



Economic Consequences of Population Morbidity

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AVP and EIZ designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors MVP and VRV managed the analyses of the study. Authors IMK and AID managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

In the modern world, the morbidity of the population plays an important role in the dynamics of economic processes. On the one hand, significant government expenditures on providing the necessary medical care and medicines to citizens directly or indirectly affect the dynamics of budget expenditures. On the other hand, state guarantees for financial support of citizens during their disability are also a costly budget item. Finally, global disasters such as pandemics certainly

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damage the economies of entire states in particular and the world as a whole. The purpose of the work is to consider the features of the economic consequences of population morbidity. According to the results of the study, it should be concluded that the morbidity of citizens of any country is always the reason for the state's expenses for their treatment and rehabilitation. At the same time, it is quite profitable for the state that citizens again acquire the necessary working capacity, since this directly affects the amount of taxes received by the state Treasury. At the same time, favorable working conditions significantly reduce the morbidity of the population and the occurrence of disability, which also, while reducing the cost of treatment and restoring the health of citizens, contributes to maintaining an appropriate level of taxation.

However, the morbidity of the population – the main productive force of any country-can be associated with the development of various kinds of epidemics and pandemics, when the spread of infection partially paralyzes the economy.

Outbreaks of infectious diseases can easily cross borders and threaten economic stability. The current outbreak of human coronavirus (COVID-19) is a reminder of this threat. The constant adaptation of microbes, as well as their ability to develop and become resistant to antibacterial and antiviral agents, ensures that infectious diseases will continue to be a constant and ever-changing economic threat. Consequently, the assessment of these threats is important to inform households, governments and businesses about potential economic shocks as a result of outbreaks of infectious diseases.

The purpose of the study is to determine the degree of economic consequences of population morbidity in the modern world.

The objectives of the study should include:

- identification of the impact of population morbidity on the economy of a country;
- analysis of the scale of economic consequences for countries as a result of the spread of infectious diseases;
- assessment of the possibility of reducing the negative impact of population morbidity on the economy of countries.

Keywords: Morbidity; economic consequences; pandemic; government spending on health; crisis.

1. INTRODUCTION

People all over the world, depending on their immunity and genetic predisposition, as well as under the influence of various natural, man-made and other factors, are subject to various injuries and diseases both infectious and non-infectious genesis. As a result, such conditions lead to disability of the population. The state's concern for its citizens is the most important part of the country's social expenditure. At the same time, this amount of expenses includes not only the cost of free provision of medicines, but also the compensation of medical workers, and the provision of financial guarantees to patients. However, the incidence of the population can be a disaster for the state in the event that an epidemic or pandemic is expected to develop, spreading rapidly.

A significant part of the diseases progressive humanity has won for a long time, this was due to the introduction of universal vaccination by age and taking into account the current epidemiological situation at the time of the

vaccination campaign. However, you cannot discount the various medical experiments conducted in closed laboratories, during which various types of viruses and bacteria are studied that can spread at lightning speed and cause various diseases in people. If such viruses get out of human control, the situation in the country where this situation has developed, as well as, as it turned out, around the world, can become critical. The introduction of a special provision related to overcoming the consequences of epidemics and pandemics permanently disables the economy, which, taking into account the worldwide supply chains of raw materials and equipment, can lead to economic failures in various industries. It is difficult for countries that are used to the current situation in the economy to switch to a closed-loop economy, which will allow States to independently provide their needs with the necessary raw materials and technologies. That is why it is very important to control the population's morbidity in a timely manner, prevent outbreaks of infectious diseases, and create a specialized fund that can be used to help the population in the event of mass morbidity or other situations related to the

state guarantee of medical care for the population.

2. MATERIALS AND METHODS

In the process of writing the study, a systematic analysis of the literature within the research topic was applied, as well as comparative and comparative methods were used. The literature on the spread of both non-communicable and infectious diseases was analyzed, including an assessment of the impact of their development dynamics on the health sector, as well as articles on the latest data on the spread of COVID-19.

In one of the studies, the author examines a number of channels through which the economy of any country can be affected by a serious flu outbreak. These channels include: reducing household consumption of tourism, transport and retail; frequent absences from work due to illness or prevention; school closures; and increased demand for health services. Given these channels, four types of economic shocks are used to simulate an influenza pandemic.

1. Temporary rise of demand for hospital and other medical services. The increase in medical costs associated with each pandemic is applied as an increase in spending on the public services sector.
2. Temporary increase in the number of sick leave and school closures. This is a disease of workers and parents caring for children. These effects are modeled as a temporary decrease in output per employee (labor productivity).
3. Deaths with a corresponding permanent reduction in the labor force.
4. Temporary reduction of international tourism and business travel. They depend on the number of people infected and the initial deaths per case. The impacts of tourism are applied to the exports of the four sectors: wholesale and retail trade, air transport, other transport, recreation and other services. Such purchases represent expenses of tourists [1].

Accordingly, it is obvious that the reaction of the economy of any country, even to a short-term rise in morbidity, is quite noticeable.

Assessing the financial impact of medical interventions requires some understanding of the extent to which a particular medical intervention

and related health changes affect labor market activity and transfer payments.

From the government's perspective, morbidity and mortality that affect productivity, retirement decisions, and labor force participation will affect government revenue [2].

At each age of life, per capita expenditures and expected tax revenues allow us to assess the likely financial consequences of changes in health status at any stage of life. For example, an intervention that supports the health of a 61-year-old man and allows him to avoid early retirement for health-related reasons will increase taxes for the government and reduce disability costs and additional pension costs paid for early retirement. In addition, an understanding of the role that certain medical conditions may have in the accumulation of human capital, such as education, may also be considered.

Understanding how medical interventions affect people's financial lives can be used to assess the return on government investment in future gross and net tax revenues associated with improved health. In public-funded health services, new medical interventions represent increased costs for the government, but can also increase tax revenues when used effectively [3].

To understand the overall and net fiscal impact, you can estimate the fiscal cost of new activities, including investment costs in government spending profiles, to assess the fiscal impact and whether the additional costs are justified. For example, a person who is diagnosed with a disease at the age of 39 is likely to reduce productivity for the rest of their life and increase transfer costs. This will lead to a shift in both age-related per capita tax revenue (lost tax revenue) and per capita transfer costs (increased spending). Therefore, investment in new medical technology aimed at controlling this disease is likely to reduce the shift towards lower age-related spending on transfers per capita and support age-related tax revenues per capita.

The return on investment can be estimated by comparing the net fiscal effect with and without investments in healthcare technologies. The financial health framework can also be used to account for future lost income from children, because it represents expected revenue for governments and is well reflected in public finance methodologies [4].

Public finances are influenced by two opposing forces of the population: government expenditures and tax revenues. As the age structure and health status of the population changes, these opposing forces, including economic growth and tax revenues influenced by labor market participation, as well as age-related expenditures, are also adjusted.

Looking at the age structure of the population, you can see how changes in the health status of the population can affect the state balance by increasing transfers and reducing tax revenues. As health status improves in one age group, productivity and tax revenues will increase. From the government's point of view, investment choices made by national and regional health services can have both a positive and negative impact on public accounts, depending on the extent to which health investments affect morbidity, mortality, and the level of economic activity [5].

In recent years, public finance and policy agendas have increasingly focused on health sustainability due to concerns about rising health costs, aging, and increased consumption of health resources. The issue of health sustainability is most relevant in countries with health systems that are primarily funded by taxes; in private payment markets, sustainability is limited by solvency. Despite the importance of sustainability, there is limited agreement among health researchers on how to define a sustainable health system and how health sustainability fits into the broader theme of public finance sustainability [6].

In the current environment, experts often confuse technical efficiency with sustainability. It is clear that efficiency contributes to sustainability; however, even universal implementation of effective health programs can become unsustainable if the number of effective programs adopted becomes unavailable. At the moment, cost – effectiveness analysis – the main tool used by health systems everywhere to control costs – does not guarantee the sustainability of our health systems in the long term. In addition, the cost-effectiveness analysis cannot inform the cross-sectoral allocation of resources, i.e. the transfer of public spending from one sector to another, which is likely to be important for assessing the sustainability of the public sector. This points to the need for a broader set of analytical approaches to examine sustainability and how investments in the health sector affect public finances.

2.1 The Role of Pandemics in the Economic Situation of Modern States

Based on the situation described above, it is necessary to clarify the following: all of the above is related to the traditional state policy in the field of health at a time when the country is not involved in wars or a particular pandemic has not spread on its territory. However, in the situations described above, which are sometimes extreme, everything can change. An example of this transformation is the current pandemic associated with the incidence of COVID-19 in the world population [7].

The spread of the disease occurred within a few months of its onset in China, and to date, the number of cases has reached more than 50 million, of which more than 1 million are fatal.

In our opinion, the historical significance of this epidemic is due not only to the fact that it has become the most widespread over the past few decades, but also to the fact that its consequences will take place in various spheres of human activity over the next few years.

Strategies for managing the spread of COVID-19 have varied, with many researchers applying several additional approaches, often including:

- coordinated search and distribution of security tools;
- redistribution of medical potential;
- testing for viruses and antibodies;
- contact tracking;
- frequent disinfection of public facilities;
- social distancing;
- wearing masks;
- management of crowds in public places due to unstable schedules, and move outdoors;
- limit large meetings;
- quarantine infected people and minimize the risk of infection by closing schools and businesses and making more extensive orders to stay at home [8].

Of these strategies, quarantine was one of the most accessible, widely used, and hotly debated measures in the COVID-19 framework. This approach also has a number of historical precedents. In fact, closure and quarantine were among the only tools available to society before the advances of Virology in the 19th and 20th centuries. Although the closure of firms was more extensive under COVID-19 than during

many past pandemics, the main measures taken now, such as quarantining patients, restricting public gatherings, and closing schools, were implemented during the 1918 pandemic, although on a smaller scale and with a shorter duration [9].

The coronavirus pandemic is characterized by six types of economic shocks.

1. Temporary rise in demand for hospital and other medical services. This effect is scaled to reflect the number of coronavirus infections relative to the number of pandemic flu infections. Note that the number of coronavirus infections (as of the end of April 2020) is much lower than the number of pandemic flu infections.
2. A temporary surge in demand for police and related services. This effect is associated with the use of large-scale and mandatory social distancing measures applied almost everywhere. This effect is expected to peak at 5% of basic government spending for all countries except Sweden and Singapore. The peak of spending growth coincides with the peak quarter of infection, and then falls as the number of new infections decreases over the course of the year.
3. Temporary increases in sick leave, school and university closures, job closures, and cancellations of public events and meetings. These effects are intended to reflect the wide range of serious mitigation measures that countries have taken to ensure mandatory social distancing in efforts to contain the spread of the coronavirus. These effects focus on the impact on jobs. This effect is expected to peak at - 20% of the base labor productivity across the economy for all countries except Sweden and Singapore. For Sweden and Singapore, the peak is assumed to be -5%. The peak of the fall in productivity coincides with the quarter of the peak of infection, and then falls as the number of new infections decreases over the course of the year.
4. Deaths with a corresponding permanent reduction in the labor force.
5. Temporary reduction of domestic and international tourism and business travel. During the initial stages of the outbreak, there was a decrease in international travel and tourism due to uncertainty about the epidemiological characteristics of the virus

and the cancellation of international meetings. In the end, most countries closed their borders to all visitors and allowed only returning citizens and residents to enter. This has led to an almost complete cessation of international travel and tourism. This is imposed on the global reduction of the relevant sectors by 25-60%. It is assumed that this peak effect is timed to the number of coronavirus infections during the year.

6. Temporarily switch home and business spending from domestic tourism and travel, restaurants and accommodation, sporting events, and retail shopping in stores. Strict mitigation measures have led to restrictions on a number of activities that are typical for personal contact; this has affected restaurants and residential areas, sporting events, and retail purchases of non-essential goods in stores. In most countries, mitigation measures also severely restrict movement between and within cities, which has a serious impact on domestic tourism and travel. Shifting spending on these products means a 50% reduction in domestic sales in the respective sectors. This peak effect is associated with the number of cases of coronavirus infection during the year [10].

It is necessary to indicate another negative factor that will lead to a decrease in the birth rate in the future and, as a result, to a reduction in the resources of the labor market. This is child mortality. The unprecedented global socio-economic crisis triggered by the COVID-19 pandemic poses serious risks to the nutritional status and survival of young children in low-and middle-income countries. Of particular concern is the expected increase in child malnutrition, including malnutrition, due to a sharp decline in household income, changes in the availability and availability of nutritious foods, and interruptions in the provision of health, nutrition and social protection services.

One in ten deaths among children under 5 years of age in the countries mentioned above is associated with severe exhaustion, as emaciated children are at increased risk of dying from infectious diseases. Before the COVID-19 pandemic, approximately 47 million children under 5 years of age suffered from moderate to severe malnutrition, most of them living in sub-Saharan Africa and South Asia [11].

Economic, food and health disruptions resulting from the COVID-19 pandemic are expected to further exacerbate all forms of malnutrition. The international food policy research Institute estimates that the pandemic will put an additional 140 million people in extreme poverty on less than \$ 1,90 a day in 2020.

According to the world food program, by the end of 2020, the number of people in third world countries facing acute food insecurity will almost double to 265 million. A sharp decline in access to child health and nutrition services is expected, similar to that observed during the 2014-2016 outbreak of Ebola virus disease in Saharan Africa [12].

At the start of the COVID-19 pandemic, UNICEF estimated a 30% overall reduction in basic nutrition coverage, reaching 75-100% in isolation settings, including in unstable countries with humanitarian crises.

A call to action on child malnutrition and COVID-19 came from the heads of four UN agencies. These efforts combine three approaches to modeling the combined impact of COVID-19 on the economy and health system on malnutrition and mortality: macroeconomic projections of the impact on gross national income (GNI) per capita (GNI) MIRAGRODEP; microeconomic estimates of how projected GNI shocks affect child attrition; a "Saved lives" tool that links country-specific health service disruptions and projected increases in attrition to child mortality [13].

The COVID-19 pandemic is expected to increase the risk of all forms of malnutrition. The attrition-oriented estimates given here are likely to be conservative, given that the duration of this crisis is unknown and its full impact on food, health, and social safety nets has yet to be realized. Disrupting other health services during quarantine will further undermine the health and mortality of mothers and children, and as economic and food system crises deepen, other forms of malnutrition are expected to increase, including stunting of children, micronutrient deficiencies, and maternal nutrition.

Without adequate action, the profound impact of the COVID-19 pandemic on nutrition at an early age can have generational implications for children's growth and development, and have lifelong impacts on education, chronic disease risks, and overall human capital formation.

3. RESULTS

3.1 The Influence of the Incidence of Citizens on the Income and Expenditure of the State

Governments of all countries have a direct interest in ensuring that the health of their citizens is sustainable. Public health is not only fundamental to economic growth, but also affects short - and long-term government spending on health, disability, and other social programs, and is associated with direct and indirect taxes.

The role of fiscal transfers between ordinary citizens and government is largely ignored in the traditional analysis of welfare economics, based on the hypothesis that there are no winners or losers as a result of wealth transfer. However, from the government's point of view, this position is incorrect, since the costs of disability and lost taxes associated with poor health and reduced productivity represent real costs that have consequences for the budget and growth [14].

Sociologists are increasingly paying attention to the relationship between macroeconomic conditions, individual experience in the labor market, and physical and mental health outcomes. Among the negative effects on public health, researchers cite a decrease in mental and physical health, a deterioration in self-esteem, an increase in cigarette smoking and alcohol consumption, as well as short-and long-term increased risks of death of all causes.

Research has documented how increased economic stress has led to reduced job prospects and precarious employment, as well as reduced access to health insurance and use of health services.

Traditional approaches to assessing the health economy originate in the welfare economy, which focuses on the costs of the health sector, but ignores transfers and taxes, based on the assumption that there is no increase or decrease in welfare associated with transfers and taxes. While this does reflect the economic perspective of welfare, it does not reflect fiscal reality and the observation that the loss of taxes and the increase in transfer taxes represent real costs for the government [15].

In many ways welfare economics provides a theoretical framework for optimizing public welfare; it is detached from the reality of financial

constraints and the need to tax citizens to pay for government programs. An example of such transfer costs was discussed in a report commissioned by the UK government, which describes the impact of poor health on working-age adults. The report notes that the impact of poor health on adults of working age ranged from 62 to 76 billion pounds per year (2007), of which 29 billion pounds were unemployment benefits, and 28 to 36 billion pounds were lost tax revenue [16].

Health sector expenditures, traditionally included in cost-effectiveness analyses, account for between 8% and 15% of total government spending. These figures highlight the fact that applying a limited approach to health care for adults and working-age children, who represent future taxpayers, may not account for most of the associated financial costs that are beyond the health system's budget [17].

Events such as premature death, disability, early retirement, or reduced labor force participation will reduce the amount of taxes paid to the state. Similarly, health conditions that increase life expectancy have a beneficial effect on tax revenues, but there is also an increase in transfer costs for the government. Simultaneous accounting of transfer costs and tax revenues provides an insight into the impact of minor health changes on public finances. This may include improving education, future income, and productivity; delaying a decision about retirement; or the avoidance of early mortality. In this respect, reduced labor force participation has the same effect as unemployment, because people are excluded from the labor market, which requires an increase in state-funded social support programs [18].

4. DISCUSSION

The history of past pandemics and economic downturns provides an insight into what we can expect from the current COVID-19 crisis. There is a complex relationship between health and economic productivity that will determine the immediate and hidden consequences of COVID-19 in both obvious and subtle ways. Taking into account that these hidden effects develop over decades and even generations, economic history is uniquely able to provide evidence of the potential long-term costs of a pandemic.

The experience of both historical pandemics and historical recessions can give us insight into the

possible long-term effects of COVID-19 and how we can reduce these costs. The experience of the 1918 flu pandemic shows that the impact of the disease can affect people throughout their lives, both directly through a deterioration in their current health status, and indirectly through a reduction in investment in human capital. Costs were not limited to those directly affected; instead, they spread within households and across space, sectors, and generations [19].

Moreover, while mortality is high and saving lives may remain the main goal during a pandemic, preventing and compensating for disease may be an equally important policy issue, especially in the context of possible long-term consequences. In particular, during a pandemic, when a large proportion of elderly people become ill (as in the 1918 pandemic), or during pandemics, when many are infected but eventually survive (as in the 1918 pandemic and COVID-19), cases of a pandemic disease can have long-lasting consequences throughout life, either as a result of the initial disease (which can, for example, disrupt fetal nutrition, reduce working capacity, or permanently harm health), or as a result of its consequences later in life [20].

The great depression points to other long-term consequences that may result from the downturn in economic activity associated with the pandemic: both birth and entry into the labor market during the great depression led to economic penalties in adulthood, and restrictions on migration took place. Adverse effects on people and businesses. It is important to note that history shows us that these two types of harm are mutually reinforcing: harm to health tends to undermine the prospects of the labor market in the long run, while harm to the prospects of the labor market tends to undermine health in the long run.

Therefore, researchers and policy makers should consider the possibility of these long-term costs when weighing the short-term costs and benefits associated with pandemic control and fiscal intervention. The story suggests potentially huge future costs to both the economy and the social safety net associated with the deteriorating economic situation, chronic health problems, and missed fertility of the covid-19 cohorts. Given that investments in human capital tend to be more productive the earlier they are made, this suggests that policy measures taken now, such as monetary assistance, may be particularly cost-effective [21].

Economic history also shows that we cannot consider the impact of COVID-19 on health and the economy independently. Past pandemics indicate that regardless of the pathology of the disease, its effects often depend on economic conditions. While some pandemics have not spared the class, many have disproportionately affected people with lower socio-economic status due to a variety of factors, including their profession, living conditions, and access to health care. These people are at greater risk of infection, are at greater risk of exposure-related harm, and are less able to eliminate this harm. It is already clear how this happens in the case of COVID-19, and it is necessary to remember that the spread of the disease and the severity of its consequences will partly depend on the spatial distribution of residence and economic activity.

These disparate effects of the virus itself will be compounded by the associated economic downturn. To the extent that the COVID-19 economic downturn limits exposure to environmental and work-related hazards, or reduces the cost of unhealthy behaviors, non-coronavirus aspects of health can actually improve. However, both the current literature on developing countries and the US experience during the great depression suggest that a severe economic downturn may exacerbate health problems in regions with lower basic incomes and weaker social protection systems [22].

Identifying the channels through which loss of income and general recession conditions affect health is essential for correctly interpreting any observed changes in the population's health level during COVID-19 and for developing effective health policies. Successful implementation of this policy also requires a solid understanding of history. In particular, the obstacles to public health initiatives during past pandemics that were linked to institutional structures and individual attitudes provide warnings for our current crisis.

While the history of the economy provides useful insights into the current pandemic, the way this crisis is developing also provides a new perspective from which to go back in time. We are witnessing the actions that individuals and families, employees and firms, citizens and government officials are taking to protect themselves from the pandemic and the damage it has caused to the economy. You can see how these responses change as new information about COVID-19 becomes available. The current

pandemic provides us with unprecedented rich and disaggregated data that, even if still evolving, can provide new insights into which groups may require additional study of past pandemics. All these aspects of COVID-19 can help us change the way we study the economic history of pandemics [23].

One of the most important ways that the COVID-19 experience can shape the direction of economic history may be to focus on differences rather than looking for similarities. Although the transmission rate and severity of COVID-19's effects have historical counterparts, many important features of the world vary significantly, including the global nature of production; flows of people, goods, and information; urbanization; basic standard of living; medical technology; public health infrastructure; and the role of government [24-29].

These differences can help us better understand past and present pandemics; moreover, they help us understand how and why things have changed. For example, the effects of COVID-19 were more widespread and the corresponding economic downturn more devastating than previous pandemics would suggest. This situation is likely to have been affected by the much higher economic costs of COVID-19 compared to the equally deadly pandemics of the 20th century.

5. CONCLUSIONS

The morbidity of citizens of any country is always the reason for the state's expenses for their treatment and rehabilitation. At the same time, it is quite profitable for the state that citizens again acquire the necessary working capacity, since this directly affects the amount of taxes received by the state treasury. At the same time, favorable working conditions significantly reduce the morbidity of the population and the occurrence of disability, which also, while reducing the cost of treatment and restoring the health of citizens, contributes to maintaining an appropriate level of taxation.

However, the morbidity of the population is the main productive force of any country- it can be associated with the development of various kinds of epidemics and pandemics, when the spread of infection partially paralyzes the economy.

Outbreaks of infectious diseases can easily cross borders and threaten economic stability. The

current outbreak of human coronavirus (COVID-19) is a reminder of this threat. The constant adaptation of microbes, as well as their ability to develop and become resistant to antibacterial and antiviral agents, ensures that infectious diseases will continue to be a constant and ever-changing economic threat. Consequently, the assessment of these threats is important to inform households, governments and businesses about potential economic shocks as a result of outbreaks of infectious diseases.

The greatest economic impact of the infectious disease pandemic is caused by reduced travel and tourism due to household risk management measures and travel restrictions imposed by health authorities, as well as lost work days due to illness or official social distancing measures aimed at restraining the spread of the virus.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. King RG, Rebelo ST. Resuscitating real business cycles' J.B. Taylor, M. Woodford (Eds.), Handbook of macroeconomics, Elsevier North Holland, Amsterdam. 1999; 927-1007.
2. Olivera MJ, Chaverra KA. New diagnostic algorithm for Chagas disease: impact on access to diagnosis and out of pocket expenditures in Colombia Iran J Public Heal. 2019;48(7):1379-1381.
3. Finkelstein A, Luttmer EFP, Notowidigdo MJ. What good is wealth without health? The effect of health on the marginal utility of consumption Journal of the European Economic Association. 2013;11:221-258.
4. Holly Hedegaard, Arialdi M. Miniño, Margaret Warner. Drug Overdose Deaths in the United States, 1999 – 2018 NCHS Data Brief. 2020;356:1-8.
5. Matthew Lang, Clay McManus T, Georg Schaur. The Effects of Import Competition on Health in the Local Economy Health Economics (December 2017). 2019;44-56.
6. Michael Massoglia, Brianna Remster Linkages Between Incarceration and Health Public Health Reports. 2019; 134(1):88-141.
7. Roberton T, ED Carter, VB Chou, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: A modelling study Lancet Glob Health. 2020;8:901-908.
8. Headey D, Ruel M. The impact of economic recessions on child acute malnutrition: implications for the COVID-19 crisis. IFPRI discussion paper 01941, June, 2020 International Food Policy Research, Washington, DC; 2020.
9. Coronaviridae Study Group of the International Committee on Taxonomy of Viruses. The species Severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2 Nature Microbiology. 2020; L5:536-544.
10. Roser M, Ritchie H, Ortiz-Ospina E, Hasell J. Coronavirus pandemic (COVID-19); 2020. Available:<https://ourworldindata.org/corona-virus>
11. Li L-q, Huang T, Wang Y-q, Wang Z-q, Liang Y, Huang T-b, Wang y. Covid-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis Journal of Medical Virology. 2020; 92(6):577-583.
12. Ann Arbor MI. Inter-university Consortium for Political and Social Research [distributor]. 2020;2020-10-28.
13. Huang CY, Wang X, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu ZX. Cheng clinical features of patients infected with 2019 novel corona virus in Wuhan, China Lancet. 2020;497-506.
14. Chou J, Kuo N-F, Peng S-L. Potential impacts of the SARS outbreak on Taiwan's economy Asian Econ Pap. 2004;3(1):84-99.
15. Hai W, Zhao Z, Wang J, Hou ZG. The short-term impact of SARS on the Chinese economy Asian Econ Pap. 2004;3(1):57-61.
16. Keogh-Brown R, Wren-Lewis S, Edmunds WJ, Beutels P, Smith RD. The possible macroeconomic impact on the UK of an

- influenza pandemic Health Econ. 2010; 19(11):1345-1360.
17. Beutels P, Edmunds WJ, Smith RD. Partially wrong? Partial equilibrium and the economic analysis of public health emergencies of international concern Health Econ. 2008;17(11):1317-1322.
 18. Vellore Arthi. The dust was long in settling: Human capital and the lasting impact of the American Dust Bowl J. Econ. History. 2018;78(1):196-230.
 19. Wu YC, Chen CS, Chan YJ. Overview of the 2019 novel corona virus (2019- nCoV): the pathogen of severe specific contagious pneumonia (SSCP) J. Chin. Med. Assoc. 2020;217-220.
 20. Wang FS, Zhang C. What to do next to control the 2019-nCoV epidemic? Lancet. (10222). 2020;395:391-393.
 21. Huang C, Wang Y, Li X. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China Lancet. 2020;497-506.
 22. Campbell Bannock D. Unlike Anything Seen in Peacetime': NHS Prepares for Surge in Covid-19; 2020.
 23. Chinazzi M, Davis JT, Ajelli M, Gioannini C, Litvinova M, Merler S, Piontti AP, Mu K, Rossi L, Sun K, Viboud C, Xiong X, Yu HM, Halloran E, Longini Jr. IM, Vespignani A. The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak Science. 2020;395-400.
 24. Gery P. Guy, Kun Zhang, Lyna Z. Schieber, Randall Young, Deborah Dowell County-Level Opioid Prescribing in the United States, 2015 and 2017 JAMA Internal Medicine. 2020;179(4):1033-1036.
 25. Achmad H, Tanumihardja M, Ramadhany YF. Teledentistry as a Solution in Dentistry During Covid-19 Pandemic Period: A Systematic Review. International Journal of Pharmaceutical Research. 2020; (Supplementary Issue2):272-278.
 26. Huldani, Pattelongi I, Massi MN, Idris I, Bukhari A, Widodo ADW, Achmad H. Research Reviews on Effect of Exercise on DAMP's, HMGB1, Proinflammatory Cytokines and Leukocytes. Systematic Reviews in Pharmacy. 2020;11(4):306-312.
DOI: 10.31838/srp.2020.4.44
 27. Ramadhany S, Achmad H, Singgih MF, Ramadhany YF, Inayah NH, Mutmainnah N. A Review: Knowledge and Attitude of Society toward Tuberculosis Disease in Soppeng District. Systematic Reviews in Pharmacy. 2020;11(5):57-62.
DOI: 10.31838/srp.2020.5.10
 28. Singgih MF, Huldani, Achmad H, Sukmana BI, Carmelita AB, Putra AP, Ramadhany S, Putri AP. A review of Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) Medications in Dentistry: Uses and Side Effects. Systematic Reviews in Pharmacy. 2020; 11(5):293-298.
DOI: 10.31838/srp.2020.5.43
 29. Achmad H, Fajriani, Inayah Y, Singgih MF, Syahrir S, Handayani H, Horax S, Ramadhany S, Ramadhany YF. A Systematic Review of Gene Therapy as Treatment of Oral Squamous Cell Carcinoma. Systematic Reviews in Pharmacy. 2020;11(6):529-534.
DOI: 10.31838/srp.2020.6.81

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