were reported to have dropped from 87% to 45% (Holmes et al, 2016) due to the FDA regulatory stringent requirements. Therefore, FDA undertook a review process to remove the barriers that contributed to this movement. In 2013, FDA introduced the Early Feasibility Study (EFS) program to accelerate American patient access to innovative medical technologies and recoup the US leading role in the pre-market research. EFS are limited exploratory clinical investigations taking place early in the development of devices, in small number of patients, typically before the device design has been finalized. Their purpose is related to demonstrating proof of concept and optimizing device design when further non-clinical testing is deemed inadequate to the scope.

Currently European countries do not have a standardized procedural framework for EFS, that are either put forward as individual requests for compassionate use or submitted as traditional feasibility studies and evaluated with inappropriate criteria.

The new European Regulation on MDs (MDR), that became fully active in May 2021, is expected to make the regulatory framework in Europe more restrictive. A European FDA-like EFS program would be desirable as it may contribute to a more streamlined and efficient process for evidence generation and therefore constitutes a viable option to meeting the requirements of the MDR while acknowledging the specificities of devices development and reducing the burden for technology developers.

Aims: The aim of this study was to explore perceptions of relevant stakeholders about the desirability and feasibility of an EFS program in Italy and of critical factors favoring or hampering its implementation.

Methods: To gain insight into the characteristics of the EFS, we first conducted a structured search of the EFS registered on ClinicalTrials.gov and we performed a literature search on Pubmed, Google, and American Heart Association/American Stroke Association (AHA/ASA) journals and with searches in the main news websites. Afterwards, we applied qualitative research methods (i.e., exploratory and confirmatory focus groups) involving an expert panel of clinicians, biomedical engineers, members of ethics committees, academics, and industry representatives to collect opinions on the appropriateness and feasibility of an EFS Italian program.

Main results: Overall, we identified 183 EFS since 2012. The number of studies increased over time, with peaks in 2017 and 2021. The interest in the EFS Program remained stable in 2020, even during the global COVID-19 pandemic. More than half of the studies focused on diseases of the circulatory system (58%), followed by endocrine, nutritional and metabolic diseases - in particular diabetes (10%) and diseases of the nervous system (8%). Approximately three fourths (72.7%) of the studies were conducted in the US. European countries seem to have limited experience with EFS. Germany is the most experienced, followed by France, Poland and Italy.

The expert panel agreed that an EFS program would maximize the efficiency of evidence generation process, strengthen competitiveness and attract R&D investments in the biomedical area. Potential challenges relate to the need for a clear legal framework and high level of technical competencies to evaluate studies. A particular attention must be given to ethical aspects, safety and risk analysis. Any device could be eligible, but potential benefits should offset risks, and the use of the device on human subjects should be regarded as the only way to further product development.

Conclusions: An Italian EFS program is highly desirable, however it requires trust and open dialogue between stakeholders, strong investments in capacity building, and patient protection measures to be successful. If successful, it could be scalable to the European context.

Title

An international perspective on business models for precision medicine

Authors

F. Amatucci, P. R. Boscolo

Abstract

There are several definitions of precision medicine, but all confirm it is “an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment and lifestyle for each person”(US National Institute of Health, 2015).While some consider ‘precision medicine’ and ‘personalized medicine’ as synonym, especially in USA (Nesesini, 2020),others suggest there are conceptual differences between the two, with the first referring to a patient approach that considers their genes, genome, behaviors, environments and social contests; and the second one proposing instead a model for health care systems based on patient centrality, data and information (Ginsburg & Phillips, 2018). Whatever the definition, precision medicine is certainly related to progress in genomics and other –omics sciences (i.e.: proteomics, metabolomics). In recent times, precision medicine has gained the interest of prominent scholars and scientists all over the world with fascinating discoveries and improvements in diagnosis and patients’ outcomes (e.g. Abu Elmagd et al., 2015; Bando & Takebe, 2016; Brittain et al., 2017; Moscatelli et al., 2018; Bergen S.E. & Sullivan P.F.; 2018; Nicol et al., 2017; Zhang, 2018; Qorongleh et al., 2020; Mohammed F. et al., 2018), but there are still some barriers preventing a wider diffusion. Despite the abundant scientific production, little in fact is known about how to organize precision medicine centers, how to make public and private centers, specialized in genomics, financially viable and sustainable. Technology costs have typically posed a major hurdle for the wider uptake of precision medicine; but costs are decreasing and experience is growing. The purpose of this paper is to investigate how genetic and genomic analyses are organized and financed in different countries, in order to shed light on plausible service delivery evolutions and elaborate useful suggestions on sustainable business models for new genome centers, with relevant insights also for governments and PAs that are called to align with private providers of genome analyses to sustain the trends towards a more personalized medicine. In order to collect evidence about active genomics centers, we run a literature review on financing models for genomic centers, and in parallel a desk analysis of publicly available information in order to compare different centers’ business models and international financial schemes. For the literature review the following keywords and combinations of keywords were identified: “genomics” AND “business plan”; “genomics” AND “financing”; “genomics” AND “revenues”; “genomic tests payers”; “cost of genetic tests”; “genetic center” AND “cost”. The search was limited to publication in English until February 2021. Publications were scanned for relevance firstly by title, later by abstracts and finally by reading the full text. We retrieved 131 publications, then excluded 84 papers based on their titles,24 based on their abstracts, and 13 based on the full texts. Papers were excluded when focusing primarily on medical aspects of precision medicine and genomics, but not on business and managerial aspects. Ultimately 10 publications were included in the review since they provide useful information about costs and revenues of genomics centers or companies, within sights also on genetic e DTC tests. Other 8paperswere instead added via snowballing. Then, once identified country by country the relevant genomic centers and companies, we searched for information about their history, partnerships, public-private relations and present offerings. Preliminary findings confirm international genomics centers performing whole genome analyses are not many, and the mix of research and services offered varies notably center by center, as well as the mix of public and private financing. While in 2006 a human genome had an estimated cost of $20-25 million, nowadays the advent of next

generation sequencing (NGS) technologies contributes to a regular decrease of the costs of consumables and a widespread expectation that a '$1000 genome' will be available in few years (Schwarze et al., 2020).Since the early experience of the Human Genome Project, completed in UK in April 2003, genetic testing service companies have flourished at a high pace and wide ranges of genetic tests are now available directly to consumer(DTC)(Hudson et al., 2007; Borry, 2013). Companies such as 23 and me, de CODE, Veritas Genetics are now market leader and make million dollars profits every year. National health systems are somehow challenged by the emergence of these players, and in very few cases negotiations are currently ongoing to define how to integrate new genomic information with general patient data, and how to manage the short term implications of having detailed genome information for a larger population.

ECONOMICS SECTION

Title

Vax Populi: Social Costs of Fake News on Childhood Vaccines

Authors

M. Giaccherini, J. Kopinska, G. Rovigatti

Abstract

Despite the indisputable benefits of vaccinations, due to vaccine hesitancy, herd immunity for several diseases is not reached. It is thus of substantive policy interest to quantify the spillover effects of novax propaganda for society. We study how novax propaganda on Twitter affects pediatric vaccines and vaccine-preventable health complications among individuals untargeted by immunization. In a theoretical framework, we provide a rationale for the role of social media in increasing polarization induced by exposure to stances of like-minded peers. We empirically test the model predictions with Twitter data, paired with data on vaccination rates and hospitalizations for vaccine-preventable health complications. As novax propaganda and vaccine hesitancy are inherently endogenous, we employ an IV strategy based on passive exposure to novax Twitter contents. We collect the universe of tweets containing vaccine-related keywords for 2013-2018. From user profile data we construct ego-networks evolving around users who tweet vaccine contents. The starting node within each network is a user residing in an Italian municipality, with its own stance on vaccines. Each user is exposed to its friends who we group into passive (users who do not tweet vaccine contents), and active (users who post-vaccine tweets). Our IV reflects the exposure of each user to friends who passively propagate vaccine contents. In particular, we exploit a lag in the network nodes, where a user is exposed to vaccine stances within a "friends of friends" network. We estimate the effect of novax propaganda on vaccinations and hospitalizations in a Mixed two-stage least squares approach, with the user-specific lagged network in the first stage, and municipality level aggregated data on vaccinations and hospitalizations in the second stage. We find that exposure to novax propaganda causes a reduction in vaccination rates for measles, mumps, and rubella and an increase in vaccine-preventable disease hospitalization rates and costs.

Title

Looking for a star: evaluating the effect of the cohesion policy on Regional Well-being

Authors

G. Albanese, V. Carrieri, M. M. Speziali

Abstract

This paper presents new evidence on the last concluded wave (2007-2013) of the EU cohesion policy. We depart from the broadly used GDP-growth approach and evaluate the impact of EU Structural Funds (SFs) on a battery of regional well-being indicators including economic, educational, health, and demographic outcomes. We exploit the SFs assignment rule to construct a fuzzy RDD. Our results reveal an overall null effect of the policy. We further identify how regional (i) quality of local institutions (ii) human capital and (iii) urbanization impact on the policy's effectiveness. We conclude that these characteristics affect the relationship between SFs and economic outcomes only.

Title

The Impact of Face-Masks on Total Mortality Heterogeneous Effects by Gender and Age

Authors

G. De Giorgi, M. M. Speziali, F. Michalik

Abstract

Governments around the world have been implementing several non-pharmaceutical interventions (NPIs) to fight Covid-19 spread and its associated mortality. We estimate the causal impact of mandatory face-mask wearing policy in public places on(total) mortality in Switzerland. We exploit the staggered introduction of the policy across Swiss cantons using a Difference-in-Difference and an event study approach. We find that the extension of compulsory mask wearing to public places has a heterogeneous impact on mortality, with small positive effects on male mortality entirely driven by older age-cohorts (90+). Finally, we show that adding contact tracing and stricter distancing to compulsory face-mask policy does not lead to better results in terms of mortality.

Title

Screening, diagnoses, and mortality in Europe: the breast cancer puzzle.

Authors

V. Carrieri, S. Guthmuller, A. Wübker

Abstract

The European strategy for the early diagnosis and treatment of breast cancer involves a strong public intervention, i.e. the implementation of Organized Screening Programs(OSP). This paper relies on a unique data-set built by merging data on the universe of NUTS-2 level OSP in Europe, individual survey data from the European Health Interview Survey (EHIS), and cancer registries on diagnoses and death to evaluate the effects of OSP on mammography uptake, efficient targeting, breast cancer diagnoses, and mortality. We employ multiple complementary quasi-experimental approaches that exploit regional heterogeneity in the availability of OSP, in the age eligibility criteria, and the timing of OSP introduction. We find that OSP increases mammography uptake by more than 30% and reaches women more at risk of developing cancer and/or not undertaking appropriate prevention measures. However, we find that while OSP increase substantially the number of breast cancer diagnoses, their effects on 5-10-15 years mortality are insignificant. These results point to the need of redesigning such programs and limit over diagnosis.

Title

Visiting Parents in Times of COVID-19: the Impact of Parent-adult Child Contacts on the Psychological Health of the Elderly

Authors

A. Brugiavini, C. Di Novi, C. E. Orso

Abstract

The novel coronavirus pandemic (COVID-19) and the consequent restrictions imposed by governments worldwide have affected individuals' health and well-being globally. The most significant public health costs of lockdown restrictions include potential adverse effects on mental health. In the recent literature on symptoms of depression in the elderly due to the COVID-19 pandemic, one of the neglected topics is the impact of disrupting parent–adult child contacts on their psychological and emotional well-being. Using data from the 8th wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) and the SHARE Corona Survey, this study aims to fill this gap, providing additional insights into the psychological status of, and strain on, older people during the COVID-19 outbreak and contributing to the body of research on the negative association between social isolation and the psychological well-being of the elderly. Our findings show that the interventions deemed essential to reduce the spread of the pandemic, such as the "stay-at-home" order, have necessarily disrupted personal parent–child contacts and the social processes that facilitate psychological well-being, with negative consequences on the mental health of elderly parents.

Title

Assessing the impact of the COVID-19 pandemic on patient-reported data in elective oncological robot-assisted surgery

Authors

S. Manetti, A. Ferrari, C. C. Zirafa, F. Melfi, M. Vainieri

Abstract

Background. The Coronavirus disease 2019 (COVID-19) pandemic has disruptively changed healthcare routine practice and affected the delivery of elective care. Italy has been one of the most affected countries by COVID-19 in Europe. Hospitals and frontline healthcare professionals had to face and manage unexpected pressures to sustain ordinary activities in extraordinary conditions, while patients might have felt abandoned and neglected alongside their journey because of the lack of family support and the difficulty in communicating with doctors.

Objective. To investigate how the current pandemic might have influenced the patient-reported outcome and experience (PRO and PRE) data of oncological patients involved in ongoing clinical research and medical care.

Methods. Using a systematic and continuous data collection strategy implemented in Tuscany Region, Italy, since January 2018, we employed PRE and PRO measures routinely collected from oncological patients requiring elective robot-assisted surgery for lung, prostate, or colorectal cancer at four different time points, during the hospitalization for the intervention (T0) and 1-, 3-, and 6-months after surgery (T1, T2, and T3). We analyzed two separate patient samples (pre-COVID-19 group: N = 482vs.COVID-19 group: N = 238) by including individuals with similar socio-demographic characteristics and lifestyle habits. Patients belonging to the reference pre-COVID-19 group completed their last follow-up by February 2020. We evaluated PROs by using a validated tool, the EORTC QLQ-C30 questionnaire, which provides an overall score computed from nine sub-dimensions. PREs were assessed by using open questions capturing the perceived experience and quality of care. Given the multidimensionality of the patient journey's perceptions, it was necessary to adopt a mixed research methodology that successfully combined quantitative and qualitative techniques. We used both linear regression models and multilevel models for repeated measures to investigate potential changes induced by COVID-19 on the EORTC QLQ-C30 sub-dimensions and overall scores, respectively. We further conducted a sentimental analysis around patients' experiences.

Results. We found significant between-group differences during hospitalization (T0) in the PRO scores for five subdimensions (global health, cognitive functioning, social functioning, fatigue, nausea). Similarly, the overall score during hospitalization (T0) was higher in the COVID-19 group (p=0.009). We also observed relevant changes on emergent themes related to experience and satisfaction levels, with significantly higher (p=0.021) rates of positive comments in the COVID-19 group during hospitalization (T0). On the contrary, there were no between-group differences in the PRO scores, nor in the proportion of positive open comments, at the following time points outside the hospital (T1-T3).

Conclusions. During the COVID-19 pandemic, hospitals and frontline healthcare professionals have been able to guarantee high standards of care delivery in elective surgery. As a matter of fact, during the hospitalization for surgery, patients reported higher PRO scores and greater quality-of-care perception and experience compared with the reference pre-COVID-19 group. In contrast, our findings imply that patient-reported data collected during the follow-up after hospital discharge can be used with confidence in clinical research despite the pandemic, as no statistical pre vs. post difference was detected.

Title
Women in Distress: Mental Health and the COVID-19 Pandemic

Authors
E. Barili, V. Grembi, A. C. Rosso

Abstract

Background. The COVID-19 pandemic has, thus far, triggered two types of emergencies: a health care emergency, ranging from the fear of being infected to the inability of national healthcare systems to deal with the subsequent waves of patients, and an economic emergency, with massive layoffs due to the limitations to economic activities, the rearrangement of working conditions, and the restrictions to mobility. These two emergencies, joint and protracted in time, have brought unexpected and unprecedented disruption to everyday life. Among the consequences of this situation, repercussions for mental health appear to be the most ignored by policy makers so far. However, the only somewhat comparable and not-so-remote experience of the 2008 Great Recession has provided a plethora of evidence of both the mental health costs of economic downturns (Frasquilho et al. (2016), Dagher et al. (2015), Browning et al. (2006), Kuhn et al. (2009)) and the need to target relief policies to specific population groups that tend to be more fragile than others in times of distress (Hoynes et al. (2012), Bertoli et al. (2021)).

Objectives. We investigate the main determinants of women's mental distress during the first wave of the COVID-19 pandemic in Italy. The focus on a specific population group, women, allows us to go in depth into the peculiar drivers of self-reported mental well-being affecting them. Women are selected because they are and will continue to be among the most penalized by the downturn of the economy due to the pandemic (Alon et al. (2020), Profeta (2020), Dang and Viet Nguyen (2020)). Moreover, differently from men that tend to externalize mental distress through risk taking behaviors or antisocial conducts, women tend to internalize it, resulting in a higher probability of developing disorders like depression or anxiety (Rosenfield and Mouzon (2013)).From a policy-making perspective, it is crucial to understand the relative role of drivers to define better priorities for intervention and shape communication strategies for the population.

Methodology. Exploiting a unique survey run at the end of the first wave of the COVID-19 pandemic (July 2020) on more than 4,000 women aged 20-65 in Italy, we explore the relative role of two groups of drivers, present issues and expectations, in affecting mental well-being. To capture mental well-being, we propose a new mental distress index (i.e., synthetic measure based on self-assessed statements of having very often or constantly experienced feelings of depression, anxiety, panic, fear that something bad could happen, or sleeping problems). Present issues are defined as factors that already occurred in the experience of the respondent, as for the incidence of the COVID-19 outbreak in the province of residence or changes in employment status pre-post first wave, while expectations consist of speculations about future events, such as the expected impact of the pandemic on access to health care or potential changes in employment conditions in the short run.

Main Results. Our results show that present issues play a minor role compared to expectations. Concerns over the respondents' future employment status represent the lion's share (+48.1%) in explaining the variation in mental distress compared to similar concerns about the employment status of the partner (+25.6%). Since both incomes contribute to the household wealth, these findings highlight the relevance of employment status per se and its links to respondents' social status. More general expectations regarding the effects of the pandemic on the labour market and access to care explain a +31% and +24.6% increase in mental distress, respectively. The explanatory power of the controls related to expectations is far larger than that of any other variable, sustaining the hypothesis that pessimistic expectations have a major impact on respondents' mental health. Examining present issues, a one standard deviation increase in the incidence of the COVID-19 outbreak, as proxied by administrative data on the COVID-19 mortality rate, explains a +4.6% increase in mental distress, although the effect is not robust through all specifications and outcomes used in the analysis. On average, younger women (i.e., below 35) and women lacking a high school degree face higher levels of mental distress, while regardless of the restrictions in access to childcare services and schools during the first wave, having (school-aged) children plays a minor role. Using a panel fixed effects model that includes respondents to a re-call run in February 2021, we show that there was no adjustment to the new normal. Finally, using data on gender norms, we show that where the role of women is conceived in a more traditional way, the level of mental distress as driven by future employment is lower, suggesting that women's expectations for their role in society do play a relevant role in self-assessed well-being.

Title

Regional devolution and productivity of the Italian hospital sector: Catching up or falling behind?

Authors

C. Guccio, G. Pignataro

Abstract

This paper analyses productivity growth in the Italian hospital sector over a period characterized by substantial reforms that shifted the responsibility of both managing and funding from central to regional governments. One of the main goals of these reforms was to improve the accountability and efficiency of the Italian NHS. In a country characterized by large disparities across the different jurisdictions, along the different dimensions of the provision of healthcare services, one would expect that regional autonomy should provide a powerful incentive to improve the efficiency of provision, above all for those regions lagging behind. As a result, we should observe a closing gap in the efficiency level of the different regions and a general increase in the national level of efficiency. Of course, this is something that needs to be tested over a sufficiently long timespan. This study explores for the first time the dynamic effects of delegation of healthcare policies to Italian subnational governments, on hospital sector productivity levels. We use the latest advances of time-dependent robust nonparametric frontier analysis to assess the effects of these reforms on hospital efficiency levels. It utilizes conditional order-m robust frontiers to model the dynamic effects of decentralization on a large sample of Italian hospitals over the period 1999–2010to disentangle the dynamic effects alongside the effects of decentralization on productive efficiency levels between geographical area. The analysis shows that the effects of the reform have been mixed for the regions as a whole, further widening the efficiency gap between the hospital sectors in the North and the South of the country.

Title

Should I care for my mum or for my kid? Sandwich generation and depression burden in Italy

Authors

E. Brenna

Abstract

Setting and objective. In Italy, over the last decades, elderly care has been mostly provided by family members, especially adult offspring, and in particular daughters. This paper investigates the relationship between informal caregiving and mental distress among Italians aged 35 to 59, with a focus on gender effect and parenthood responsibilities.

Data. The dataset is the European Health Interview Survey (EHIS), second wave, year 2015. As far as it is known, the Italian EHIS has not been used for studies on ageing and caregiving.

Methods. Using selected subsamples, a Propensity Score Matching between caregivers and non-caregivers aged 35 to 59 is implemented, with the aim of measuring the difference in level of depression, if any, between the two groups.

Results. Findings show that women providing their frail relatives with informal care are less likely to suffer from mental distress compared to non-carers. However, results change radically if they have children aged less than 15at home, and a higher probability of being depressed is detected for women overwhelmed by the double responsibility of assisting both dependent relatives and their own children. Results are not significant for men.

Title

COVID Angels Fighting Daily Demons? Mental Health of Healthcare Workers and Religion

Authors

E. Barili, P. Bertoli, V. Grembi, V. Rattini

Abstract

Background. An increasing number of studies shows the negative impact of theCOVID-19 pandemic on mental health regardless of the different institutional contexts and responses to the emergency (Adams-Prassl et al., 2020; Giuntella et al., 2021; Oreffice and Quintana-Domeque, 2020; Proto and Quintana-Domeque, 2021).Consistent with evidence on past disease outbreaks (Gershon et al.,2016; Lee et al., 2018;Shah et al., 2020) and with the effects detected in the overall population, by the end of the first wave of COVID-19, healthcare personnel had experienced a dramatic deterioration of their mental health, showing clear signs of post-traumatic stress disorder (PTSD) and burnout (Cabarkapa et al., 2020; Giusti et al., 2020; Muller et al., 2020;Pappa et al., 2020; Preti et al., 2020; Vindegaard and Benros, 2020). Understanding the role of potential mechanisms to help cope with the stress triggered by the traumatic situations has important consequences for both the health of specific categories of workers and the general well-being of the population (Bohlken et al.,2020; Cai et al., 2020; Chew et al., 2020; Donget al., 2020; Labrague and De Los Santos, 2020; Maraqa et al., 2020; Shechter et al., 2020;Xiao et al., 2020). It goes beyond the specific traumatic situation experienced due to theCOVID-19 pandemic, possibly applying to other events which are out of the control of individuals. **Objectives.** This paper assesses the effectiveness of a specific coping mechanism that can be used to deal with memories of traumatic events: religiosity. The propensity of people to use religiosity to cope with negative events is known as religious coping (Pargament, 2001). Differently from previous studies that limit their discussion to descriptive analysis (Koenig, 1998; Shariffet al., 2016), we aim at estimating the causal effect of religiosity on reported mental health.

Methodology. We isolate the effect of religiosity running an experiment through an online survey administered to healthcare workers in Italy between June and August2020. The experiment directly manipulates the salience of individual religiosity through implicit priming (Benjamin et al.,2016): participants were randomly assigned to one of the two versions of the survey differentiated by the presence/absence of "sacred" words among statements unscrambling task. Overall, we collected more than 15,000questionnaires from health workers. Based on the answers to the frequency of feelings of distress in the previous months, we construct our main outcome of interest, Mental distress, which captures the memories of severe mental distress statuses, and an index for the level of Concerns, which groups the potential causes of poor self-assessed mental health. Since both measures refer to the period from the end of February to June 2020, our estimated effects refer to coping with past traumatic events, in the spirit of the literature on dealing with PTSD.

Main results. We show that priming religiosity decreases self-assessed mental distress by -9.5% in the full sample (at the mean of the outcome). The baseline results are stronger in the subsample of respondents working in Northern regions, the area most affected by the virus during the first wave. These findings are robust to controlling for a rich set of covariates and to the use of regional fixed effects. The effects on Mental distress are confirmed through an analysis of the impact on Concerns. Based on the assumption that the priming effects should be stronger when the traumatic experience has a potentially deeper impact, we address the role of religiosity as a coping mechanism in two ways. First, we run the baseline analysis on subcategories of workers who were, on average, under more distress as far as mental health is concerned (i.e., women-(Astbury, 2001)) and who were more exposed to the first wave (i.e., hospital workers). Priming religiosity generates a reduction in reporting extremely poor mental status of -9.9% in the subgroup of women, while a reduction by -11.2% among

hospital workers. Second, we look at the type of situation experienced during the first wave. The results show that the effect of priming is stronger in situations regarded as more stressful (e.g., perceived lack of medical personnel). When we analyze the heterogeneous effects of the stressful situations across categories of workers, we observe a profession-specific response to priming. Finally, we check whether priming religiosity implicitly activates a strictly defined inner religious identity. We consider both a more subjective proxy (i.e., self-classification as a religious person) and a less subjective proxy (i.e., prevalence of religious weddings in the province of birth) to identify respondents with different degrees of religious identity. We test the results on several subsamples, observing that when the difference more/less religious respondents is significant, more religious respondents report a stronger effect of the priming.

Title

The impact of Governmental counteracting measures to COVID-19 pandemic on retail trade: some preliminary evidence from Europe.

Authors

M.D. Giammanco, L. Gitto

Abstract

Background. Economists agree that the crisis due to COVID-19 contains aspects related both to demand and supply shocks (Baldwin & Weder di Mauro, 2020; Brinca et al., 2020). While a supply shock reduces the economy's ability to produce goods and services at given prices, a demand shock, on the other hand, reduces consumers' ability and willingness to purchase goods and services. From this viewpoint, the impact of COVID pandemic on the retail sector activity may be seen as relevant for both the demand and the supply side. Governmental reactions to face the COVID-19 pandemic threat are varied and characterised by diverse intensity. Restrictive measures, accompanied by economic support measures have been taken to control the pandemic, although the same actions have determined economic fallouts that need to be faced by other governmental interventions, such as additional measures of social welfare support. The question concerning the type and the intensity of the governmental actions is still an open issue in the public debate.

Objectives. This study carries out a preliminary reflection on how different sectors of economic activity have reacted to the crisis engendered by COVID-19in the first nine months of the pandemic. Using monthly Eurostat data on 29 European countries, the relationship between the adoption of governmental measures and, respectively, the turnover of volume of sales (the percentage change on previous period) of the retail sale of food, beverages and tobacco and of the internet retail sector has been investigated.

Methodology. Explanatory variables employed encompass the government response to COVID-19 pandemic, as measured by the Oxford University team led by the Blavatnik School of Government, through a government response index, a stringency index, a containment and health index and an economic support index employed in their lagged values. In order to limit the use of independent variables, the consumer confidence index has been chosen as control variable, because of its stable relation with relevant macroeconomic variables. Two generalised least squares models have been estimated (one for each dependent variable), controlling for heteroskedasticity across panels and autocorrelation.

Main results. As far as the first model is concerned, the results outlined a positive relationship between consumer confidence and the percentage change on previous period of the index of deflated turnover of retail sale of food, beverages and tobacco. Instead, a negative relation between the dependent variable and restrictive governmental measures has been observed. With respect to the second model, there is a negative relation between consumer confidence and the percentage change on previous period of the index of deflated turnover of retail sale via mail order houses or Internet. Instead, it emerged a positive relation between governmental measures aimed at stringency and the percentage change on previous period of the index of deflated turnover of retail sale via mail order houses or Internet. The results of the analysis offer preliminary insights on consumers' response to governmental action to tame the COVID pandemic state of emergency. Although foods, beverages and tobacco satisfy primary needs and they should be not significantly affected by stringency measures, it emerges that consumers are suffering because of such stringency. On the other hand, internet retail trade shows an opposite pattern, probably because of the limitations to free circulation.

Title

The impact of medical equipment shortage on COVID-19 mitigation in Italy. A nonparametric two-stage approach.

Authors

C. Guccio, G. Pignataro, D. Romeo

Abstract

Background. The outbreak of Covid-19representsa huge challenge to any healthcare system. Especially in the first stages of the pandemic, local and international governments as well as public health experts were found unprepared to respond to the emergency (Bosa et al., 2021). To address the growing number of acutely ill patients, healthcare systems were forced to make every effort to increase their production capacity (De Filippo et al., 2020). Focusing on Italy, our country was underequipped in terms of both ventilators and intensive care units (ICU) available (only tenth in Europe for ICU in 2012, Rodhes et al., 2012). For this reason, new hospital facilities were built, additional healthcare workers were employed but first the number of ICU beds was increased by 65% in the most severe phase (Aimone Gigio et al., 2020). Additionally, hospitals shifted resources from elective activities and services to the treatment of Covid-19 infected patients (Bosa et al., 2020). Access to urgent care (for instance: care for chronic conditions) was globally delayed and prevention programs were interrupted. According to a global expert response study, most surgical operations would have been cancelled or postponed (Banghu, 2020). To provide an example, in Italy, on average 50,55 operations per week were cancelled over the three-month period of the epidemic peak (Bosa et al.,2021).

Objectives. Italy has been among the most seriously hit nations. In fact, the coronavirus pandemic had a significant impact on the population, dropping life expectancy by 1,2 years (4,3 for Bergamo)1, according to the National Statics Agency (ISTAT). This questions the capacity of the country's response strategies adopted to contrast Covid-19 transmission and, more generally, widespread emergency occurrences. The Covid-19 experience, in other words, questions the strong efficiency-oriented healthcare policies, implemented in the last twenty years, which brought the hospitals' capacity dimensioning to be exclusively based on cost-saving arguments. Moreover, as shown by Capano (2020), lack of experience to face a pandemic makes a country's health response dependent on its organizational capacities. Italy's decentralized regional system, therefore, led to very different health policy outcomes (Capano and Lippi, 2021). The purpose of this study is to estimate the performance of Italian NHS, at local level, to contrast Covid-19, and to investigate the impact of medical equipment endowment on this performance.

Methods. For this purpose, we employ a two-stage approach. Specifically, we first assess the relative efficiency in minimizing the spread of the pandemic at the local level, through a nonparametric frontier approach using a smoothed data envelopment analysis (DEA) bootstrap procedure. Then, in the second stage we assess the role of medical equipment endowment in the relative performance at local level using a semi-parametric technique that produces a robust inference for an unknown serial correlation between efficiency scores. In the first stage, in line with recent literature in the field (e.g. Su et al., 2021), we use data on COVID-19 spread provided by the Civil Protection Department and available at national, regional and provincial levels on a both daily and weekly basis (Morettini et al., 2020).In the second stage although it does not exist a unique measure of technology in hospital (see Spetz and Maiuro, 2004), drawing from Finocchiaro Castro et al. (2014), we will build an aggregate index of medical equipment, which combines the number of pieces available with the vector of their estimated normalized price. Such index is computed per millions of inhabitants to allow comparisons between regions which differ in the number of residents.

Expected results. Although our study provides an efficiency analysis of Covid-19 response strategy, like Su et al. (2021), it is unique in that it focuses on a single country at a regional and even local level, going down to the local sanitary units' performances. Furthermore, in the second stage of our analysis, we try to find a connection between the Italian hospitals' technology equipment and their capabilities to deal with the recent infection.

Title

The Economic Burden of Obesity in Italy: A Cost-of-Illness Study

Authors

M. d'Errico, M. Pavlova, F. Spandonaro

Abstract

Background. Obesity is a complex health disorder that significantly increases the risk of several chronic diseases, such as diabetes, cardiovascular diseases (CVDs), and several types of cancer, and it has been associated with a 5 to 20-year decrease in life expectancy. The prevalence of obesity is increasing steadily worldwide and Italy follows this trend with an increase of almost 30% in the adult obese population in the last three decades. An estimated 2–4% of the total health expenditure in Europe is attributed to obesity and it is projected to double in the next 30 years. Detrimental effects have also been described in the work environment (i.e., sick leave, reduced productivity, reduced employment), where obesity is projected to cause the loss of the equivalent of 6 million full-time workers by 2050. Accurate measures are essential for raising awareness around this issue and eventually for developing effective public health interventions to address it.

Objectives. Even if the national and international literature already provides information on the magnitude of the obesity burden, the current knowledge does not yet offer an accurate description and projection of the phenomenon for Italian policy-makers, and the most relevant estimates for Italy are derived from international studies. Therefore, the aim of this study is to estimate the economic burden of obesity in Italy, taking 2020 as the reference year and estimating direct and indirect costs.

Methods. Based on data collected from the literature, a quantitative cost-of-illness (COI) study was performed from a societal perspective focusing on the adult obese population (Body Mass Index (BMI) ≥30 kg/m2) in Italy. This study adopted a top-down (population-based) approach, using aggregate data on mortality, morbidity and other disease-related costs and indicators. After identifying in the literature data on the prevalence of obesity and obesity-associated pathologies, such as diabetes and CVDs, costs were calculated using a prevalence-based approach. More specifically, costs were estimated using the Population Attributable Fraction (PAF), which allowed the estimation of the percentage of the patient population, for each pathology, attributable to obesity.10The evaluation of direct and indirect costs considered both costs solely attributable to obesity (i.e., bariatric surgery) and costs attributable to obesity-associated pathologies. A deterministic (one-way) sensitivity analysis and a probabilistic sensitivity analysis (PSA) for the base case were performed to address the uncertainty of the data included in the model and to validate the study results.

Main results. The study indicated that the total costs attributable to obesity in Italy amounted to €13.34 billion in 2020 (95% credible interval: €8.99billion < μ < €17.80 billion). Direct costs were €7.89 billion, with cardiovascular diseases (CVDs) having the highest impact on costs (€6.66 billion), followed by diabetes (€0.65 billion), cancer (€0.33 billion), and bariatric surgery (€0.24 billion). Indirect costs amounted to €5.45 billion, with almost equal contribution of absenteeism (€2.62 billion) and presenteeism (€2.83 billion). Direct healthcare costs represented 59.2% of the overall costs, while indirect costs accounted for the 40.8%. Obesity has been therefore associated with high direct and indirect costs, and cost-effective prevention programmes are deemed fundamental to contain this public health threat in Italy.

Title

Bio-psycho-social frailty and its effects on healthcare consumption among elderly Europeans: a cross-national longitudinal analysis

Authors

S. Calciolari, C. Luini

Abstract

Background. Frailty represents an emerging challenge for Europe and has major implications for clinical practice, public health and the sustainability of health systems. Itis a geriatric condition, related to but distinct from disability and multimorbidity, and defined as state of vulnerability resulting from physiological declines in reserve capacity and fitness across multiple organs. Notably, such condition results in increased adverse outcomes in older people. More recently, however, it has been argued that the concept of frailty should be widened to adopt a multidimensional approach, including cognitive and social components. In this respect, Gobbens and colleagues (2010) define frailty as “a dynamic state affecting an individual who experiences losses in one or more domains of human functioning (physical, psychological, social) that are caused by the influence of a range of variables, and which increase the risk of adverse outcomes”. Therefore, both biologic and psycho-social aspects should be considered to embrace a more integrated approach to frailty.

Objectives. The analysis aims to provide evidence on the importance of taking a broader approach in defining the condition of frailty, by investigating the role of its physical, social and psychological subdomains in predicting healthcare consumption in elderly Europeans. The outcome variables considered are hospital admission and number of doctor visits.

Data and Methods. The study uses the Survey of Health, Ageing and Retirement in Europe (SHARE), a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks. The analysis is based on the information from 12 European countries included in wave 4 (n=47,323), wave 5 (n=56,736) and wave 6 (n=52,899), collected in years 2011, 2013 and 2015 respectively, with a total number of observations equal to 156,958. The physical frailty index is built following the phenotype definition by Fried et al. (2001), while psychological and social frailty are constructed to proxy the Tilburg Frailty Index. The analysis investigates the relationship between the three dimensions of frailty on: 1) the likelihood of being hospitalized; 2) the number of doctor visits. The study uses two regression models (logit and poisson, according to the nature of the outcome variable) exploiting the longitudinal structure of the data to control for time-fixed unobserved characteristics and including regressors to correct for demand-side factors (health status; socio-economic status; and behavioral risk) as well as for country-specific characteristics (country binary variables).

Main Results. Prevalence of physical frailty increases with age (61% vs. 39%, respectively, in 70-80- and 50-60-years old people) and is highest among respondents with multi-morbidities (80% vs. 20%, in people with and without, respectively). Similarly, prevalence of social and psychological frailty is highest in presence of multi-morbidity (60% vs. 40% and 73% vs. 27%, respectively), despite they are substantially uncorrelated with age. After controlling for the main correlates and for unobserved individual effects, the study shows that physical frailty, in line with previous findings, increases the likelihood of hospitalization and doctor visits. Social frailty, instead, is negatively associated with both outcomes. Results indicate potential health access inequalities. Lastly, psychological frailty increases the likelihood of visiting a doctor and reduces the likelihood of being hospitalized: the latter finding is perhaps due to the activation of different care settings and deserves further attention. In conclusion, the study suggests that taking a multidimensional approach to frailty has the potential to better predict complex needs of the elderly and shed a light on the need to further investigate the role of psycho-social frailty in predicting healthcare utilization in the elderly.

Title

Uncovering Sources of Heterogeneity in the Effect of Maternal Smoking on Birth Weight and APGAR Score

Authors

J. Zenzes

Abstract

Background. Maternal smoking during pregnancy is strongly associated with birth weight reduction as well as fetal growth restriction. It is a matter of debate, whether smoking is more harmful to newborn health in some pregnancies than others. Only few studies have examined the possibility, that effects differ with mother's characteristics, but provide unclear causal interpretation. Understanding possible drivers of heterogeneity is important in identifying those mothers most at need for intensified care and assistance with smoking cessation.

Objectives. This study aims at learning about driving factors of heterogeneity in the effect of smoking on newborn health. Understanding the drivers of heterogeneity in the effect of smoking on birth outcomes is very important. In case strong heterogeneity exists, one would want to be able to intensify care and support smoking cessation for those mothers harming the health of their newborn most when smoking. This would not only help in increasing newborns' health, but saving enormous costs associated with low health at birth.

Methodology. Using recent advances in the intersection of econometrics and machine learning, allowing treatment effects to differ with observables, individual treatment effects can be estimated. However, detection of driving factors remains unclear. We estimate the effect of smoking on birth weight conditional on mother's characteristics using a causal forest and decompose the distribution of conditional average treatment effects (CATE) in order to isolate driving factors of heterogeneity. This way, we are able to isolate differences in effects that are only driven by one single variable, while keeping other characteristics comparable.

Main Results. We apply this framework to decompose the effect of maternal smoking on birth weight (standardized for gestational age and sex of newborn) and the 5-minute Apgar score. Using a comprehensive data set by the National Center for Health Statistics, abstracted from US birth certificates, we find strong modifying effects for mother's age, parity, BMI and weight gain for the effect of smoking on birth weight. Increased age and parity amplify the effect of smoking on birth weight, where increased age can explain up to 75 grams (when comparing mothers aged 23 or younger and mothers older than 34) of difference in treatment effects. For increased BMI and weight gain, we find mitigating effects, thus being overweight or obese and increased calorie intake can alleviate the effect of smoking on birthweight. Considering the 5-minute Apgar score as an additional measure for newborn health, we see a slightly different picture than for the birth weight decomposition. Decomposition for mother's age show similar patterns as for birth weight, increased mother's age amplifies the effect of smoking on Apgar score. For the weight related characteristics, such as BMI and weight gain, we cannot find any positive effect of increased weight or calorie intake on Apgar score. Thus, suggesting that birth weight increased through overweight and excessive weight gain does not result in better infant health.

Title

Optimal consumption, portfolio, and long-term insurance in a dynamic framework

Authors

L. Leporatti, R. Levaggi, F. Menoncin, R. Miniaci

Abstract

Background. Demographic changes, ageing in particular, as well as related public expenditure on health and long-term care (LTC), are a source of concern in many European countries. Public health and LTC expenditure have already been growing over the last decades in all European countries and are expected to increase even more, given the significant improvements in life expectancy. As a result, expenditure on LTC is expected to rise from 1.3 per cent of GDP in 2007 to 2.9 per cent in 2050 (Lipszyc et al. (2012); De la Maisonneuve and Martins (2014)). While demographic ageing impacts on public expenditure have been widely analyzed and assessed in depth, much less attention has been paid to the economic consequences of demographic changes for individuals and households. In OECD countries, the risk of needing long-term care (LTC) is likely a very important driver of savings because it is insured to a lesser extent than medical expenses and it is expensive when paid out-of-pocket. The increasing demand for health and LTC and the financial vulnerability of older persons might create a significant financial burden for the elderly if related costs are not covered by social protection systems. In particular, out-of-pocket (OOP) expenditures occurring on account of deficits in financial protection might have severe impacts, given their regressive nature, and thus increase inequities between the rich and the poor (Scheil-Adlung (2012)). Given the increasing budget pressure faced by governments in developed countries, voluntary private policies covering LTC will become more and more important in the next decades. However, long term care OOP expenditure is still mainly financed with saving (Palumbo (1999); Brown and Finkelstein (2011); Beuren (2017); Crainich et al. (2017)). Thus, understanding the relationship between saving and the purchase of voluntary LTC private insurance is crucial to assess individuals' portfolio choices and future needs for LTC public coverage. Specifically, we aim to assess the financial consequences of LTC expenditure for the elderly, in particular the impact of this expenditure on consumption, assets allocation and wealth accumulation when a private insurance policy is available. Our model allows to explain the evolution of LTC private insurance during the individual life cycle and the reasons leading the individual to decide against a 100% LTC insurance.

Objectives. We study the effects of LTC private insurance coverage on individual choices. Our model aim at answering some important questions:

- what are the individual strategies to reduce the financial risks related to LTC expenses?
- which type of age profile has this insurance? Do older individuals increase or reduce their insurance level?
- LTC changes the optimal portfolio decision?

Methods. We solve the problem of an agent who maximizes the expected discounted (HARA) utility of his inter-temporal consumption over a stochastic life time horizon (mortality risk). The agent can invest on a complete and arbitrage free financial market, and faces a health risk which takes the form of a jump Poisson process. If the negative health shock realizes, recovery is not possible and a constant and permanent flow of resources must be devoted to LTC expenditure. The agent may hedge against this risk by subscribing an insurance contract, on which we assume there exists a mark-up, and that reimburses a given fraction of the amount to be paid for LTC in every period. We find a closed form solution for the optimal consumption, the optimal portfolio, and the optimal insurance hedge. Similarly to Pauly (1990), we interpret LTC insurance as a contract reimbursing to the policy holder an annuity that covers (part of) LTC expenditure if a permanent impairment of everyday life activities realizes. In our model many subsequent permanent health shocks may realize and cumulate in the

long run so that we can study the evolution of private coverage purchase and how private coverage for LTC interacts with saving and dissaving. On the continuously open financial market 2 assets are listed:

- a riskless asset whose price G_t solves the ordinary (scalar) differential equation
$$\frac{dG_t}{G_t} = rdt \ , \tag{1}$$
where r is the (instantaneously) riskless interest rate;
- a risky asset whose prices S_t solve the stochastic differential equation
$$\frac{dS_t}{S_t} = \mu dt \ + \ \sigma dW_t \ , \tag{2}$$
in which dW_t is a Wiener process whose mean is zero and whose variance is dt.

An agent aged x and time t_0 whose demographic profile is summarized by his force of mortality κ. The agent needs some life-saving medications whose total price is mt. This variable evolves in a stochastic way, depending on the agent's health. In particular, we assume that it evolves following a jump process as follows
$$dm_t = \phi d\Pi_t \ , \tag{3}$$
where dΠt is a Poisson process whose intensity λ measures the frequency of the jumps, and φ is the width of the jump, that is the increase in the expenditure for life-saving medications due to a worsening in the agent's wealth. This contract is fair if the expected value of the discounted cash flows paid by the agent is the same as the expected value of the discounted cash flows paid by the insurance. The consumer is endowed with an initial level of wealth which accrues by a constant ow of income w. Resources are used to buy consumption (ct) and LTC insurance (pht). Savings are invested on the financial market. In particular, the consumer optimally chooses the number of risky assets θt and riskless asset θt, G to be held in portfolio. The agent receives utility only from the consumption that exceeds the amount of money spent for buying life-saving medications. In particular, if we assume that the agent's preferences belong to the Hyperbolic Absolute Risk Aversion (HARA) family. We solve the problem presented above to find the optimal consumption path, the optimal portfolio and the optimal LTC insurance. The results of theoretical model will be tested using actual data...

The results of the theoretical model will be tested and calibrated by the use of actual data derived from the Health and Retirement Study (HRS, Rand data files), a biannual longitudinal panel study that surveys a representative sample of approximately 20,000 people in America. For the purpose of our analysis, we have exploited 8 waves covering a period between 2000 and 2014, selecting individuals aged between 55 and 85. The HRS dataset is merged with the Consumption and Activities Mail Survey (CAMS) to observe data corresponding to consumption. The simulation analysis of the theoretical model will then be calibrated by using the parameters (e.g. income; probability of health shock; impact of a health shock) estimated from HRS-CAMS data.

Results. The preliminary results of the model show that individuals may reduce their (marginal) insurance coverage through their life time. More interestingly, when reducing private coverage for LTC they simultaneously dissave. Specifically, the model predicts substitutability between private coverage and saving as a mean to finance LTC expenditure, and also show that such substitutability increases with the individual's age. Finally, we show that, in response to a health shock requiring LTC, the individual uses its assets to keep up the level of consumption, in other words, it prefers to smooth consumption patterns rather than wealth, in line with the Life-Cycle Model.

Title

Consideration of others and consideration of future consequences predict cooperation in an acute Social Dilemma: An application to COVID-19.

Authors

M.A.J. van Hulsen, K.I.M. Rohde, N.J.A. van Exel

Abstract

Background. This paper examines the role of future and social orientation in explaining cooperation in a social dilemma. In the Netherlands, the COVID-19 pandemic raised an acute social dilemma where citizens could decide whether to comply with the precautionary measures recommended by the government. Because of this, we could study whether Consideration of Others and Consideration of Future Consequences can predict compliance to the precautionary measures put in place to prevent the spread of the coronavirus in the Netherlands during the first wave of the pandemic.

Methods. Through an online survey (N=1019), send out during the peak of the first wave (March 2021) to a representative sample of the adult population of the Netherlands, consideration of future consequences (CFC), consideration of others (COO) and compliance with the precautionary measures were measured. The data is analyzed in a two-step approach. First, we compare full compliers (maximum compliance score) to those that did not fully comply with a series of Wilcoxon rank-sum tests. Then we run hierarchical regression on the subsample of partial compliers.

Results. Results show that both an increase in COO and CFC are associated with increased compliance. Moreover, COO and CFC interact: the marginal effects of COO and CFC are lower for higher values of CFC and COO, respectively. Gender, age, perceived risk for others, perceived compliance by others and opinion about government response to the pandemic also have a significant association with compliance.

Conclusion. These findings emphasize the importance of both social and future orientation in the prediction of cooperation in social dilemmas. Additionally, it shows that social orientation is an important predictor of compliance to measures.

Title

The effect of minimum wages on health in China

Authors

D. Liu, G. Turati, S. Robone

Abstract

Background and Objectives. Since 2004 the employment regulations in China require that nominal minimum wages should be adjusted at least once every two years in all the provinces of this country. Previous literature mainly focuses on the effects of minimum wages on the employment conditions and income, however the possible effects on the health of workers have received little attention so far. A minimum wage increase might have a positive impact on health through the channel of income or income distribution. However, it might also be adversely linked to health due to a worsening of working conditions (such as the request of higher productivity and/or more working hours). Thus, a priori, the net effect of minimum wages on health is uncertain. By using data from the Wave 1 of the World Health Organization's Study on Global Aging and Adult Health in China (2007-2010), in our study we estimate this net effect.

Methods. We use ten health and well-being domains (mobility, memory, learning, sleep, vision, pain, discomfort. depression and anxiety) as the dependent variables. Since such domains are self-reported and measured on a 5-point categorical scale, the issue of reporting heterogeneity might bias the results of our analysis (King et al. 2004). In order to address this issue, on the top of estimating standard Ordered Probit (OPROBIT) models, we exploit the "vignettes" questions which are provided in the WHO dataset and we estimate Hierarchical Ordered Probit (HOPIT) models. We regress each of the aforementioned health and well-being domains on the real minimum wage, by controlling for standard socio-demographic characteristics, employment and working conditions and characteristics of the living environment (such as safety of the neighbourhood and population density). We also control for unobserved residual heterogeneity by including province level fixed effects and year fixed effects

Results. Results from the OPROBIT suggest that the real minimum wage is negatively and significantly related to several health outcomes. When we consider the results from the HOPIT model, the negative effect of minimum wage appears even larger. As an example, a 100 RMB increase in minimum wage decreases the likelihood of having mental health issues by 6.22%, pain by 13.22% and cognition problem by 15.63%. These negative effects are mostly found for men, for employee in the private sector and with a full time contract.

Discussion. The negative effect of minimum wage on health might be explained by the worsening of working conditions (increase of working days or working effort) which workers experience in response to the increase of minimum wage. To prevent such negative effect, the Chinese Government should pay more attention in regulating the working conditions of workers.

Title

Ethnicity and Health at Work during the COVID-19

Authors

J.E. Madia, C. Nicodemo

Abstract

This paper explores how health-work related illnesses and injuries have changed during theCOVID-19 pandemic for different ethnic groups and by gender. We found that not all the groups are being affected in the same way. While almost all men ethnic groups were in average less likely to work during the pandemic period, women from White British, Mixed, Indian, Pakistani and other Asian and Blacks were more likely to work. We also find that Mixed Ethnic and Pakistani women who reported a higher probability of working in the reference week, they also have higher risk of illness/injuries at work. Contrarily, White man and Other ethnic with reduced probability of working during the pandemic have lower risk of illness/injuries at work. Finally, looking at having a long-term illness, we also found ethnic and gender differences. In particular, there are opposite signs between man and woman: while men in White British, Pakistani, Other Ethnic experienced a reduction in physical and sensory health issues, women in the same ethnic groups experience an increase of these issues. Similarly, among Mixed ethnic group, woman experienced larger mental health issues while men experienced a reduction. Analyses distinguishing by essential and non-essential workers suggest that there have not been particular differences between these types of workers.

Title

What properties should a hypothetical point-of-care diagnostic test possess? Early economic modelling capturing to inform a Target Product Profile for new rapid tests for Clostridioides difficile infection

Authors

P. Cocco, A. Smith, K. Davies, C. Rooney, R. West, B. Shinkins

Abstract

Background. In the midst of the ongoing COVID-19 pandemic, international and national health organisations are in the process of developing Target Product Profiles (TPPs) as a means to steer the innovation pipeline of new diagnostic tests towards urgent clinical and public health priorities. TPPs are strategic documents, targeted at test developers, summarising at early development stages the key properties a new test should possess in order to fulfil an unmet clinical need. In a methodology review we conducted, several methodological limitations with TPPs were identified, including a lack of cost-effectiveness considerations when defining test requirements, poor methodological transparency and reliance on subjective data (e.g. expert consultations and literature findings). Early economic evaluation (EEE) is increasingly performed at early development stages as a means to inform the optimal trajectory of future research for new health technologies. In this study, we applied the EEE methodology to a case study example – a new point-of-care test for Clostridioides difficile infection (CDI) – to explore how EEE methodology could be integrated within the TPP development process to help define acceptable and desirable performance specifications for new tests. CDI is a healthcare-associated infection which causes diarrhoea resulting in longer hospital length of stay and increased healthcare costs. In the UK, inpatients with suspected CDI are typically isolated in single rooms while awaiting test results to prevent transmission, until confirmation of non-infectious diarrhoea. Slow test-turnaround hinders de-isolation of non-infected patients, causing ineffective utilisation of infection control infrastructure.

Objectives. A rapid point-of-care test (POCT) for CDI is under development as part of a Medical Research Council-funded programme grant (MR/N029976/1). To ensure that the test is 'fit-for-purpose', a TPP will be developed outlining the necessary characteristics of the test. To inform the TPP for rapid POCT for CDI, this model-based early economic evaluation has the following objectives:
-To explore the impact that a hypothetical POCT could have on infection control infrastructure, clinical decision-making, infection spread and costs.
-To identify the necessary characteristics of a POCT for CDI to be cost-effective compared to standard care from a UK NHS perspective.

Methodology. A discrete event simulation model was built in SIMUL8 to reflect the Leeds Teaching Hospitals NHS Trust (LTHT) care pathway for patients with suspected CDI. The model compares the hypothetical test against the current two-step testing algorithm at LTHT over a two-month time horizon. Parameters are taken from observational data, published literature and expert opinion. Extensive model validation was conducted.

Primary outcomes are the total number of secondary cases and quality-adjusted life years lost due to infection. Secondary outcomes assess the impact of the hypothetical test on the clinical workflow, CDI treatment and costs. Headroom, threshold and sensitivity analyses are conducted to determine the characteristics for the hypothetical test to be cost-effective compared to standard CDI testing (e.g. diagnostic accuracy, speed of diagnosis, maximum cost).

Results. To be confirmed in November 2021.

Discussion. TPPs are increasingly of interest to healthcare decision-makers seeking to accelerate the innovation pipeline for new tests towards areas of clinical need. The COVID-19 pandemic has put a spotlight on the need for TPPs to provide clinically meaningful and evidence-based performance

specifications for new diagnostics. This novel work applies early economic modelling to inform what requirements a new hypothetical test for CDI should possess to be clinically- and cost-effective, whilst also identifying any limitations with this approach which could be addressed in future research.

Title

EQ-5D-5L population norms for Italy

Authors

M. Meregaglia, A.P. Finch, F. Malandrini, O. Ciani, C. Jommi

Abstract

Background. The EQ-5D is a commonly used family of instruments to describe and value health in a wide range of conditions and populations. The EQ-5D-5L version is composed by five dimensions (i.e., mobility, selfcare, usual activities, pain/discomfort, anxiety/depression), articulated into five levels each (from no problems to extreme problems), and accompanied by a visual analogue scale (EQ-VAS, from 0 to 100). The description system generates3,125 (55) health profiles that can be transformed into utility values for health technology assessment using a country-specific value set.

Objectives. The present study is part of the EQ-5D-5L valuation study conducted to derive a value set for Italy. It aimed to provide normative data for the EQ-5D-5L questionnaire, together with some additional information on health and socio-economic conditions, collected from a nationally representative sample during the valuation study. This study also allowed to outline the health status of the Italian population during the second wave of Covid-19 pandemics.

Methods. The target participants were a sample of the Italian adult population (aged 18and above) and were recruited through a market research company (Pepe Research). Due to the Covid-19 emergency, one-to-one interviews were conducted using a videoconferencing software (Zoom)and a survey web application (LimeSurvey) by eleven trained interviewers between November 2020 and February 2021.The distribution of answers was estimated for the descriptive system of the EQ-5D-5L, and descriptive statistics were calculated for the EQ-VAS in the whole sample and in relevant subgroups (e.g., by age and gender). Data analysis was performed using Stata (StataCorp).

Results. The sample was composed of 1182 people and fully represented the Italian population (2020) in terms of gender and geographical area. Mean age was 48.3; men were 48.7%. Of the health states potentially generated by the instrument, only 106 (3.4%) were selected, and the two most common (i.e., '11111' and '11112') were chosen by half of the sample. Mean VAS was 81.8, and steadily decreased with increasing age (from 87.0 in the 18-24 group to 75.1 among the over 75). In participants affected by chronic illness (39%), mean VAS dropped to 75.5. Lower values were also observed in people with low educational level (78.2) and low income (78.8), pensioners (77.5) and housewives (78.8), divorced (79.3) and widowed (76.5), carers of a severe disabled (79.3), and social assistance recipients (77.5). In terms of EQ-5D-5L dimensions, at least one problem (from slight to extreme) was reported by 12.1% of respondents for mobility, 4.2% for selfcare, 11.6% for usual activities, 43.3% for pain/discomfort, and 41.2% for anxiety/depression. The frequency of problems generally increased with age, except for the last dimension, where 56% among the youngest (18-24) reported complaints versus 30% of people aged 75 and above. Moreover, self-reported anxiety/depression was far more common in women (49.7%) than in men (32.3%).

Conclusions. EQ-5D-5L population norms provide useful insights into the health status of the Italian population and can be used as reference values for other surveys using the same instrument. The mean EQ-VAS registered in this study (81.8) was higher than values observed in similar studies performed in other western countries, such as Netherlands (80.6), Germany (79.4), France (79.0) and United States (80.4), but lower than in Canada (82.7). The mean VAS also resulted considerably higher than the one (77.1) obtained in the previous instrument version (EQ-5D-3L) valuation study, which, however, recruited a higher proportion of elderly people. In synthesis, the overall health status of Italians captured using EQ-5D-5L was good, with more than one thirds selecting the 'perfect health' status (i.e., 11111). However, over 40% of respondents reported various levels of anxiety and

depression, especially in the youngest age classes (below 35), which, as shown in other studies, resulted more affected by mental disorders during the Covid-19 pandemics.

Title

Education and COVID-19 excess mortality

Authors

P. Bello, L. Rocco

Abstract

COVID-19 mainly spreads through close contact from person to person. Hence, people potentially have a great deal of control over the risk of getting infected. For instance, they can keep social distancing, reduce mobility, use face masks and adopt specific hygiene practices. However, adopting these protective strategies requires a profound change of long-established and deeply interiorised social behaviours. Changing is difficult because of inertia (Ornaghi and Tonin, 2018), and because these strategies limit social interactions and freedom of movement. The decision to adopt protective strategies depends on their perceived costs and benefits, and individuals comply only if perceived benefits exceed perceived costs. The balance between costs and benefits is influenced by several factors, including gender, age, occupation, income, trust in the government and beliefs (Galasso et al. 2020, and Desmet and Wacziarg 2021, among others). Several papers also show that compliance is stronger in areas richer in social capital (Barrios et al. 2021, Durante et al. 2021, Brodeur et al. 2020), where social benefits are more likely to be factored in individual decisions. Assessing the size of the benefits crucially depends on one's ability to acquire and process information, to judge the effectiveness of alternative strategies, the level of own risk of infection, the credibility of alternative information providers, the ability to discriminate between evidence-based and fake news. Quite obviously education is crucial in this respect, as individuals with higher education enjoy higher numeracy, literacy, cognitive and analytical abilities. Hence, they are less likely to believe in conspiration theory, or fake news (Freeman et al. 2020) and are able to take better decisions in the health domain (Reyna et al. 2009). It is surprising that so little attention has been spent studying the role of education in determining the spread and intensity of the COVID-19 pandemic. Many studies control for education, but very few focus primarily on education. We exploit the mortality data provided by the Italian National Statistics (ISTAT), by municipality, date of death, and age, from 2012 to 2020. These data allow to examine (excess) all-cause mortality in 2020 compared to the previous years in detail. All-cause mortality captures mortality both directly and indirectly related to COVID-19, the latter being the one caused by possible disruptions of the healthcare system at the peak of the epidemic, the delay in programmed treatments, surgery and screening. We believe that all-cause mortality is a more accurate account for the intensity of the epidemic compared to the number of COVID-19 cases, hospitalizations or fatalities. We consider mortality in the population aged 60 and over, which is the age group that almost exclusively suffered the worst consequences of COVID-19, and distinguish four periods in the epidemic, January and February 2020, which is essentially pre-COVID-19; March to May, which corresponds to the first COVID-19 wave; June to September, which corresponds to the fading out of the first wave and the ease of mobility restrictions; and, finally October to December, which corresponds to the rise of the second wave. We also distinguish between Northern and Central-Southern Italy, because the former experienced both waves while the latter was spared between March and May. For each period and each area, we estimate a continuous event study model to establish if and to what extent the increase in mortality rates registered in 2020 compared to the period between 2012 and 2019 depends on the proportion of municipality residents with at least an upper secondary school diploma, our main measure of education. Our data permit us to test parallel trends in a very long pre-COVID-19 period and to neutralize confounding seasonal effects, such as the flu, representing a major value-added compared to the literature. As the identifying condition of parallel trend holds, we can safely attribute the differential excess mortality we observe in 2020 to education

and not to pre-existing diverging trends across municipalities. We find that in Northern Italy, during the first wave, education played a significant protective role. The excess mortality rate among the over 60 was much smaller among the more educated municipalities than among their less educated counterparts. Specifically, a 10 percentage points increase in the share of residents with at least secondary education was associated with a 0.64 deaths per 1000 inhabitants lower excess mortality, which correspond to about 36 percent of the average excess mortality registered in the North between March and May. During the second wave, which regarded the whole country, we do not find any significant differential effect related to education, neither in the North nor in the Centre-South. Interpreting this pattern of findings is difficult especially for lack of timely and geographically detailed data on individual behaviors, information and perceptions. We start by ruling out explanations which point to correlations between education and urbanization, home working or preference traits. Our preferred interpretation calls for the interplay between education and information. We argue that when information is contradictory, as it was the case during the first wave, the more educated are better able to discriminate among different opinions and are more likely to take the right side. Differently, when information is easily accessible and univocal, as in the second wave, everyone adopts the right strategy, independently of their education.

Title

Risky Behaviours: A Matter of (Relative) Age

Authors

L. Fumarco, F. Principe

Abstract

Background and aims. Does classroom age composition affect health behaviours? Despite the emerging research examining the impact of classmates' characteristics on several outcomes, the answer to this question has not been studied directly. Adolescents' health risky behaviours, such as smoking tobacco and marijuana or drinking alcohol, affect school performance and thus labour market outcomes. On top of that, risky behaviours cause externalities that negatively affect the healthcare system. In general, as argued by Cawley and Ruhm (2011), the identification of the causes of adolescents' health risky behaviours may "lead to improvements in public health policy that enhance social welfare". One possible cause of adolescents' health risky behaviours that has been so far neglected is the policy of grouping students born up to one year apart in the same class; this policy is widespread but costly in terms of human capital formation, and likely to affect risky behaviours as well. The aim of our study is to fill this gap.

Data and methods. This paper uses data from the international survey "Health Behaviour in School-Aged Children" (HBSC), on adolescents from most European countries (see Fumarco & Baert (2018) for more details on the list of included countries). We use four waves: 2001/2, 2005/6, 2009/10, 2013/14; about 500,000 observations. The HBSC survey has a unique feature compared to more popular students' surveys (e.g. PISA, TIMMS, PIRLS): respondents' target age range is between 10.5 and 16.5 and, hence, it allows the disentanglement of absolute age from relative age. The possibility to accomplish this disentanglement sets the main difference between our study and those on the related literature of age at school entry effects (ASEs; Ponzo & Scoppa, 2014; Mühlenweg et al., 2012; Sprietsma, 2010; Bedard & Dhuey, 2006). So far, to the best of our knowledge, only one study has conducted this disentanglement: Peña and Duckworth (2018), who used unique survey data from Mexico. To identify the causal effects of relative age on a set of risky behaviors, we set up an instrumental variable strategy, which exploits the variation in cut-off dates for school enrolment across countries as a source of independent variation in relative age.

Preliminary results. We find that relatively younger students are more likely to engage in risky behaviours, such as smoking, drinking alcohol and substances use. In particular, we find that an increase by one month in relative age decreases the chances to smoke once a week by 0.2%, the chances to have been drunk at 13 years of age or earlier by 0.1%, the chances to have ever been drunk by 0.4%. These results imply that a twelve-month increase in relative age (i.e. the hypothetical maximum age gap between regular students) increases these probabilities by 2.4%, 1.2%and 4.8%, respectively. Concerning alcohol consumption, we find that an increase by one month in relative age decreases the chances to drink at least once a month by 0.6%. Concerning substances use, we find that an increase by one month in relative age decreases the chances to have ever been smoked weed by 0.2% the chances to have smoked weed at 13 years of age or earlier by 1.8. Finally, an increase by one month in relative age increases the chances to have ever had sex by 0.2%. Differently from previous studies (Mühlenweg, 2010), we do not find that relatively young students are more likely of having been bullied or cyberbullied. However, we still find that an increase by one month in relative age increases the chances to have been in a fight or to have bullied someone else by 0.3% and by 0.1%, respectively.

Title

Determinants of CoViD-19 infections among nursing home residents and staff: a case study of Tuscany

Authors

S. Barsanti, A. Bunea, E. Pardini

Abstract

Background. In the first months of the coronavirus pandemic, numerous infections occurred among elderly living in nursing homes (NHs) all around the world. In the western European countries up to May 2020, the proportion of deaths in NHs for CoViD-19 was between 26% (UK) and 66% (Spain) of the total deaths from CoViD-19 (Danis et al., 2020).

During the first wave, Italy was one of the hardest hit countries by the pandemic. An Italian National Institute of Health (ISS) survey showed that 7.4% of the NHs' patients who died between February 1st and April 30th, 2020 were infected with CoViD-19. However, other 33.8% had flu-like symptoms (ISS, 2020). Thus, the crisis highlighted even more the weaknesses of the Italian NH sector, due to the complexity and fragmentation in terms of competencies and resources among institutional and non-institutional actors (Berloto et al. 2020).

Objectives. The aim of our research is: (i) to analyse managerial practices in the NHs, February – June 2020, and (ii) to identify the determinants of the presence of CoViD-19 cases among NH patients and staff during the first months of the pandemic.

Methodology. We submitted a survey to the 328 NHs located in Tuscany to collect data about how the structures reacted to the pandemic and coped with its effects during the first critical wave of contagion. The questionnaire was created with the open-source software LimeSurvey and is divided into the four sections: procedures, personnel and process management, management of clients and possible cases, critical issues and good practices. We received 225 responses, thus a 68,6% response rate.

We also inserted in the model some control variables: ownership, size, territorial distribution and the participation at the evaluation system and data regarding some characteristics such as: service externalisation, certifications, evaluation scales and personnel. This information was gathered from previous surveys conducted by our research team.

After collecting the data, we carried out a statistical analysis to identify possible factors associated with the presence of positive cases for CoViD-19 among NH patients and staff. We use the stepwise method (Efroymson, 1960) to automatically select predictor variables at 95% significance level for logistic regression among numerous independent variables inserted in the model.

Main results. In both the analyses, for residents and staff, the probability of having infections with CoViD-19 is lower where there is greater satisfaction with the general coordination between general practitioners and NHs and higher for NHs located in areas most affected by the virus.

Additionally, the probability of having CoViD-19 positives among residents is lower for NHs that have (internal staff or freelancers) at least two of the following professional figures: social-health coordinator, nursing coordinator, facility doctor and quality manager, whereas the probability of having CoViD-19 positives among staff is lower for NHs that have provided specific training to nurses for the management of CoViD-19 positive patients in the first two months (February and March) compared to those who have undergone training starting from April.

Our results highlight the importance of the coordination with the general practitioners and the presence of professional figures in the structure in reducing the spread of the virus among residents. However, being part of an area affected by the virus increases undoubtedly the probability to have positive cases (among residents or operators) in the structure, a variable beyond the manager's control. This stresses the need for regional and state intervention to reduce the overall infections on the territory.

Some actions did not have a significant impact on the likelihood of having covid-19 cases neither among residents nor staff. Notable examples are the type of property (public or private), the size of the facility, and the presence of pandemic plans.

Title

Severe Health Shocks and Disability Take-Up in Italy: Targeting, Choices and Timing

Authors

I.Simonetti

Abstract

Over the past 25 years, the occurrence of cardiovascular diseases (CVDs) has increased in most European countries, including Italy. CVDs are a source of major human and economic costs -direct health costs, productivity loss and informal care costs –as they lead to physical and mental impairments, limiting daily activities and the ability to work. Nowadays, a widespread of monetary (and non-monetary) programs aimed at protecting against the consequences of disability have been developed by many social care systems. However, the increase of the social care expenditure, and its foreseen consequences for the already tightened public purse, have recently stemmed policy debate on the role and the effectiveness of these benefits (Walness, 2006; Berthoud and Hancock, 2008; Pudney, 2010). The design of each public program requires targeting, especially when addressed to the disabled. Indeed, if the take-up by eligible individuals is low, then the targeted program may fail to reach the goal of providing a minimum bundle of goods for the target group. On the contrary, if the take-up by ineligibles is too high, then government revenues will be diverted from other productive uses (Currie, 2006). Empirical evidence has shown the role played by complex application processes and administrative costs for incomplete take-up rates in public programs (Currie and Grogger 2001; Bitler, Currie, and Scholz 2003; Daly and Burkhauser 2003; Currie, 2006; Aizer 2007). No less important when evaluating programs' effectiveness is the timing of provision, that is whether these benefits are promptly received after the onset of the disability (Zantomio, 2013). By focusing on different health-related supports in Italy, namely disability and civil incapacity benefits, I provide new evidence on the relationship between individuals' socio-demographic and economic characteristics and the take-up of disability programs. Do personal features influence the accessibility of specific programs and the timing of the benefit receipt? The attention on alternative programs –diverse in terms of eligibility criteria, duration and generosity -provides insight into individuals' preferences and/or constraints when asking for a specific benefit. Moreover, while researchers are often concerned about recognizing that any set of disability indicators may give an imperfect description of the concept of disability (Hancock et al. 2015), the identification of the first hospitalization for a CVD shock that occurred in the last two years allows us to define it more accurately. This study is based on a new Italian administrative dataset - WHIP&Health - which covers the work and social security histories (1990-2012) of a random sample drawn from the Social Security archives (INPS, Istituto Nazionale della Previdenza Sociale), linked to individuals' hospital discharge records from all private and public hospitals since 2001. We consider male blue-collar workers aged 18-64 who experienced a severe form of CVD shock between 2003 and 2005. Preliminary findings from a sample of 1,658 individuals show that the take-up probability of a benefit as well as the timing of receipt is clearly affected by personal characteristics that should not influence eligibility. For instance, people coming from underdeveloped countries are found 18 percentage points less likely to get none of the available health-related programs within one year after the time of the CVD shock (T). Interesting results also appear when looking at the area of work at time T: with respect to workers in the northern regions, those employed as blue-collars in central and southern areas are also more likely to get at least one benefit, 12 and 16 pp respectively. The feeling of significant heterogeneities among areas of work –potentially reflecting a different development of the labour market -are also depicted by the multinomial analysis: the take-up of a civil incapacity benefit (as the first one) appears determined by the past labour income as well as by working in southern regions. The hazard ratios estimated through a Cox

proportional hazard model on the elapsed time between the reference hospitalisation and the time they received the benefit also confirm these results. All these findings depict specific individuals' characteristics –that are irrelevant with respect to the eligibility for the payment –as confounders in the benefit assignment mechanisms, both in terms of selection as well as the timing of the claim. To the extent that such results reflect delays in pursuing a claim, rather than administrative delays, health and social care professionals' referrals could play a crucial role in improving the targeting and fostering horizontal equity of public financial support for disability in older age.

Title

An EQ-5D-5L value set for Italy using videoconferencing interviews and feasibility of a new mode of administration

Authors

A.P. Finch, L. Borsoi, C. Falivena, R. Freddi, B. Roudijk

Abstract

Background. Generic preference-based measures (GPBMs) are prescored utility measures. These are commonly used for calculating quality adjusted life years in cost-utility analysis (CUA) of health care interventions. The 2020 guidelines of the Italian Drug Agency(AIFA) states that CUAs are a mandatory component of the national-level pricing and reimbursement dossier, and that utility data should be referred to the Italian context. The EQ-5Dis the most widely used GPBM of health, but an EQ-5D-5L value set is not available in Italy. EQ-5D-5L value sets are developed based on a standardized protocol, an important requirement of which is the conduct of face-to-face interviews. Due to the COVID-19 pandemic, travel restrictions, establishments closures and limitations of in-person meetings were imposed by the Italian government, preventing the possibility of conducting face-to-face interviews. An alternative mode of administration that may preserve the required interaction between interviewers and interviewees is videoconferencing (VC) administered interviews. Yet, the feasibility of this mode of administration has not yet been tested for the conduct of valuation studies.

Objectives. To test the feasibility of using VC administered interviews and, conditional on a positive assessment, to derive an EQ-5D-5L value set for Italy.

Methods. Preferences were collected using the EuroQol standardized valuation protocol (EQ-VT) administered via VC. Two valuation methods were employed, composite time trade-off (cTTO) and discrete choice experiment (DCE). Technical, organizational and protocol feasibility were tested in a pilot of 198 interviews using both quantitative and qualitative metrics. Upon positive assessment, data collection continued with a target sample of 1000-1200participantsincluding the pilot. Quality control(QC) procedures were employed to monitor interviewers' performance during the pilot and the data collection. Data were modelled using GLS, Tobit and Hybrid models with different error specifications. Monotonicity of coefficients, statistical significance, and theoretical considerations informed the model choice.

Results. Technical problems occurred in 13%of the pilot interviews and dropouts in 6% of them. Protocol compliance was demonstrated with significant improvements in QC parameters and limited interviewers' effects, for all interviewers. Overall, interviewers were satisfied with this mode of administration, highlighting it allows flexibility and efficient scheduling. Based on these results, VC was deemed a feasible mode of administration. The study collected preferences for 1182 responders, including the pilot interviews. The demographic characteristics of the sample were representative of the Italian general population for age, gender and geographical macro-areas. The linear random intercept model showed monotonic coefficients, but mobility level 2 was non-significant. The Tobit random effect model had a non-significant parameter, and the Tobit random effect heteroscedastic model had a non-monotonicity and an inconsistency. The hybrid Tobit heteroscedastic model without constant was consistent and significant in all parameters. This model estimated on the full sample (including pilot) was selected for the derivation of the value set. Values ranged from -0.571 for the worst health state (55555) to 1 for the best health state (11111). Pain/discomfort registered the largest decrement, followed by mobility, anxiety/depression, self-care, and usual activities. 523 health states were worse than dead.

Conclusions. VC appears a viable approach for the conduct of valuation interviews using both cTTO and DCE. Based on this mode of administration, an Italian value set for the EQ-5D-5L was developed. This can be used for value determinations of drugs and other health technologies in Italy and enables cross-country comparisons.

Title

The Returns to Preventing Chronic Disease in Europe and the United States

Authors

V. Atella, F. Belotti, D. Goldman, A.P. Mortari, M.S. Ryan, B. Tysinger, J.C. Yu

Abstract

Since the 1950s, life expectancy in Europe and the United States has improved at a steady pace, driven mostly by gains at older ages. However, these lives are punctuated by more chronic disease than ever before, contributing to substantial morbidity and disability. Using the Future Elderly Model, we simulate longevity and disability over the remaining lifetime for cohorts of older Europeans and Americans.

The model simulates total longevity and disability over the course of a lifetime for representative cohorts of older Europeans and Americans. We then consider two counterfactual scenarios. In the first, we reduce the presence of the chronic illness at age 50, if present (i.e., the impact of removing stock). In the second, we reduce the incidence of chronic disease after age 50, among those developing disease after this age (i.e., the impact of removing flow). We then assess the impact on the treated and the average effect on the overall cohort, in terms of life-years (LYs) and disability-free life-years (DFLYs). We study Europe and the US to understand how differences in older age prevalence and incidence between the two regions influence the burden of disease, as well as the trade-offs between treatment and prevention by disease.

We see that investment in both treatment and prevention for cancer, diabetes, and heart disease show tremendous promise for breaking Europe and the United States out of the expensive equilibrium we now find ourselves in as a result of demographic gains.

Title

Studying informal care during the pandemic: mental health, gender and job status

Authors

J.E. Madia, F. Moscone, C. Nicodemo

Abstract

Unexpected negative health shocks such as COVID-19 has put pressure on households to provide more care to relatives and friends. Using UK data survey, and exploiting the pandemic, we are able to estimate if people who provide care report more mental health problems with respect to people who do not provide it. We found that people who start to provide care have more mental health issues and work less hours. Further, women are the ones who are most affected when they start to provide care after the pandemic. Our evidence show how these “invisible” workers are vulnerable and why they need the same social protection of formal carers.

Title

Standardising policy and technology responses in the immediate aftermath of a pandemic: A comparative and conceptual framework

Authors

N. Moy, M. Antonini, M. Kyhlstedt, G. Fiorentini, F. Paolucci

Abstract

The initial policy response to the COVID-19 pandemic has differed widely across countries. Such variability in government interventions has made it difficult to compare what has happened and the effectiveness of interventions across nations. To examine the impact government interventions and technological responses have on epidemiological and economic outcomes, this health policy paper proposes a conceptual framework that provides a qualitative taxonomy of government policy directives that allows for a better understanding and evaluation of the effectiveness of policies that were implemented in the immediate aftermath of the pandemic announcement and before vaccines were implementable. This framework assigns a gradient indicating the intensity and extent of the policy measure, and applies the gradient to four countries that have different COVID-19 experiences: Italy, New Zealand, the United Kingdom and the United States of America. In doing so we provide a measure that examines the effect of dominant policy initiatives on health and non-health related outcomes. We demonstrate the value of the categorisation process using interventions for the SARS-CoV-2 pandemic in four countries.

Title

The COVID-19 pandemic in Italy: Policy and technology impact on health and non-health outcomes

Authors

C. Berardi, M. Antonini, M.G. Genie, G. Cotugno, A. Lanteri, A. Melia, F. Paolucci

Abstract

Background. Italy was the first Western country to experience a major coronavirus outbreak and consequently faced large-scale health and socio-economic challenges. The Italian government enforced a wide set of homogeneous interventions nationally, despite the differing incidences of the virus throughout the country.

Objective. The paper aims to analyse the policies implemented by the government and their impact on health and non-health outcomes considering both scaling-up and scaling-down interventions.

Methods. To categorise the policy interventions, we rely on the comparative and conceptual framework developed by Moy et al. (2020). We investigate the impact of policies on the daily reported number of deaths, case fatality rate, confirmation rate, intensive care unit saturation, and financial and job market indicators across the three major geographical areas of Italy (North, Centre, and South). Qualitative and quantitative data are gathered from mixed sources: Italian national and regional institutions, National Health Research and international organisations. Our analysis contributes to the literature on the COVID-19 pandemic by comparing policy interventions and their outcomes.

Results. Our findings suggest that the strictness and timing of containment and prevention measures played a prominent role in tackling the pandemic, both from a health and economic perspective. Technological interventions played a marginal role due to the inadequacy of protocols and the delay of their implementation.

Conclusions. Future government interventions should be informed by evidence-based decision making to balance, the benefits arising from the timing and stringency of the interventions against the adverse social and economic cost, both in the short and long term.

Title

La crescita delle prestazioni previdenziali: un’analisi delle determinanti per l’Italia

Authors

F.S. Mennini, C. Nardone, S. Gazzillo, V. Sciannamea, R. Migliorni, M. Trabucco Aurilio

Abstract

Background. Negli ultimi 15 anni, in Italia, il numero di richiedenti di prestazioni previdenziali è cresciuto significativamente, causando un incremento dell’impatto economico e sociale.
Obiettivi. Gli obiettivi dello studio sono stati quello di identificare ed analizzare le determinanti della crescita del numero di prestazioni previdenziali, e quello di fornire una stima dell’impatto economico relativo a tali prestazioni.
Metodologia. Per analizzare la relazione tra le prestazioni previdenziali ed alcuni fattori economici, sanitari e demografici, è stato sviluppato un modello di regressione su dati panel a effetti fissi. A partire dai dati real-world ottenuti dall’Istituto Nazionale della Previdenza Sociale (INPS), lo studio si è focalizzato sulle domande accolte per prestazioni previdenziali effettuate dai lavoratori malati di tumore, in ciascuna regione italiana, nel periodo 2006-2018. È stato analizzato come le domande accolte per prestazioni previdenziali siano influenzate dal tasso di occupazione (fattore economico), dall’indice di vecchiaia (fattore demografico) e, come proxy della salute della popolazione, dal numero di pazienti ospedalizzati con una diagnosi primaria di tumore (ottenuti dai Sistemi Informativi Sanitari). Inoltre, i costi previdenziali relativi ai pazienti malati di cancro in Italia, dal 2009 al 2015, sono stati stimati tramite un modello probabilistico con una simulazione Monte Carlo.
Principali risultati. Lo studio, basato su dati real-world, ha dimostrato l’esistenza di una relazione diretta tra le domande accolte per prestazioni previdenziali e i fattori di tipo economico, sanitario e demografico identificati tramite letteratura. I dati panel hanno consentito di analizzare alcune dinamiche, proprie di alcune regioni, che esistono in Italia. In termini di impatto economico, le prestazioni previdenziali relative al gruppo patologico dei tumori determinano un costo medio annuo di circa € 2 miliardi. La spesa è cresciuta costantemente nel periodo di analisi.

Title

Determinants of consumer behavior in drug purchase: patient Vs physician

Authors

E. Barili, L. Leporatti, M. Montefiori

Abstract

Background. Adherence to drug therapy is probably the most important determinant of health for patients with chronic diseases. The onset of chronic diseases is strictly correlated to aging. If, on the overall population, the percentage of people suffering from at least one chronic pathology is 40.9 per cent, this value rises to 85.4 per cent when looking at the over 75 population (AIFA2020). Still referring to data provided by ISTAT, it emerges that 90.2 per cent of people over 75 declared they had consumed drugs in the two days prior to the interview (AIFA2020). Unless the relevance of adherence, little is known regarding the relative role of physicians and patients in determining different individual behavior. Analyzing the contribution of physician-specific, patient-specific and drug-specific factors, Koulayev (2017) recently suggest that physicians can exert substantial influence on patient compliance to drug therapy. Still, they report large differences in magnitude of the effects across types of drugs and observe that patient sorting has a large impact in explaining the result.

Objectives. The aim of this study is to estimate the relative role of patient and physician's components in determining individual behavior in drug purchase. Specifically, we focus on the purchase of drugs belonging to the class of lipid modifying agents (ATC code: C10). Hypercholesterolemia is indeed an interesting case study since it is a highly prevalent condition in the adult population and, given its association with cardiovascular diseases, has relevant consequences on health outcomes. Moreover, medications in the treatment of hypercholesterolemia are highly effective. On the other hand, failure to adhere to the therapy has negative effects in terms of health outcomes (e.g., coronary heart disease, stroke, heart failure, kidney failure) and costs (hospitalizations, use of Emergency Department, examinations, specialist visits, etc.) (AIFA2019, Di Novi et al. 2020, Leporatti et al. 2021). Several studies suggest that adherence to statin treatment (i.e., prevalent treatment of hypercholesterolemia) is limited, causing a loss of efficacy, both in primary and secondary prevention, as well as an increased risk of adverse events (AIFA, 2019). The AIFA report on the use of drugs in Italy estimates a percentage of non-compliance with statins around 42 per cent in the general population (AIFA, 2019).

Methodology. We analyze consumer behavior in drug purchase observing the frequency in individual purchases referred to drugs within the class of lipid modifying agents (ATC code: C10). We assume that frequency in purchases is strictly correlated with adherence to therapy, with more frequent purchases signaling higher adherence. The frequency in purchases is alternatively measured as a continuous (i.e., number of days between two refills) or dichotomous (i.e., dummy equal to one in case the number of days between two refills is lower than predetermined thresholds -15 days, 30 days, 45 days, 60 days-) variable. We estimate two alternative models imposing either physician or patient fixed effects, while controlling over a rich set of controls (both on the patient and the physician side). The study uses a unique dataset from Liguria. Liguria is of extremely interest in the study of pathologies, such as hypercholesterolemia, strictly correlated to age. According to our estimates, 77 per cent of people with hypercholesterolemia are aged 65+. Here the importance to study data from Regione Liguria which is the oldest Italian region with a percentage of individuals 65+ that exceeds the 28.4 percent of its entire population (EUROSTAT 2018). The analysis we conducted refers to the period 2013-2018. Physicians are individually identified as those producing the prescription. Patients are allowed to switch between physicians. Patients and physicians were assigned a ‘‘numeric ID’’ to guarantee their anonymity and privacy.

Main Results. We observe that physicians have a larger role in explaining frequency in purchase, with respect to the patient component. The results are consistent throughout the alternative specifications of the outcomes. We observe that the inclusion of physicians fixed effects rather than patient fixed effects produces higher explicative capacity of the models along all indicators considered (overall R2, within R2, between R2).Still, individual patient characteristics matters, with being males, younger and with cardiovascular chronic conditions determining more frequent purchases, while having a low socio-economic status (proxied by the grant of an exception to drug payment due to low household income) decreases the frequency in purchases. An increase in copayment required to patients decreases the frequency in purchase as well. Moving to the physician side, being a male physician is correlated with a decrease in the frequency of purchases, while having on average younger patients in their case-mix and interactions with a larger number of patients increases the frequency in purchase.

Title

Jumping the queue. Willingness to pay for faster access to COVID-19 vaccines in seven European countries.

Authors

S. Neumann-Böhme, I. Sabat, N.E. Varghese, A.E. Attema, J. Schreyögg, W. Brouwer

Abstract

Background. Once the first vaccines to protect against COVID-19 were approved by regulators, many countries set up priority lists to manage the demand for the limited number of vaccines available.

Objective. The aim of our study is to estimate the willingness to pay for a COVID-19 vaccine, or more specifically, quicker access to this vaccine in seven European countries in January 2021 and investigate what influenced the willingness to pay. The ECOS data allows us to investigate the determinants of the willingness to pay as well as other aspects such as the behavioural factors associated with the demand for access to a COVID-19 vaccine.

Methods. We report data from the European COVID Survey (ECOS) consisting of representative samples of the population from Denmark, France, Germany, Italy, Portugal, the Netherlands, and the UK(N=7,068) in terms of age, gender, regional distribution and education. The data presented here consists of the fifth ECOS data collection conducted from January 19 until February 1, 2021. We elicited the willingness to pay for access to two hypothetical COVID-19 vaccines (100% and 60% effective). Respondents were asked how much they would be willing to pay to get an immediate COVID-19 vaccination rather than to wait for a free offer through the public system. By using this method as opposed to just eliciting the willingness to pay, we avoid the dominant no treatment effect methodologically and practically the problem that in the ECOS countries, citizens never directly faced the cost of the vaccine since it was paid for by national governments. Willingness to pay values were elicited with a modified version of the payment scale, adjusted for the country purchasing powers and converted into Euros (in the case of Denmark and the UK).

Results. Respondents gave mean willingness to pay of 54.96 Euros (median 37Euros) for access toa hypothetical 100% effective COVID-19 vaccine and 44.32 Euro (median 32.79Euros) for one with an effectiveness of 60%. Our results indicate that age category, country of residence, income, health state and well-being are important determinants for the WTP. In January 2021, 67.76% of respondents were willing to be vaccinated, 17.57% were unsure, and 14.67% stated they were unwilling to be vaccinated. As expected, being unsure or unwilling to receive a vaccination was associated with a lower WTP. We furthermore find that a higher perceived risk of infection with or health risk of COVID-19, trust in the safety of vaccines and the expected waiting time are associated with a higher WTP for access to a vaccine. In total, 72.6% of respondents were willing to pay for immediate access to a 100% effective vaccine and 69.9% for one that is 60% effective, ranging from the lowest share in the Netherlands (65.5% / 58.4%) to the largest in Portugal (83.1% / 80.9%).

Title

That colleague knows the answer! An explanatory study on team characteristics and boundary spanning ties in healthcare organizations.

Authors

R. Laurita, L. Giorgio, A. Cicchetti

Abstract

Rational and Research Purpose. The purpose of this research is to shed a light on the antecedents that facilitates team members to establish inter-organizational collaboration. Nowadays, organizations, especially those who are knowledge intensive, heavily rely on work group and interprofessional collaborations to reduce knowledge fragmentation and develop solutions to complex problems (Mascia, Cicchetti & Fantini, 2011) achieving a competitive advantage (Nahapite & Ghoshal, 1998; Wright, Dunford, & Snell, 2001). In that context, the COVID-19 pandemics revealed that, due to the high presence of complex problems and adverse events, team resilience, intended as the capacity to cope and recover from difficulties (Alliger et al., 2015), plays an important role. Interprofessional collaboration is intended as composed by actions that a team engages to establish relationships with external actors who can assist it in meeting its objectives (Marrone, 2010) and it emerges from team members' combined knowledge, skills and abilities (Kozlowski & Klein,2000). The antecedents of these type of relations are grounded in the concept of team itself that is in evolution: scholars have traditionally defined teams as a bounded and stable set of individuals that work interdependently for a common purpose (Aldefer, 1977), but in recent years, teams have becoming more fluid, overlapping, and dispersed (Mortensen & Haas 2018).Existing research demonstrated that interprofessional collaboration are important for team effectiveness (Ancona & Bresman, 2007) and they may contribute to many important collaborative outcomes such as innovation (Nonaka and Takeuchi 1995). Literature concerning teamwork is wide but the design choice and the effects of boundary spanning activities seems to be scarce (Marrone 2010). For this reason, the aim of this research is to enhance this literature, by analyzing the characteristics that drive team members to create interprofessional relations, making team more resilient.

Background and hypotheses development. Researchers previously recognized that interaction in small groups and teams is inherently structural in nature (Katz & Kahn, 1978; Stogdill, 1959), occurring in patterns that are complex, dynamic, discontinuous, and nonuniform. They also tried to assess the implications, for team effectiveness, of the relationships that are instrumental, understanding the extent to which a person asks for an advice (Crawford et al., 2013). However, if great attention has been devoted to the study on internal team dynamics' (Mathieu et al., 2008), it seems that less attention has been given to boundary spanning activities. Benefits of boundary spanning therefore seem clear, but what drives team members to create external ties? Employees are influenced by the context in which they operate, since it "provides constraints on or opportunities for behavior and attitudes in organizational settings" (p. 32 Johns, 2001). We attention individual perceptions of team characteristics and on how this perception influences the creation of ties outside the team. Specifically, we focus on the perception of team cohesion and on the perception of team heterogeneity. Cohesion increases knowledge sharing, open communication (Ensley et al., 2002; Lester, Meglino & Korsgaard, 2002) and trust (Büchel and Raub, 2002), which in turn are related to stability and routinized interactions (Jones and George, 1998). Moreover, team cohesiveness is essential for understanding group dynamics in teams describing the degree to which team members like to each other and identify themselves positively with the team(Shaw, 1981). In this sense, socially cohesive groups can perceive external actors as threat to the group's collective identity (Turner and Pratkanis, 1998), refraining from creating boundary spanning ties. In addition, scholars have acknowledged the effects of diversity on team

performance stressing different dimensions of heterogeneity including differences in skills and abilities and educational background highlighting the possibility for teams to draw on different sources of information and enabling creative problem solving (Page, 2007). Thus, when individuals perceive the group as different enough, they will tend not to seek external knowledge.

Research Methods. We tested our research hypothesis on a sample of healthcare professionals working in 12 hospitals located in Italy and part of multidisciplinary teams. In this study we used a sample of 174 professional belonging to 22 different multidisciplinary teams. In the healthcare context clinical decisions are based on heterogeneous knowledge that require a continuous interaction between different professions (Tasselli, 2015) through the implementation of multidisciplinary teams.

Results & Contributions. Results coming from our analysis demonstrated some features that are associated to the creation of inter-professional collaboration and that could enhance or reduced them, contributing to the creation of more innovative and thrive organizations. The perception of cohesion is negatively correlated with the number of external relations, in fact, when the cohesion is low individuals are more prone to establish external relationships. Even the perception of heterogeneity is negatively correlated to the creation of boundary spanning ties. When members perceive the team scarcely heterogeneous, they will be more prone to create new boundary spanning ties. We believe that our results are important for almost three reasons. First, we provide fresh insight on the inter-organizational collaboration literature, determining under which conditions members are more prone to establish team external boundaries in a situation of emergency. Moreover, this study offers insight on how individual act in response to their perception of the environment in which there are embedded. Finally, we expect that this study contributes to the broad literature on knowledge exchange and multidisciplinary teams in healthcare organizations.

Title

Income-related equity in access to healthcare and in healthcare financing in a decentralized healthcare system: The case of Italian regions

Authors

G. Citoni, D. De Matteis, M. Giannoni

Abstract

Objectives. The aim of this paper is to compare and to map: a) income-related horizontal equity in access to healthcare, with b) vertical equity in healthcare financing, across the Italian regions. There is evidence that equity in Italy decreased over time, particularly regarding healthcare utilisation. However, to our knowledge no study has evaluated and compared the regional pattern of both horizontal and vertical equity.

Methods and data. We tested for Income-related equity in health care use applying the indirect standardization by regression methodology (see Kakwani, Wagstaff and van Doorslaer, 1997; van Doorslaer, 2006; Wagstaff and van Doorslaer, 2006; O'Donnell et al.,2008). We analyse equity in access to healthcare by estimating models for the probability of reporting unmet needs for medical visits and for dental care. Self-reported unmet need is our measure of access (or lack thereof). We conduct the analyses for the country as a whole, and within each of its main regions. We use a set of both socioeconomic and need factors at individual level for the estimation of horizontal inequity index (HI). According to the principle of horizontal equity in health care, access should depend only on need, while socioeconomic factors unrelated to need should not influence utilization (O'Donnell et al.,2008). The horizontal inequity index (HI) is defined the difference between income-related inequality in the observed health care use (CM) and income-related inequality in 'need-expected' use (CN).The concentration index CM is positive (negative) whenever the better-off (worse-off) use dental care more than the worse-off (better-off). If the need distribution is favouring the worse-off (better-off) then we will observe that the value of CN will be negative (positive). There is no inequity in access to care when CM equals CN or the difference is not statistically significant. A positive (negative) value of the inequity implies inequity favouring the better-off (worse-off). Conversely, when the dependent variable measures unmet access to dental care, a negative (positive) value of HI implies inequity favouring the better-off (worse-off). Regarding vertical equity, we draw on our previous study on the progressivity of healthcare financing systems at the regional level (see for a review Citoni et al., 2020). This was based on the Kakwani index (KI)methodology, as applied to vertical equity in health care financing measurement by O'Donnell et al. 2008; Wagstaff et al. 1992 and Wagstaff et al. 1999. This is the most widely used summary measure of progressivity in both tax and health finance literature. KIs are reported by region and by health financing sources. We also present first estimates of the impact on existing inequities due to changes in the financing mix caused by the economic crisis following the Covid-19outbreak.We used cross-sectional data from ISTAT Household Budget Survey (n = 15,013 households) for 2015 and from Eurostat EU-SILC microdata (n = 17,985 households) for 2015. Moreover, a matching of the two surveys was performed for the estimation of vertical equity.

Main Results. There are significant inequities in access to medical care at the national level and at the regional level. Moreover, there are much higher and significant pro-rich inequities in access to dental care in all areas. There are vertical inequities in healthcare financing at both the national and the regional level. OOP (out-of-pocket) payments and value added tax are slightly regressive; income taxation on firms and households is progressive. A regional divide emerged: overall regressivity is higher in the south and lower in the north. However, this is partly compensated by the interregional equalisation mechanism, based on the redistribution of VAT from northern to southern regions. We graphically map the main results obtained at the regional level from both horizontal and vertical equity

analyses and discuss their implications for the Italian healthcare system. In times of policy interventions aiming at recovering the economy during the COVID-19 pandemic, it is important to monitor equity in access to healthcare and healthcare financing.

Title

Lifetime obesity costs: new evidence using ECRs data from Italy.

Authors

V. Atella, F. Belotti, M. Giaccherini, A.P. Mortari

Abstract

Obesity prevalence has increased dramatically over the past 40 years, doubling in more than 70countries, and Italy is not an exception on this ground. As it represents a major contributor to total healthcare costs understanding its dynamic is extremely important. Using Electronic Clinical Records at individual data of a representative sample of more than 1.5 million patients aged between15 and 80 years from the HS-SiSSI database and by exploiting the longitudinal dimension of the data over the period 2004-2018 we study how patients belonging to different BMI classes generate differential cost profiles for the National Health System. Adopting a cohort approach and limiting the analysis to outpatient costs (drugs, specialist visits and diagnostic tests), for the first time we are able to compute the lifetime health care costs for individual at different levels of BMI (obese, overweight, and normoweight). In order to achieve this goal we account for selection and attrition problems that could potentially affect our data. Furthermore, given the richness of information in our data we are able to identify only the costs related to diseases associated with excess of BMI. Our results clearly show that for any cohort studied the cumulative healthcare expenditure at the end of the 15-year period is higher for the obese group compared to the normoweight. Furthermore, overtime this differences increases more for the adult cohorts (25-55) compared to elderly ones (60+).Overall, the life time cost of obese individuals seems to be four times greater than normoweight ones.

Title

The impact of COVID-19 outbreak on childbirth experience and the effectiveness of a measure to ensure labour companionship: results from an interrupted time series and qualitative analyses conducted in the Tuscany Region

Authors

I.Corazza, M. Bonciani

Abstract

Background. After the Covid-19 outbreak in Italy, all areas of the health sector were under pressure and most of the resources available were redirected towards the management of the pandemic, while many health activities were temporarily suspended. One area of care that did not stop is that related to maternal and childcare, as pregnant women always continued seeking healthcare services related to pregnancy, delivery and post-partum. However, although the maternity services, especially regarding the phase of childbirth, were always accessible, the measures taken by the Italian Government for the containment of contagion required some restrictions on the presence of partners and other caregivers for mothers and newborns, forcing them to isolation during the hospitalization. Nevertheless, the labour companionship, which refers to support provided to a woman during labour and childbirth, is considered fundamental for providing respectful maternity care (Bohren et al. 2019; Shakibazadeh et al. 2018; Bohren et al. 2017) and the WHO recommended guaranteeing it also during COVID-19to ensure a positive childbirth experience and to maintain high quality of maternal and newborn care (WHO 2018). In order to preserve the labour companionship that was a widespread practice in the birth hospitals of Tuscany(Italy)before the Covid-19 outbreak, the Regional Health Authority(RHA) issued a regional resolution (DGR 510 of14/04/2020) providing partners with the possibility to be present during labour and childbirth for non-asymptomatic women.

Objectives. In this study, the authors aim at:1) Analysing the impact of the pandemic on the labour companionship in terms of significant reduction of the possibility for women to be accompanied by a trusted person during labour and childbirth, and its consequence on the childbirth experience; and 2) Ascertaining if the resolution issued by the Tuscany Region was effective in containing the reduction of labour companionship, determined by the safety provisions undertaken in response to the Covid-19 emergency.

Methodology. This study used the data from the longitudinal and continuous survey on the experience of women in using the maternal and childcare services in the Tuscany Region, which was designed, developed and implemented since March 2019 by the Management and Healthcare Laboratory of the Sant'Anna School of Advanced Studies. The survey investigates the various phases characterizing the maternity pathway from pregnancy until one year after childbirth through eight web questionnaires composed of closed-and open-ended questions. This study used the data collected in the questionnaire concerning childbirth until December 2020(more than 10,000 questionnaires). The authors used mixed-methods in order to pursue the above-mentioned research objectives. More particularly, they used a quantitative method, by performing Interrupted Time Series (ITS) analysis to assess the impact of Covid-19 outbreak in the Tuscany Region in altering the labour companionship, which allowed measuring the trend variation of the possibility for women to be accompanied by a trusted person during labour and childbirth. In addition, a content analysis of the comments left by women on the childbirth experience was performed in order to categorize the positive and negative perceptions of women concerning specifically the labour companionship.

Main results. The percentage of women reporting to have had the possibility to have with them a trusted person during labour and childbirth passed from around 90% before March 2020 to less than 50% in the following two months. The trend observed for childbirth was from around 80% to around

70%. Regarding the dimension of proximity of women to beloved and/or trustworthy people, the authors present in turn the results of the labour and childbirth phases. As far as it concerns the labour phase, the ITS analysis showed that there was a significant decrease(P<0.0001)in the women-reported experience of labour companionship in the month of the Covid-19 outbreak in Tuscany(February 2020)followed by a slight increase in the upcoming months. An analogous significant trend (P<0.01) emerged also as far as it regards the women-reported experience of labour companionship relative to childbirth phase. Particularly the reversal of the trend in both cases was observed after April 2020, month in which the regional resolution was approved, and this may suggest that the measure implemented in Tuscany worked quite effectively on ensuring labour companionship. However, the pre-Covid-19 level of labour companionship was not reached again at the end of 2020. In fact, the results of content analysis showed that the lack of a trust worthy person during labour and childbirth is one of the aspects that impacted most negatively the experience of women, who report instead a good perceived quality of care in general. The feeling of loneliness and lack of involvement were strongly perceived by women during the Covid-19 period. While such contingency was accepted and considered as inevitable immediately after the Covid-19 outbreak, the perception of women became more critical against the restriction concerning labour companionship in the second part of 2020. These results suggest continuing monitoring the correct implementation of the good practice of labour companionship in the Tuscany Region.

Title

Il cost-of-illness della sedazione palliativa nel setting assistenziale italiano

Authors

M. Basile, A. Cicchetti

Abstract

Background. Ricevere cura e assistenza finalizzate al controllo della sofferenza fisica e psichica e al supporto sociale del paziente rientra tra i diritti che devono essere garantiti a ogni cittadino, al fine di migliorare la qualità della sua vita. Nondimeno la sofferenza del paziente è da considerare come parte integrante della malattia che il medico è chiamato a curare. È in questo contesto che si inserisce la sedazione palliativa. La sedazione palliativa consiste nella intenzionale riduzione della coscienza del paziente fino al suo possibile annullamento, al fine di alleviare i sintomi refrattari fisici e/o psichici.

Obiettivo. Questo studio di pone l’obiettivo di stimare il costo associato all’erogazione delle principali alternative terapeutiche ad oggi disponibili per la gestione del dolore mediante sedazione palliativa nelle fasi terminali del percorso terapeutico.

Metodologia del lavoro. Al fine di determinare i parametri utili alla costruzione del processo di erogazione della terapia per la sedazione palliativa dal momento dell’inizio della stessa fino alla sua conclusione, è stato predisposto un questionario che informasse su una serie di driver specifici tra cui: la durata degli interventi, la terapia farmacologica utilizzata, i materiali e driver specifici per la stima dei costi indiretti gravanti sul paziente e sul suo caregiver. La compilazione del questionario ha visto la partecipazione di sette clinici con comprovata esperienza nella gestione del paziente mediante sedazione palliativa. Al fine di informare l’analisi economica sono stati considerati sono stati considerati i valori medi di ciascun parametro determinati mediante la somministrazione del questionario con l’obiettivo di poter generalizzare i risultati ottenuti e renderli compatibili alla molteplicità di contesti in cui si struttura il Servizio Sanitario Nazionale Italiano (SSN). La valorizzazione economica dei driver individuati è stata condotta secondo le metodiche dell’Activity Based Costing (ABC). L’analisi considera quattro macrocategorie di assorbimento risorse legate all’erogazione delle terapie oggetto di analisi: costi diretti sostenuti dal SSN e relativi all’erogazione della terapia in termini di tipologia e posologia di principi attivi impiegati per la realizzazione del trattamento; costi diretti sostenuti dal SSN e relativi all’erogazione della terapia in termini di numero e natura dei professionisti coinvolti; costi diretti sostenuti dal SSN e relativi all’erogazione della terapia in termini di numero e tipologia di materiali utilizzati; costi indiretti relativi alle perdite di produttività del caregiver per il tempo destinato all’erogazione della terapia. I risultati sono, dunque espressi in termini di costo pieno della sedazione palliativa per paziente trattato e per setting di riferimento e totale pesato per la percentuale di pazienti gestiti nel setting ospedaliero/residenziale e domiciliare. Nel presente studio è stata altresì condotta un’analisi univariata al fine di determinare i parametri la cui variazione determina lo scostamento maggiore rispetto ai risultati inizialmente ottenuti.

Risultati lavoro. Dall’analisi di tutti i parametri considerati nello studio, nonché del costo unitario di ciascuno di essi, è stato possibile determinare il costo pieno di gestione del paziente mediante sedazione palliativa: tale trattamento risulta associato ad un assorbimento di risorse per ciascun paziente pari in media a €721,81 per il setting ospedaliero/residenziale e a €802,60 per quanto concerne il setting domiciliare per un costo medio complessivo indipendentemente dal setting di riferimento pari a €775,67. Dal punto di vista della perdita di produttività da parte del caregiver, il ricorso alla sedazione palliativa implica un assorbimento di risorse pari a €86,80. la voce di costo associata all’assorbimento di risorse maggiore tra quelle considerate nell’analisi sia quella relativa al personale, che costituisce l’75,37% del costo della terapia erogata nel setting ospedaliero/residenziale e l’73,82% del costo del trattamento erogato nel setting domiciliare. il parametro la cui variazione influenza

maggiormente i risultati ottenuti nello scenario base è il numero di ore in cui intervengono i medici a domicilio durante il periodo di erogazione della terapia: un aumento di tale parametro determina, infatti, un aumento del costo medio di gestione fino a €835,05; al contrario, una riduzione nel numero di ore impiegate a domicilio da parte del medico comporta una riduzione del costo medio di gestione del paziente fino a €716,29.

Il numero di ore dedicate dallo psicologo al supporto al paziente nel setting ospedaliero rientra tra i parametri la cui variazione impatta meno significativamente sui risultati ottenuti nello scenario base: un aumento di tale parametro determina un aumento del costo a €780,61, mentre una riduzione in tale parametro implica una più modesta contrazione di risorse assorbite per un costo pari a €770,73.

Title

Do managerial incentives matter? The effect on hip fracture surgery delays and outcomes

Authors

M. Lippi Bruni, R. Verzulli

Abstract

Background and objectives. In most OECD countries, pre-surgery waiting times are viewed as a process indicator of the quality of care for hip fracture patients, and international clinical guidelines recommend hip fracture surgery to be provided within two days after hospitalisation. To incentivize hospitals to meet this target, in year 2011 the Italy's Emilia-Romagna region implemented a policy allowing the chief executives of Local Health Authorities and hospital Trusts to receive additional rewards if they managed to achieve increases in the proportion of hip fracture patients operated on within two days after hospital admission. In this paper, we empirically test the effect of the policy on shortening surgery delays for hip fracture patients, by using a difference-in-differences analysis on patient-level data between 2007 and 2016.

Data and Methods. We use patient-level data over years 2007-2016 to examine the effect of the policy by exploiting a difference-in-differences (DiD) identification strategy based on comparisons in waiting times for hip and tibia/fibula fracture surgeries before and after policy implementation. While clinical recommendations suggest that timely surgical interventions also benefit tibia/fibula fracture patients, the latter were not included in the incentive scheme. Given that the pre-policy trends in surgery delays for hip and tibia/fibula fracture patients are very similar, we take the latter as our main control group. In the sensitivity analysis, we consider two alternative control groups to test for the robustness of results.

Main results. We find that the introduction of managerial incentives had the effect to reduce hip fracture surgery delays. Differences in surgery delays between the treated and control groups also persist over time, with larger effects in the medium-and long-run relative to the short-run. The policy induced a leftward shift in the distribution of waiting times, while leaving unaffected the cases far beyond the incentive threshold of two days. There is evidence of convergence in pre-operative waiting times across hospitals, with those that were most distressed by longer pre-policy surgery delays being the ones that achieved the greatest improvements. Finally, our findings lend support to the hypothesis that hospitals reacted to the policy by targeting patients with less severe health conditions as recorded at the time of hospital admission.

Title

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

Authors

E. Croda

Abstract

Chronic pain has an important impact on peoples' lives and is a fundamental dimension of wellbeing. Pain is one of the most common reasons people seek medical care and take medications. It 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 recently 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).Our current understanding of people's pain experiences has been largely limited by data availability. Most research so far has focused on the US (eg. Grol-Prokopczyk, H., 2017), where chronic pain has been deeply intertwined with the opioid crisis (Case and Deaton, 2015, 2017), but little is still known about pain in Europe. In this paper, I investigate the existence of sex disparities in chronic pain and 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 whether (i) sex-based differences in pain are relatively similar across countries, (ii) country-specific characteristics matter the most for people in the bottom of the income distribution (Chetty et al., 2016), and (iii) greater use of pain medication reduces aggregate pain. HRS has been asking questions about pain since its first wave, while SHARE started in wave 5. Therefore, I use the three available waves of SHARE (wave 5, 6, and 7) and the corresponding HRS waves. To measure chronic pain, I rely on two questions. Both surveys ask respondents whether they are troubled with pain, and if they are, the questionnaires then ask how bad the pain is most of the time(and give the options: mild, moderate or severe).I consider respondents answering "yes" to the initial question as individuals experiencing chronic pain and I combine responses to both questions to create a 4-category "pain intensity" variable for each survey: no pain, mild pain, moderate pain, and severe pain. 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, the prevalence of pain in the US seem 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. That markers of socioeconomic status, such as education and income, are associated to health outcomes is by now quite well established (e.g. Cutler and Lleras-Muney, 2008). The association between socioeconomic status and pain, however, has only been recently receiving attention among researchers, and so far, the focus has been mostly on education in the US (e.g. Atlas and Skinner, 2010, and Case and Deaton, 2017). SHARE and HRS allow me to go beyond education and consider additional dimensions of socioeconomic status, such as income and occupation. I first document the existence of dramatic differences in the prevalence of pain by educational attainments

in Europe as well as in the US: In every country, individuals with less than high school are much more likely to be troubled by pain than those that have completed secondary education, and these two categories are more likely to report pain than those who have higher educational attainments (Figure 3). Next, I provide evidence that the reporting of pain shows a strong gradient also according to income quintiles, across all the countries in the sample. Arguably more importantly, I find that there is more country-level variation in the lowest income quintile (Figure 4) as well as in the lowest education group (Figure 3), suggesting that country-specific characteristics matter the most for people at the bottom of the income distribution. This finding is similar to Chetty et al. (2016)'s results for the association between income and life expectancy. Not only the less educated are more likely to be in pain, they are also more likely to experience more severe pain levels than the rest of the population(Figure 5), suggesting similar overall rates of pain, which arguably may be surprising given the widespread use of opioids and the "death of despair" in the US. 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. I estimate probit regressions for the prevalence of pain and ordered probits for the intensity of pain.

Title

Covid-19 diffusion and effects. Do the characteristics of healthcare systems matter?

Authors

V. Baldo, G. Boccuzzo, A. Buja, M. Celidoni, S. Coretti, O. Paccagnella, M. Paganini, V. Rebba, M. Scioni

Abstract

Background and aim. Speed of propagation of the SARS-CoV-2 virus and lethality have been very heterogenous among Italian regions and European countries, especially in the first wave. As for regional differences in Italy, it is estimated that the attack rate was higher in Lombardy and Valle d'Aosta (13.30% and 11.07%, respectively) while for many regions the average attack rate was less than 1%. Moreover, a significant discrepancy in lethality was observed between the regions at different times of the pandemic. These differences in the extent and effects of the contagion do not appear to be fully explained by the variability of the methods of tracing cases or by the containment measures applied (such as social distancing or the communication of hygiene rules and / or the use of barrier devices) which within the Italian context were uniform, although implemented at different times of the epidemic curve in the different regions. On the other hand, it is conceivable that - in addition to environmental, demographic and socio-economic factors - also the differences between the organizational models of the various regional health systems and the availability of health resources (human and material) may have contributed to explaining this variability. For example, the use of significant resources in the tracing of infections and in the management of most of the paucisymptomatic cases affected by Covid-19 seems to have been a key factor in reducing the spread of infections in Veneto in the first wave. Also, at the European level, there were strong differences both in the indicator of the raw mortality rate per 100,000 residents (54.7 in the UK, 54.0 in Italy, 9.9 in Germany, 4.4 Norway, 1.6 in Greece) measured at the beginning of the epidemic in various countries, and in the speed of propagation of the virus.

The MOSSCOV project (research project on “Impact of different healthcare System MOdels and of different COntainment measures on the spread and health outcomes of COVID-19 in Italy and Europe”) developed by three departments of the University of Padova aims to investigate - both at the level of the Italian regions and at the European level - which factors have had a greater impact with respect to the speed of spread of the virus and its lethality, focusing attention on the effects attributable to the different ways of organizing the health systems (governance and interaction models between hospital and territory) and on the various containment measures.

Methods. Epidemiological, demographic, environmental, socioeconomic characteristics and data relating to local health systems and containment measures adopted in Italy and in other European countries are analyzed.

A first ecological study aims to examine whether excess mortality during the first phase of the COVID-19 outbreak in Italy was associated with health, healthcare, demographic, and socioeconomic indicators measured at a provincial level, considering the raw number of deaths from January 1 to April 30, 2020 and the mean number of deaths in the same months from 2015 to 2019, per province. Information on socioeconomic factors and healthcare settings are extracted from the most recently updated databases on the ISTAT website. Two multivariate models are constructed to test whether excess mortality was associated with the indicators across 107 provinces in Italy.

As for the analysis of European countries, a dataset has been constructed, including data on Covid-19 spread, measures undertaken in different countries to face the pandemic (including limitations of mobility), as well as organizational and institutional features of health care systems. A multivariate model investigates which variables correlate to diffusion and mortality indicators.

Results. The ecological study at the national level shows that some health and healthcare variables (in particular, a low density of General Practitioners) are strongly associated with excess mortality caused by COVID-19 in Italy during the first wave.
At the European level, we show the role of institutional and organizational features of health care systems in Covid-19 diffusion and lethality.

Title

Perceived health, health care access and mobility during the Covid-19 pandemic. Evidence from Northern Italy.

Authors

B. Bonvento, M. Celidoni, S. Coretti, C. Dal Bianco, V. Rebba, L. Rocco, F. Rossi

Abstract

Background. This study is part of the Happy (Health Accessibility transport Public Policies for elderlY) project which is led by University of Insubria and involves University of Padua and Politecnico of Milan. The Happy project is focused on understanding which public transport policies could contribute to increase positive social connections and health conditions of the ageing population. Since 2020 the focus of the project has been extended to consider the impact of the Covid-19 pandemic on mobility habits and public transport needs.

The availability of an adequate public transport contributes to prevent isolation of the elderly with a positive effect on their perceived health. However, the needs of social distancing and self-isolation posed by the pandemic may have led to rationing of public transport services or distrust of users, resulting in less mobility for the elderly.

Objective. This paper focuses on: i) the potential correlation between the change in mobility habits determined by the Covid-19 emergency and perceived health; ii) the potential correlation between the change in mobility habits determined by the Covid-19 emergency and the access to health care facilities.

Methods. A telephone survey was run from February to March 2021, involving a sample of 1375 individuals aged 65 and over in the cities of Padua, Milan and Varese. The questionnaire included questions on: i) the individuals' perceived physical and mental health and the use of health care facilities; ii) the use of public transport; iii) demographic and socio-economic features.

First, we develop a set of logit models to test whether perceived health is related to mobility. More in detail, we test whether a deterioration in perceived physical and mental health during the pandemic is associated with the variation of a mobility indicator- i.e. a synthetic indicator which measures the degree of accessibility to a set of health and non-health facilities. Second, we test whether variation in the mobility indicator is associated with the level of physical and mental health reported by the survey respondents. Finally, we focus on individuals reporting a deterioration of their health status for cancelling or postponing a medical treatment during the pandemic; we test whether this is related to a reduction in mobility.

In all models, control variables include socio-demographic characteristics, and other individual attributes such as the presence of chronic diseases, the frequency of internet use, the overall satisfaction with own life and area of residence.

Main results. We observe a positive association between the probability of reporting a deterioration of physical and mental health and reduction of the mobility indicator during the pandemic. Also, individuals experiencing a reduction in mobility during the pandemic are less likely to report good physical and mental health status. Lastly, individuals experiencing a decrease in mobility due to the pandemic are more likely to attribute the deterioration in their health status to the need of postponing or giving up medical treatments.

Other control variables which significantly correlate with the perceived health and its variation- with the expected sign- are: baseline satisfaction with individuals' own life, baseline satisfaction of individuals with the area they live in, pre-existing chronic conditions and gender.

Title

The Health of Disability Insurance Enrollees: An International Comparison

Authors

E. Croda, J. Skinner, L. Yasaitis

Abstract

Rising costs of disability insurance (DI) programs are putting increased strain on central government budgets across nearly all developed economies. Yet little is known about how well countries target those in the poorest health across countries, or within a country over time. In this paper, we use the Survey of Health, Ageing, and Retirement in Europe (SHARE) and the Health and Retirement Study (HRS) in the United States during 2004-16to measure (a) the average health of people aged 50-64 receiving DI, and (b) the effectiveness of the DI safety net in covering those in poor health. Using these two measures, we find that U.S. and Danish DI programs appear successful at targeting benefits to those in the worst health, with France and Belgium less so. We also demonstrate how these measures can be used to evaluate changes over time in DI policies, for example by measuring secular changes in targeting effectiveness following large reductions in DI enrollment (as in the Netherlands and Denmark) or expansions (as in the U.S.).

Title

A dynamic reimbursement mechanism for health service provision under asymmetric information

Authors

R. Levaggi, M. Moretto, P. Pertile

Abstract

Background. The design of contracts between purchasers and providers of health ser-vices received great attention in the literature since the reforms that took place in several health care systems starting from the 1990s. The shift to-ward prospective payment (often, DRGs), raised a concern regarding the existence of a trade-off between costs and quality. Until recently, most of the theoretical literature tended to model such contracts as incomplete contracts, the most obvious source of incompleteness being quality of the treatment provided (see, e.g. Chalkley and Malcomson (1998)). Competition was also discussed as a tool to mitigate the trade-off between costs and quality (Ma, 1994; Brekke et al., 2010, 2014). However, evidence concerning the impact of competition on efficiency is mixed (Kessler and McClellan, 2000; Propper et al., 2008; Hunter, 2009). A possible unintended consequence of competition for patients is a non-optimal distribution of effort across different dimensions of quality, the greatest incentive being related to observable dimensions (Propper et al., 2008). Some recent contributions have explored the role of incentive compatible contracts in the presence of asymmetric information between the purchaser and the provider (Marechal and Thomas, 2019; Wu et al., 2018). Overall, with very few exceptions, the study of optimal contracts has been conducted adopting a static approach.

Objectives. The static approach prevailing in the existing literature fails to account fora typical characteristic of the relationship between purchaser and provider, namely that it lasts in time. Under some conditions, even a long-lasting relationship can be addressed with static contracts. We argue that this may not be the case in the context of interest. There are characteristics of this relationship, such as persistent differences among hospitals along some dimensions (e.g. the difference between teaching and non teaching hospitals), that make a dynamic contract more efficient than a static contract. Our aim is to characterise such contracts in a setting where we allow for both adverse selection and moral hazard.

Methods. We set up a model where both patient severity and provider effort have an impact on patient health, but are not observable by the purchaser. Providers are free to decide the level of unverifiable effort and of a verifiable measure of intensity of care (e.g. decisions concerning the technology to adopt for the treatment). Patient severity is stochastic and evolves in time following a diffusion process in continuous time. We apply methods developed by Bergemann and Strack (2015) for the characterisation of incentive compatible contracts in this setting.

Main results. We show that the second best payment rule includes two components. First, a fixed annuitized component, which resembles a DRG payment with the important difference that it is the same for all patients, but not the same for all providers. This payment is related to the initial level of patient severity. The second component varies in time and it is based on an indirect mechanism that induces truthful revelation of patient severity. Overall, we show that in this setting replacing a static with a dynamic contract allows to improve the efficiency in the second best.

Title

Going Beyond Official Statistics: the Role of Economic News in Predicting Mental Health Needs

Authors

F. Moscone, S. Vandoros, E. Tosetti

Abstract

Negative reporting of economic developments is likely to impact people’s emotional health with possible consequences on their mental health and well being. In this paper, we explore the role of media and language used to comment on economic news in explaining and anticipating suicides in the United Kingdom. We use a large data set of over 200,000 news articles discussing economic topics published in six major UK newspapers from 2001 to 2015. We adopt a dictionary-based approach to carry sentiment analysis of the language used to comment on economic news and extract daily indicators measuring a set of negative emotions that are often associated with poor mental health and depression. We then use our emotion indicators to explain and forecast national daily suicide figures. We find that highly negative comments on the economic situation in newspaper articles are predictors of higher suicide numbers, especially when using words conveying stronger emotions of fear and despair. Relative to other emotions, the indicator measuring the level of despair in the language used in news appears to better forecast suicide numbers. Our results suggest that media language carrying very strong, negative feelings may be an early signal of a deterioration in a population’s mental health status. Given the large delay with which official statistics on suicides are released, monitoring media sentiment may help central decision makers in anticipating trends in suicides and more swiftly allocating resources for mental health care.

Title

Stima spazio-temporale della latenza tra picchi di casi Covid-19 ed eccessi nella mortalità in Italia: misura dell’efficacia del tracciamento grazie all’uso di dati Open.

Authors

M. Scortichini, F.S. Mennini

Abstract

Background. Il numero giornaliero di nuovi casi è uno dei parametri fondamentali ai fini della comprensione delle dinamiche temporali dell’epidemia di Covid-19. È noto purtroppo come tale misura sia distorta, a causa di diversi fattori: per i soggetti sintomatici esiste un periodo di latenza variabile tra l’infezione e la comparsa dei sintomi; la quota di asintomatici complica ulteriormente la possibilità di ottenere una stima del numero di infetti prossima al dato reale, in generale sappiamo come il numero di casi riportati sia fortemente inferiore rispetto alla realtà. Il numero di decessi per Covid-19 è una misura altrettanto rilevante e potenzialmente più attendibile della precedente; tuttavia, studi hanno dimostrato come anche questo numero sia stato fortemente sottostimato, per questo in diversi studi epidemiologici la mortalità totale è stata considerata come indicatore dell’andamento della pandemia. L’attività di tracciamento è stata dichiarata come una delle attività fondamentali per contenere la diffusione del virus, ciononostante numerose difficoltà sono state riscontrate nella capacità di “inseguire” la malattia, con risultati differenti sia nelle diverse fasi della pandemia, sia tra regioni italiane. La stima del numero di giorni che intercorre tra l’infezione e l’eventuale decesso per Covid-19 è piuttosto variabile, con un valore che si attesta tra i 7 e i 14 giorni e che è stato rivisto più volte in letteratura. Il valore osservato della suddetta misura può essere una stima della capacità di tracciare i nuovi casi di Covid-19: un valore inferiore all’atteso indicherebbe come i nuovi casi vengano identificati solo nella fase avanzata della malattia e una conseguente ridotta possibilità di contenere il contagio, curare efficacemente i pazienti e allocare tempestivamente le risorse.

Obiettivo. L’obiettivo dello studio è stimare quanti giorni intercorrono tra la comparsa di nuovi casi di Covid-19 e la mortalità totale in Italia, e osservare la variabilità nel tempo e nello spazio di tale stima.

Metodologia. Il numero di nuovi casi Covid-19 a livello regionale è stato ottenuto dalla Protezione Civile, che rende disponibile il suddetto dato aggiornandolo con cadenza giornaliera. La serie temporale dei decessi è invece prodotta da ISTAT, che ha reso pubblica tale informazione con dato disponibile fino al 30 giugno 2021.

Per ogni regione è stata condotta un’analisi di serie storiche giornaliere con un modello di regressione di Poisson corretto per sovradispersione. Al fine di stimare la latenza tra l’insorgenza di casi covid e la mortalità è stato utilizzato un approccio di modelli non lineari a lag distribuiti (DLNM), una metodologia che tiene conto sia del fatto che la relazione tra numero di nuovi casi e mortalità possa essere non lineare, sia dell’effetto ritardato nel tempo. I risultati sono poi stati meta analizzati per ottenere stime a livello nazionale. Le stime saranno prodotte anche per diverse classi di età e per diversi periodi, analizzando separatamente prima e seconda ondata.

Principali risultati. Nel periodo in studio (1 marzo 2020 – 30 giugno 2021) sono stati osservati 992,785 decessi e 4,253,154 casi. Stime preliminari dimostrano come su tutto il periodo, un incremento giornaliero di 1,000 casi si rifletta in media in un incremento della mortalità pari al 6.0%; inoltre, in linea con l’atteso, l’effetto è massimo a 8 giorni di distanza. Di contro, considerando solo la prima ondata (1 marzo – 15 maggio 2020) per un incremento di 1,000 nuovi casi giornalieri si è registrato un incremento della mortalità pari al 95%; inoltre, i casi registrati in un determinato giorno avevano una relazione più forte con la mortalità registrata lo stesso giorno. Questo implica che, durante la prima ondata, la maggior parte dei soggetti venisse registrata come caso Covid-19 nel giorno stesso del decesso. L’analisi regionale ha evidenziato una forte eterogeneità delle stime, con alcune aree dell’Italia dove

un forte incremento di nuovi casi si ripercuote sulla mortalità in un arco temporale inferiore ai 3 giorni, evidenziando una difficoltà a individuare i casi prima che questi presentino sintomi gravi.

Title

How to Pay Primary Care Physicians for Vaccination against COVID-19: An Overview of 43 EU and OECD Countries

Authors

R. Milstein, K. Shatrov, L.M. Schhmutz, R. Blankart

Abstract

Background. Vaccinations are key to fighting COVID-19. Primary care physicians (PCPs) are essential for achieving high coverage rates: PCPs regularly administer vaccines, may have a closer relationship to their patients than do other providers, are vital to build trust into the vaccine, and most citizens generally have access to a PCP. The way countries pay PCPs for providing care has an impact on how they perform vaccinations. When designing a payment scheme, policy makers can make use of several intervention points to support an effective and timely response to the pandemic.

Objectives. In this study, we aim to explore how COVID-19 vaccination payment schemes in 43 countries differ with regard to the (i) type of payment scheme, (ii) amount paid, (iii) degree of bundling, and (iv) use of pay-for-performance elements. We discuss the strengths and weaknesses of the approaches countries take and formulate policy recommendations on how to pay PCPs for an effective and timely response to the pandemic.

Methodology. We collected information on payments and health system characteristics, such as PCP income, of all 43 EU and OECD countries. Next, we extracted information on the payment for vaccinations against COVID-19 from official documents and reports, announcements, decrees, agreements and fee schedules at the national, state and regional level published by governments, health insurers, professional associations, and other stakeholders. We contacted experts in the given countries to validate our results. We performed our research in June 2021 and updated our data in September 2021 to track changes in the payment. We regressed the payment amount on the income of PCPs, and interpreted the residuals of this regression as a vaccination payment index to indicate whether countries pay more or less than the income-adjusted average. We discussed the heterogeneity of payment schemes and the index in the context of the countries' health system characteristics.

Main results. We found that countries use two main payment schemes to pay PCPs for performing vaccinations against COVID-19: The majority of countries (30/43) chose an activity-dependent, fee-for-service-based payment scheme that rewards PCPs for the activity they perform. The remainder of countries (13/43) does not provide additional payments for vaccinations. PCPs in these countries receive an activity-independent payment (salary or capitation) and vaccinations against COVID-19 are regarded as part of their regular duties.

We found a large degree of heterogeneity in the amount paid among those countries, which offer additional payments for vaccinations against COVID-19. Payments range from US$3·57 per vaccination in Lithuania to US$42·39 in Ireland. According to our vaccination payment index, 16 countries pay less per vaccination than the income-adjusted average, whereas 14 countries pay more. The spread ranges from Canada (Ontario) paying US$10 (41%) less to Ireland paying almost US$20 (73%) more than the income-adjusted average per vaccination. Countries differ in the extent to which they bundle payments. Some countries use the payment to cover all vaccination-related services, whereas others use separate payments for e.g. the vaccination itself, consultation, or data collection. Almost half of the countries use pay-for-performance elements to increase the workforce capacity, activity, mobility, and patient outcomes (full vaccination of patients).

We found that countries adjusted their payment scheme over the course of the year in three ways: First, some countries (e.g., Greece and Romania) moved from no additional payment to additional,

activity-related payments. Second, countries increased the payment per vaccination (e.g., Lithuania and the United States). Third, countries introduced additional pay-for-performance elements, such as bonus payments for vaccination targets (Australia and Slovak Republic) and additional payments for vaccinations during after-office hours (Estonia and Lithuania).

Conclusion. Our cross-country comparison with comparative data and our intuitive vaccination payment index can guide policymakers in how to design a payment scheme for vaccinations against COVID-19 that best meets their country's needs. It supports them in making informed decisions on the payment scheme itself, the amount, degree of bundling, and use of pay-for-performance elements.

Title

Mental health and mobility restrictions during COVID-19: the Italian case

Authors

V. Atella, F. Belotti, J. Kopinska, F. Marazzi, A.P. Mortari

Abstract

An extensive strand of Economic and Psychology literature investigating mental health consequences of social distancing measures aimed at limiting the spread of SARS-CoV-2 , has found a substantial increase in self-reported depressive symptoms, stress and sleep disorders during lockdowns. Using data on weekly purchased and prescribed volumes of mental disorders' drugs from a representative sample of Italian pharmacies, we find that such evidences are not backed up by a consistent increase in the amount of anxiolytics and antidepressants sold during 2020. We argue that the gap between the existing literature based on self-reported mental health and the observed drug consumption has three potential causes: i) resorting to non-pharmaceutical therapies and non-medical solutions during lockdowns; ii) unmet needs due to both demand- and supply-side shortages in healthcare services and iii) the subjectivity of self-assessed psychological health in survey studies, capturing also mild mental distress which might not evolve into mental disorder needing pharmacological treatment. To investigate the heterogeneity in the effect of lockdown measures on antidepressants and anxiolytics purchases, we use mobile phone data to track the exact extent of mobility variation compared to a pre-pandemic situation at the Province level. We find small or no effect of social distancing on the sales of anxiolytics and antidepressants during the entire 2020 period. However, we do find a positive association between mobility and sales volumes during months characterized by higher contagion rates in regions with high excess mortality. We additionally study the differences in psychological distress affecting individuals during lockdown, by distinguishing different mobility types (according to destination), but find no statistically significant differences among mobility types on the sales volumes.

Title

Comparing risk adjustment estimation methods under data availability constraints

Authors

M. Iommi, S. Bergquist, G. Fiorentini, F. Paolucci

Abstract

Objective. To evaluate machine learning and standard risk-adjustment models under differing data scenarios that a region or country may face in practice. We explored the trade-offs between optimizing data availability and risk-adjustment prediction methods using the Italian National Healthcare Service (NHS) as our motivating example and data application. The Italian NHS relies on per capita allocation for healthcare funds because heterogeneity in data availability limits the development of a national model.

Data sources. Emilia-Romagna Region, Italy, health administrative databases (hospital discharge records, outpatient pharmaceutical database, outpatient speciality database) of 2016.

Study Design. We compared the performance of standard and machine learning techniques for estimating risk-adjustment models within six data scenarios that varied by level of detail (“granularity”) and range of variables, from only age and sex categories to sociodemographic and clinical condition variables. The outcome of interest was the total annual expenditure of 2016. The methods included ordinary least squares (standard practice) and machine learning methods (penalized regressions, a generalized additive model, random forests, and ensemble super learner). Performance was evaluated via adjusted-R2, mean squared error (MSE) and mean under/overcompensation.

Principal Findings. Machine learning methods improved adjusted-R2 and MSE in every data scenario compared to linear regression, although in the coarse granularity and poor range of variables scenario differences were negligible. The performance improvement from machine learning algorithms was greater in the coarse granularity and fair/rich range of variables set and limited with fine granularity scenarios. The inclusion of detailed morbidity- and pharmacy-based adjustors increased fit across all estimation methods, regardless of data granularity level.

Conclusions. Machine learning methods outperformed linear regression in all data scenarios, but the performance improvements were heterogenous across data scenarios. Policymakers in settings with limited data availability and budgets are recommended to implement linear regression.

Title

Voting, contagion and the trade-off between public health and political rights: quasi-experimental evidence from the Italian 2020 polls

Authors

M. Mello, G. Moscelli

Abstract

Politicians and healthcare policy-makers are faced with hard times to communicate and impose restrictions to civil rights and freedoms in order to minimize the spread of COVID-19, but they may be faced with an even tougher policy dilemma in the case of official voting polls. Elections are gatherings of vital importance for the functioning of democratic countries, and their postponement or cancellation can undermine the citizens' trust in the political institutions of a country.

This paper is among the first to provide empirical evidence on the likely short-term contagion risk borne by holding in-person elections. The estimates of this effect are prone to bias when using only observational data, as the choice of voters whether to go or not to the polls is most likely endogenous to the local stage of the epidemic. We overcome this issue by exploiting the institutional setting that characterized Italian elections held in Fall 2020, when an election day with multiple polls took place in Italy. In all Italian regions, citizens casted ballots for a constitutional referendum aimed at reducing the number of Parliament members; in 7 out of the 20 Italian administrative regions, citizens also casted ballots for electing the new regional governments and the regional assembly representatives; finally, in 955 of the 7,903 Italian municipalities, citizens voted even for appointing the new municipality mayor. Such institutional setting resulted in a 22% average increase in the turnout rate for the constitutional referendum in the municipalities where an administrative poll (i.e. either regional, mayoral elections, or both) occurred on top of the referendum.

We build a unique dataset of weekly new COVID-19 infections and voters' turnout at Italian municipality level and employ an original event-study Control Function design, i.e. an event study where the continuous treatment variable (i.e. the referendum turnout) is instrumented through a Control Function strategy, to examine the weekly evolution of coronavirus infections before and after the September 2020 polls as a function of the referendum turnout rate. Our analysis shows that post-poll new COVID-19 cases increased by 1.1% for each additional percentage point of turnout rate for the constitutional referendum.

This finding suggests that in-person polls have indeed the possibility to increase the spread of airborne diseases like COVID-19, thus potentially triggering or amplifying national-level waves of contagion when they are held during peak periods of an epidemic. To further illustrate the relevance of our results, we provide cost-benefit calculations to show that avoiding an early election at the beginning of 2021, following the collapse of the Government in charge till January 2021, has spared Italy up to about €362 million on hospital care costs and almost 23 thousand more deaths. Our investigation is informative for politicians and healthcare policy-makers regarding the public health threats posed by voting during a pandemic.

Title

The introduction of new DAA drugs for the treatment of HCV: economic impact and clinical outcome

Authors

M. Garbarino, M. Giachello, L. Leporatti, M. Montefiori, B. Rebesco

Abstract

Background. L'Epatite C rappresenta un problema rilevante sia in termini di salute (nel 2015 la prevalenza era stimata in 0,2 casi ogni 100.000 abitanti) sia in termini di costi per il sistema sanitario. La terapia farmacologica a partire dalla scoperta del virus nel 1989 ha avuto un'evoluzione significativa, in quanto, dopo i primi approcci terapeutici che miravano a controllare e tenere isolati gli effetti della malattia, sono arrivati sul mercato, a partire dal 2015, i nuovi antivirali ad azione diretta, che hanno consentito tassi di guarigione pari al 95% dei casi.

Objective. L'obiettivo dello studio è quello di produrre un'analisi economica approfondita dell'Epatite C, con riferimento alla Regione Liguria, tenendo conto sia dei costi diretti della patologia (costo dei farmaci), sia di quelli ad essa connessi, come l'utilizzo dei servizi sanitari (accessi al PS, ricoveri ospedalieri, prestazioni specialistiche).

Metodologia. L'analisi è stata condotta sulla popolazione residente in Regione Liguria per il periodo 2013-2018. La base dati è rappresentata dai flussi amministrativi "ministeriali" che raccolgono informazioni relativamente al consumo di farmaci, ai ricoveri ospedalieri, agli accessi alle strutture di emergenza e, più in generale, all'utilizzo dei servizi sanitari. I pazienti affetti da HCV sono stati selezionati mediante due diversi criteri: 1. la presenza di una diagnosi di Epatite C avvenuta in un ricovero o in un accesso al pronto soccorso: 2. il consumo di farmaci identificati, secondo quanto indicato in letteratura, come farmaci per la cura dell'Epatite C (distinguendo tra farmaci PRE e POST introduzione DAA di nuova generazione). È stata condotta una survival analysis per la valutazione degli outcome attraverso stime econometriche (Cox proportional regression, Poisson regression) e il Kaplan–Meier survival approach.

Results. Lo studio ha evidenziato una riduzione del rischio di mortalità per i pazienti con HCV che hanno seguito una terapia farmacologica, la riduzione risulta maggiore per coloro che hanno assunto i farmaci DAA di nuova generazione. Controllando anche per alcune variabili relative allo stato di salute dei pazienti (presenza di una o più comorbidità), è stata evidenziata una riduzione in termini di utilizzo dei servizi sanitari (ospedalizzazioni e accessi al pronto soccorso) per i pazienti che hanno seguito una terapia e in particolare per i pazienti che hanno assunto i DAA di nuova generazione.