

# Implications of non-communicable diseases care policies on COVID-19 disease management

## Introduction

As of April 2021, COVID-19 has already infected approximately 130 million individuals and caused about 3 million deaths worldwide<sup>1</sup>. In the United States alone, COVID-19 has resulted directly in approximately half a million deaths, and there are still almost 0.6 million excess deaths in the country that can be attributed to the pandemic<sup>2</sup>.

A study conducted in 2020 estimated that 22 per cent of the global population, have at least one underlying condition that puts them at increased risk of severe COVID-19 if infected<sup>3</sup>. There has been a huge diversion of resources and funds by nations, as well as intergovernmental agencies, to cope with pandemic needs. Despite this, there is still a necessity to identify these patients at greater risk of the worst outcomes and high mortality to triage efforts in maximising efficiency.

## Clinical conclusions and strategic direction for integrating COVID-19 response and non-communicable diseases care

Certain non-communicable diseases (NCDs) like diabetes, cardiovascular diseases (CVDs), chronic respiratory diseases (CRDs) and cancers increase the severity of COVID-19 and risk of death. Some studies estimate that mortality in 60 to 90 per cent of COVID-19 cases is attributable to either one or more of these comorbidities<sup>4</sup>. Survivors of COVID-19 with NCDs may see that the virus affects the progression of their pre-existing clinical NCD conditions<sup>5</sup>. Many studies have shown that previously healthy COVID-19 patients had cardiovascular complications causing acute<sup>6</sup> and chronic damage<sup>7</sup>, which could contribute to an increased number of complex NCD cases and increase the burden on already overstretched health systems in low- and middle-income countries (LMICs).

## Positive correlation between NCD mortality rate and COVID-19 case fatality

Figure 1 below presents the correlation of two assumptions: the first, that NCD mortality rates per 100,000 in the underlying population are an indicator of the prevalence and/or quality of NCD care facilities in a country, and the second, that the success of a country in controlling the COVID-19 pandemic can be measured by COVID-19 case fatality rates.

NCD mortality rate data was sourced from the World Health Organization<sup>8</sup> and COVID-19 case fatality rate data secured from Our World in Data<sup>9</sup>. The veracity of the demonstrated correlation is reliant upon robust and accurate COVID-19 testing.

A steady positive correlation was found when comparing the two datasets for LMICs across multiple geographical regions of South and Southeast Asia, North Africa, and Central America. This geographical reach represents 3 billion people or 38 per cent of the global population. This correlation is presented in the three graphs below across example countries in each region.

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<sup>1</sup> <https://coronavirus.jhu.edu/map.html>

<sup>2</sup> [https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess\\_deaths.htm](https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm)

<sup>3</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7295519/>

<sup>4</sup> <https://ijme.in/articles/non-communicable-disease-management-in-vulnerable-patients-during-covid-19/?galley=html>

<sup>5</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7248450/>

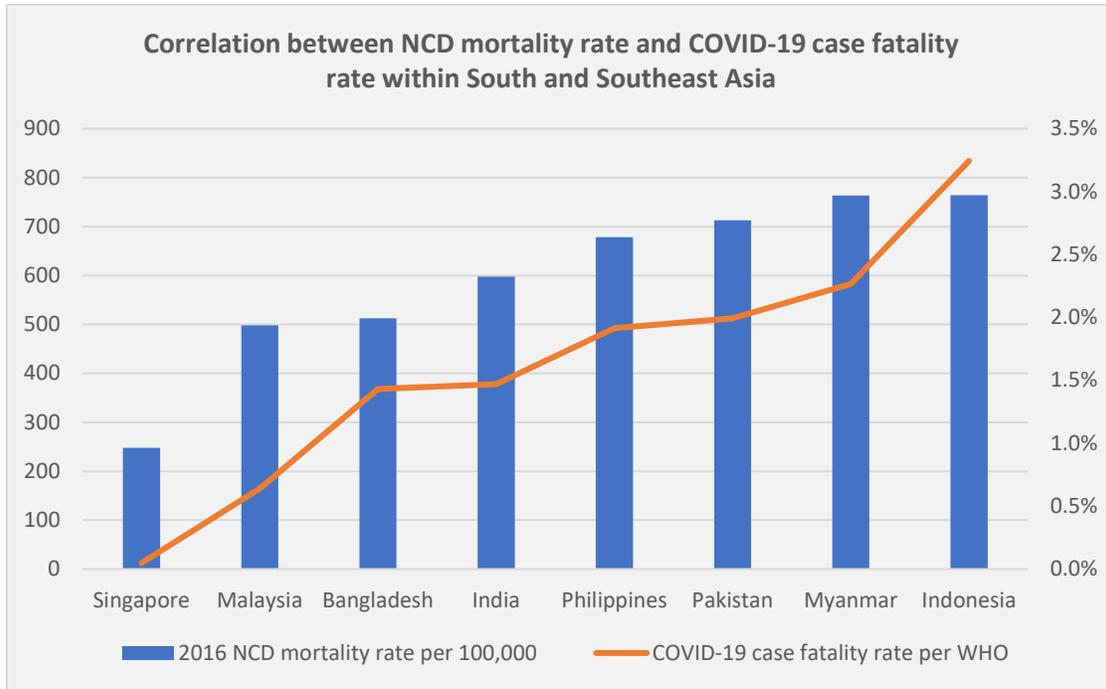
<sup>6</sup> <https://www.medrxiv.org/content/10.1101/2020.03.05.20031591v1>

<sup>7</sup> <https://www.nature.com/articles/s41569-020-0360-5#citeas>

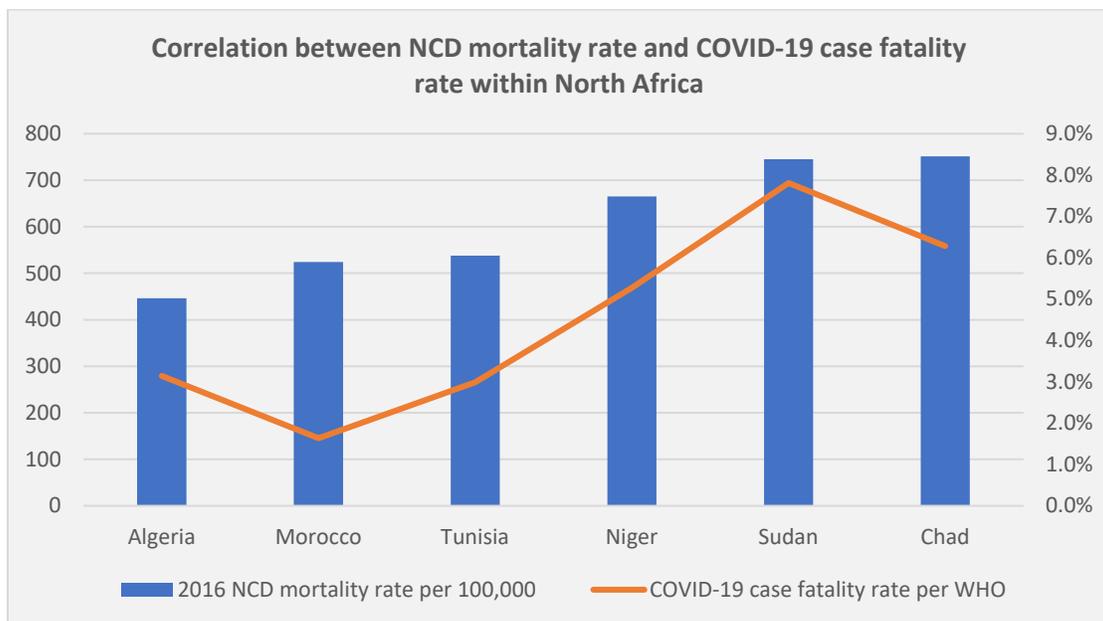
<sup>8</sup> [http://gamapserver.who.int/gho/interactive\\_charts/ncd/mortality/total/atlas.html](http://gamapserver.who.int/gho/interactive_charts/ncd/mortality/total/atlas.html)

<sup>9</sup> <https://ourworldindata.org/coronavirus>

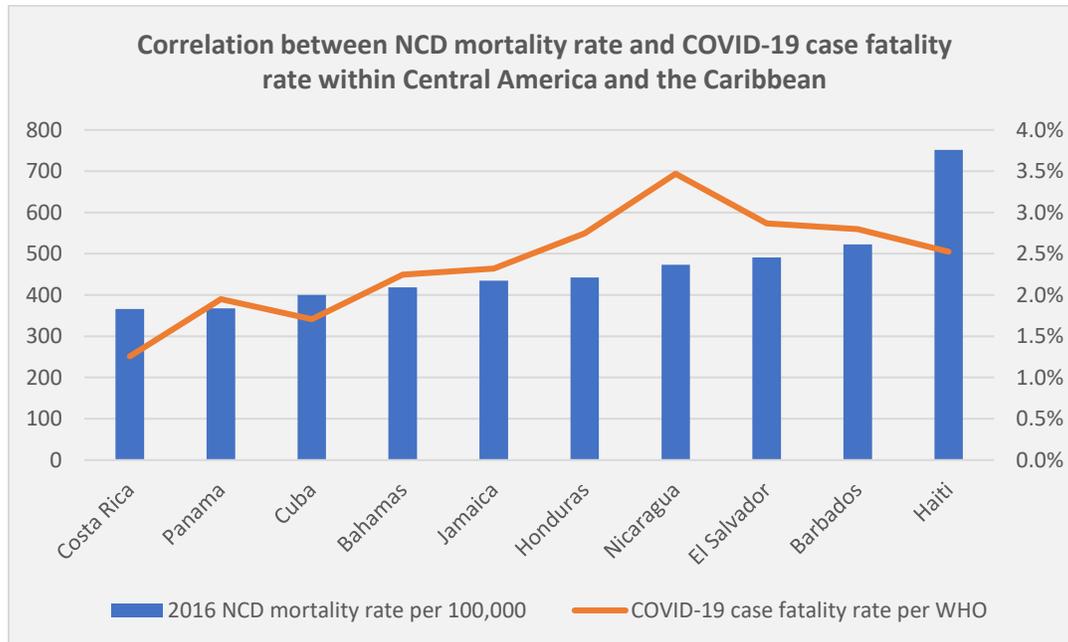
**Figure 1: Graph depicting correlation between NCD mortality rate and COVID-19 case fatality rate for selected countries within South and Southeast Asia**



**Figure 2: Graph depicting correlation between NCD mortality rate and COVID-19 case fatality rate for selected countries within North Africa**



**Figure 3: Graph depicting correlation between NCD mortality rate and COVID-19 case fatality rate for selected countries within Central America and the Caribbean**



This initial analysis concludes that countries which tackled NCDs systemically, through better screening, detection, and prevention of underlying risk factors, as reflected in their low NCD mortality rates, have demonstrated a greater capacity to reduce the impact of COVID-19 and reduced COVID-19 case fatality rates significantly.

A further cross-sectional regression analysis was performed using generalized linear model with log link approach to better understand this correlation between NCD mortality and COVID-19 mortality in LMICs. There were two confounding variables identified and used for this evaluation – percentage of elderly population per country (above 65 years old) and number of healthcare workers (physicians, nurses and midwives) per 10,000 population. As the elderly population is prone to both higher incidence of NCD and COVID-19, an increased percentage of elderly population in a country can result in increased deaths due to both causes. Similarly, healthcare workers ratio for a population can impact the management of these conditions and can change the outcome of NCD and COVID-19 for these countries.

For this purpose, COVID-19 death data was collected from John Hopkins data repository<sup>10</sup>, NCD death data from Institute for Health Metrics and Evaluation<sup>11</sup>, percent of elderly population from the World Bank<sup>12</sup>, and healthcare workforce ratio from the WHO<sup>13</sup>.

The results of this analysis indicate that **for every additional NCD death, there is an increase of 10.4 per cent in COVID-19 deaths per 1000 population for the LMIC countries**. Figure 4 below represents this relationship between COVID-19 and NCD mortality rates by region.

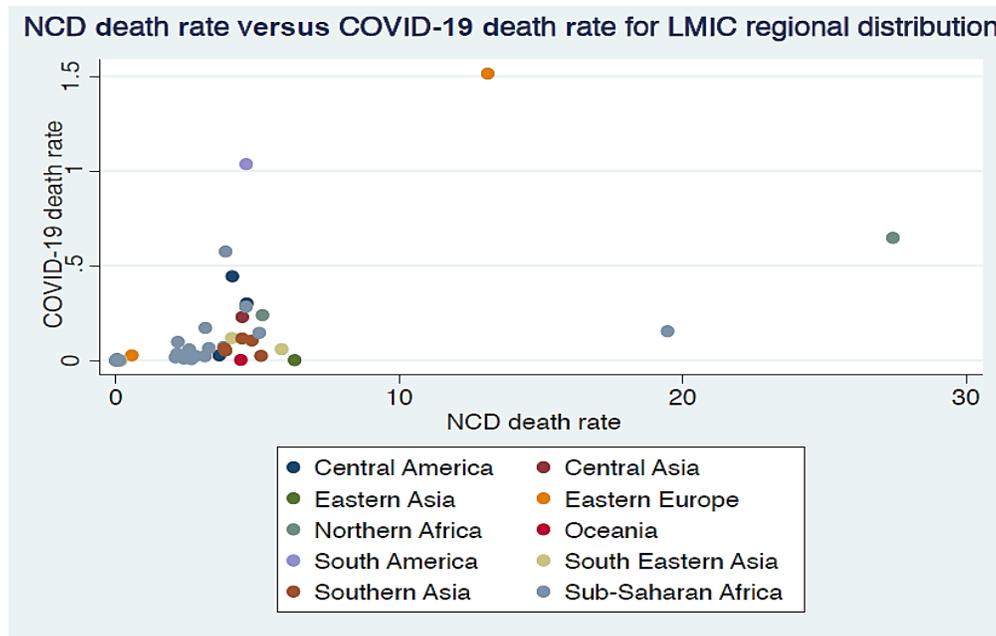
<sup>10</sup> <https://github.com/CSSEGISandData/COVID-19>

<sup>11</sup> <http://www.healthdata.org/research-article/global-burden-disease-study-and-preventable-burden-ncd>

<sup>12</sup> <https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS>

<sup>13</sup> <https://www.who.int/hrh/statistics/hwfstats/en/>

**Figure 4: Graph depicting correlation between NCD and COVID-19 mortality rates by sub-region**



Deaths due to comorbidities of COVID-19 and NCDs are just one representation of NCD-related deaths as NCDs kill 41 million people each year. CVDs cause 17.9 million deaths, followed by cancers (9 million), CRVs (3.9 million) and diabetes (1.6 million)<sup>14</sup>.

**Current level of spending on NCDs versus COVID-19**

Data on NCD health expenditure by governments around the world is scarce, but there is evidence to suggest that resources directed to the COVID-19 response are substantially higher than what is currently being spent on NCD measures.

India, for example, has spent roughly USD 2 billion on its COVID-19 response since March 2020<sup>15</sup>, compared to USD 230 million on NCDs<sup>16</sup>, accounting for purchasing power parity (PPP). In nominal terms this represents approximately USD 11.5 million, using the World Bank’s PPP conversion factor<sup>17</sup>, therefore allocating the amount spent on the COVID-19 response at around 174 times higher than the amount spent on NCD measures.

The global landscape is similar, with COVID-19 response money spent to date totalling USD 11.3 trillion<sup>18</sup>. This includes significant resources committed to COVID-19 responses in LMICs by the World Bank<sup>19</sup>, Asian Development Bank, African Development Bank and philanthropic trust funds like the Bill and Melinda Gates Foundation. The World Bank<sup>20</sup>, Asian Development Bank<sup>21</sup>, and African Development Bank<sup>22</sup> have together committed more than USD 190 billion to the COVID-19 response.

<sup>14</sup> <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>  
<sup>15</sup> [Government of India Presentation on May 17, 2020 – Part-5: Government Reforms and Enablers](https://www.mca.gov.in/Portals/0/2020/05/17/2020-05-17-Part-5-Government-Reforms-and-Enablers.pdf)  
<sup>16</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6742225/>  
<sup>17</sup> <https://databank.worldbank.org/embed/ICP-Annual-PPPs/id/8b9dca71?inf=n>  
<sup>18</sup> <https://www.weforum.org/agenda/2020/10/economic-cost-covid-global-preparedness-monitoring-board/>  
<sup>19</sup> [World Bank Press Release](https://www.worldbank.org/en/news/press-release/2020/04/2020-04-20-world-bank-press-release)  
<sup>20</sup> <https://www.worldbank.org/en/about/what-we-do/brief/world-bank-group-operational-response-covid-19-coronavirus-projects-list>  
<sup>21</sup> <https://www.adb.org/what-we-do/covid19-coronavirus/procurement>  
<sup>22</sup> <https://reliefweb.int/report/cameroon/african-development-bank-covid-19-response-moving-commitment-action>

One benchmark is the total amount of annual investment required to achieve all the targets of Sustainable Development Goal (SDG) 3 in LMICs – not just SDG 3.4 focused on NCDs – of USD 371 billion, according to the World Economic Forum<sup>14</sup>. In other words, SDG 3 would be fully met by 2030 with the amount that has been spent on COVID-19 in just over 6 months.

Analysis of COVID-19 spend data, as reported by the International Monetary Fund<sup>23</sup>, and NCD spend, as reported in the Global Health Expenditure Database<sup>24</sup>, shows that the majority of LMICs spend significantly less on NCDs each year. As of April 2019, in India, deaths due to COVID-19 remain at 135,000<sup>25</sup> compared to total annual NCDs deaths of approximately 6 million<sup>26</sup>. The amount spent on NCD care each year is just 0.25 percent of what India has spent on tackling COVID-19.

### **Opportunities to increase value-for-money spent on COVID-19**

The NCD burden is expected to reach USD 47 trillion by 2030<sup>27</sup> if steps are not taken to ensure the reduction and better management of NCDs. With the huge amount of funding spent on the COVID-19 response, there are synergistic opportunities to address both COVID-19 and NCD challenges. This would achieve long-term health impacts and outcomes, by deploying capital and resources in a fungible and effective manner. Taking this longer-term approach would ensure improvements to healthcare infrastructure and services that have impact beyond the COVID-19 pandemic.

Ensuring that medical staff conducting COVID-19 tracking and tracing, or other personnel administering COVID-19 care, should also offer NCD testing and diagnostics, as well as provide WHO ‘package of essential non-communicable disease interventions’ (PEN) protocol, are some specific examples of these synergistic opportunities. Others are using artificial intelligence and tele-medicine capabilities built for COVID-19 for NCD care, and that reverse transmission polymerase chain reaction (RT-PCR) tests and antigen tests that detect COVID-19 can simultaneously measure blood glucose levels.

Rates of undiagnosed NCDs in LMICs remain very high. Research shows that spending USD 8.5 billion globally to implement a few cost-effective interventions would reduce projected NCD mortality by 28.5 per cent around the world<sup>28</sup>.

The Defeat-NCD Partnership is supporting LMICs to implement these cost-effective measures and improve detection of NCDs through the development of a marketplace for quality assured NCD drugs, diagnostics, and medical devices, providing opportunities to maintain an efficient supply chain with fair pricing.

### **Recommendations**

Unlike COVID-19, the burden of NCDs will continue to affect billions of people in LMICs for decades to come. Focusing solely on COVID-19 ignores the growing evidence of the correlation between COVID-19 and NCDs and misses the opportunity to reengineer the relationship between these twin public health threats.

Our research has demonstrated that NCD mortality is the driver of COVID-19 case fatalities. Hence The Defeat-NCD Partnership espouses an integrated approach to dealing with the COVID-19 pandemic and the underlying NCD morbidity. Joint screening, detecting NCDs, and using COVID-19 vaccination drive to screen and provide self-care protocols for NCD patients are global opportunities to apply COVID-19 response funding for making humanity healthier. The financial resources available now should be used to make a course correction and ensure that global efforts to control and reduce NCD impacts are not set back indefinitely.

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<sup>23</sup> <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

<sup>24</sup> <https://apps.who.int/nha/database>

<sup>25</sup> <https://github.com/CSSEGISandData/COVID-19>

<sup>26</sup> [https://www.who.int/nmh/countries/ind\\_en.pdf](https://www.who.int/nmh/countries/ind_en.pdf)

<sup>27</sup> [Institute for Global Health and Sciences: NCDs could cost global economy US\\$ 47 trillion by 2030](https://www.who.int/nmh/countries/ind_en.pdf)

<sup>28</sup> <http://dcp-3.org/sites/default/files/resources/R%20Nugent%20CC%20Perspective%20Paper.pdf>

### **Copyright, attribution, and acknowledgements**

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The Defeat-NCD Partnership is currently collaborating with The Economist Intelligence Unit to further the research and analysis presented in this paper.

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### **About The Defeat-NCD Partnership**

The Defeat-NCD Partnership is a practical response to the widespread call for action on non-communicable diseases (NCDs). Formally launched alongside the UN General Assembly in 2018, we are a 'public-private-people' partnership anchored in the United Nations but extending well beyond to include governments, multilateral agencies, civil society, academia, philanthropies, and the private sector.

Our vision is clear — universal health coverage for NCDs. To achieve this, our core mission focuses on assisting approximately 90 low-resource countries via comprehensive action across four interconnected service pillars: national NCD capacity building, community scale-up of NCD services, affordability and accessibility of essential NCD supplies, and sustainable NCD financing.