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Articole originale

Which European countries seem to contribute most in controlling the covid-19 pandemic? An exploration after 12 months

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Abstract

Worldwide governments have taken measures to control the covid-19 pandemic. This study analyses which European countries have been most successful in doing so. However, data on the pandemic and on measures taken by governments are disputable. Also a variety of factors might influence the effectiveness of the measures taken. Confirmed cases and deaths due to covid-19 in 2020 are studied in 25 European countries. Resilience components of each country are assessed based on international comparative data. The mean number of confirmed covid-19 cases in 2020 in 25 European countries is 29,6 per 100.000 inhabitants and the number of confirmed deaths 0,9 per 100.000 inhabitants. The extent to which citizens underline the importance of rules, values and a strong government results in less confirmed cases and deaths of the pandemic. Financial investments in health and social care (as % of the Gross Domestic Product) do not (directly) contribute to less victims of the pandemic. The outcomes of this exploration may stimulate further research how to deal with (future) pandemics.

Keywords: *covid-19, resilience, Europe*

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Care țări europene par să contribuie cel mai mult la controlul pandemiei covid-19? Un studiu explorativ după 12 luni

Rezumat

Sistemele de îngrijire a sănătății la nivel mondial au fost supuse unor presiuni încercând să facă față pandemiei covid-19, în timp ce guvernele au luat măsuri pentru controlul pandemiei. Acest studiu explorativ încearcă să analizeze care țări europene au avut cel mai mare succes în acest sens. Studiul se concentrează pe cazurile și decesele confirmate cauzate de covid-19, din 2020 și pe căutarea de explicații pentru reziliență în 25 de țări europene. Componentele de reziliență ale fiecărei țări sunt evaluate între 2017 și 2020, pe baza datelor internaționale comparative. Numărul mediu de cazuri confirmate de covid-19 în 2020 în 25 de țări europene este de 29,6 la 100.000 de locuitori și numărul de decese confirmate de 0,9 la 100.000 de locuitori. Măsura în care cetățenii subliniază importanța regulilor, a valorilor și a unui guvern puternic are ca rezultat cazuri mai puține confirmate și decese în pandemie. Investițiile financiare în sănătate și asistență socială (ca % din produsul intern brut) nu contribuie (direct) la mai puține victime ale pandemiei. Rezultatele acestui studiu explorativ ar putea stimula cercetări suplimentare cu privire la modul de abordare a pandemiilor în viitor.

Cuvinte cheie: *covid-19, reziliență, Europa*

Introduction

The Covid-19 pandemic is a test for all countries, which may indicate how resilient their health care systems are (1). The pandemic maybe seen as a stimulus to reform health care systems (2).

This study explores which European countries seem best prepared to control the pandemic. This exploration is not directly based on the measures taken by governments to control the pandemic. Given the urgency of the pandemic, governments took a variety of measures to beat the pandemic: prevention (social distancing, mouth masks), early detection (social contacting, testing), quarantine, number of hospital beds, medication and intensive care capacity. It is argued, that such measures should be based on an integrated health care policy and need standardised data (3). Therefore, Kringos et al. (3) recommend 'integrated systems' and 'performance intelligence' to guide rational and needs-based decision-making. The reality is that such integrated systems and performance intelligence are absent. Therefore, governments has to take a variety of measures more or less related to the existing health care system.

The number and type of such measures seem 'endless' when it comes to prevention and control (4, 5), which prohibits to answer the question to which extent such (specific) measures are effective (6). Besides, the measures taken by countries to 'control' the pandemic may vary enormously within countries. It is disputed or such measures are based on scientific evidence (7). Neither is it clear to which extent these measures are maintained. So, it is impossible to classify countries to the extent they have taken 'comprehensive measures to control the pandemic' or to assess to which extent measures are maintained.

There is still another problem trying to answer the research question: national data on prevalence and mortality of covid-19. Various problems should be considered, including comparison of covid-19 data between countries (8). Countries do not have the same registration system and vary in the way the population is tested on the presence of covid-19 (so-called confirmed cases): for example, are the confirmed cases representative for the whole population or are they only based on citizens with (presented) symptoms? The same goes for 'confirmed deaths' (i.e. the number of patients who died due to covid-19) because not all died persons are tested before or afterwards on the presence of covid-19.

Despite these questions about the 'completeness' of data on the pandemic, international data are published about the number of confirmed new covid-19 cases and the confirmed covid-19 death per million inhabitants over the year 2020 (international data are for example reported by WHO and Johns Hopkins University CSSE and used in official reports to describe the extent of the pandemic (9). And these data are used for international comparisons about the pandemic, as will be done in this exploration.

One of the factors, which may explain to differences in covid-19 cases and deaths, is the type of health care system. However, to assess health care systems a range of proxies maybe used: life expectancy in years, child mortality, healthy life expectations, data on investments in health care system as % of the Gross Domestic Product (GDP), number of medical doctors and/or number of hospital beds. These proxies are often used in international comparative research and provided by international organisations (WHO, Eurostat, United Nations). However, the meaning of such proxies may be discussed. So alternative indicators maybe considered such as the % of GDP spend on social protection (10). One of the concepts, more recently used, is resilience.

The concept of resilience has been developed in biological and psychological research to explain why some living systems (plants, animals, humans) could overcome adverse events and others could not, followed by studies on societal reactions to ecological changes and economic developments (11). Besides to individuals, resilience is also applied to communities and nations to understand how institutions, politics and social context may deal with major social changes. Resilience assesses how well a system (community, organization, or nation) is able to recover ('bouncing back') in case of adverse events or even to anticipate ('bouncing forward') (12). Building resilient societies should be seen as an international challenge as stated by the United Nations in 2015 with the mission: 'Build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters by 2030' (13).

Therefore, one could hypothesise that resilient societies are better prepared to deal with a pandemic. This study explores the influence of resilience characteristics in European countries on the number confirmed cases and confirmed deaths caused by covid-19 over 2020.

Methods

To explore the research question data of 25 European countries are used of which internationally comparative data are available through Eurostat statistics and European (mostly EU) surveys. The data on confirmed cases and confirmed death per 100.000 inhabitants, related to covid-19 are derived from international publications and describe the numbers over 2020 (14).

Resilience is operationalised (based on former research) by 4 components (15):

- the extent of trust in fellow citizens as well as in legal institutions, called 'trust and secure';
- the importance of rules, values and a strong government, called 'following rules';
- the extent citizens are equally treated and have equal opportunities, called 'equity';
- the expenses (as % of GDP) of government in health care, social protection and education, called 'social protection and care expenses'.

Spearman's correlations (see Table 1) are presented between the confirmed cases and confirmed deaths and between confirmed cases/deaths and the 4 components.

Results

As may be expected, the correlation between the number of confirmed cases and number of confirmed death is statistically significant, but this association is not the same in each countries. Differences between the 25 European countries are considerable.

The mean confirmed new cases of covid-19 in these 25 countries is 29,6 per 100.000 inhabitants in 2020, which vary from 0,9 cases per 100.000 inhabitants in Iceland to 121,8 cases per 100.000 inhabitants in Portugal.

The mean number of confirmed deaths because of covid-19 in the 25 countries is 0,78 per 100.000 inhabitants. The lowest number is 0 in Iceland and the highest 2,5 per 100.000 inhabitants in Portugal. For Romania these figures are 13 confirmed new cases and 0,4 confirmed deaths per 100.000 inhabitants in 2020.

Table 1 - Spearman's correlations between confirmed covid-19 cases and death and four resilience components

	Confirmed cases	Confirmed death	Trust and secure	Follow the rules	Equity
Confirmed cases					
Confirmed deaths	.753**				
Trust and secure	-.191	(-.345)			
Follow the rules	.489*	.414*	-.142		
Equity	-.062	-.092	-.045	-.032	
Social protection and care expenses	-.004	-.115	.031	-.081	.038

** = p < .01; * = p < .05; () = p < .10

The resilience component 'follow the rules' is statistically significant correlated to both confirmed cases and confirmed deaths, i.e. in countries, where citizens consider it is important to follow rules and to have a strong government. In those countries covid-19 cases and covid-19 deaths are significant lower.

Table I also indicates a weak relationship between the number of confirmed deaths and the component 'trust fellow-citizens and institutions', but this does not apply for confirmed covid-19 cases.

The component 'social protection and care expenses', which indicates the % of the Gross Domestic Product (GDP) a country invests in health care (including prevention) and social protection is not statistically related to the covid-19 figures, neither is equity, which indicates to which extent citizens are equally treated and have equal opportunities.

Discussion

The findings of this exploration 'which resilient components are related to covid-19 pandemic outcomes (confirmed cases and confirmed deaths)' may be surprising. Often, it is assumed that (financial) investments in health care systems improve the outcomes of such a system. This seems not the case when fighting a pandemic. Former research already concluded, that not the amount of money in health care, but the way this money is spent may affect the health status of a population (10), which means that the amount of money in health care is not related to the quality of the health care system. Also, in case of a pandemic, the point is apparently not how much money is available in health care, but are citizens willing to follow recommended rules and behaviour.

The outcomes of this study show, that if citizens do so it directly affects the pandemic.

Health authorities in most European countries (like others worldwide) were relying on 'early decisive reactions', i.e. 'asking' citizens to adjust their behaviour. Indeed, this may be successful, as a study in New Zealand shows (16). But, if citizens do not understand the necessity or are not willing to change (temporally) their behaviour pattern or habits, such measures will not be effective! And a pandemic is not 'controlled' by investing more in the health care system. It would be worthwhile to investigate such differences between European countries in more detail. In doing so, special attention should be given to the role of primary health care in each health care system. Maybe, a well-functioning primary health care system is a key-factor in controlling a pandemic.

Conclusions

One may speculate – given the findings in this exploration and other studies – that if citizens trust each other and their institutions, they are more willing to follow rules (17). Looking to the way political systems functioning in the included 25 European countries, one may wonder why some countries (for example besides Portugal also Czech Republic, Spain and Slovenia) have to report a high number of confirmed covid-19 cases/deaths while other countries (for example besides Iceland also Finland, Norway and Greece) are less affected by the pandemic.

It would be worthwhile to investigate such differences between European countries in more detail.

Conflict of interest: none/**Conflict de interese:** nu există

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