Assessing the causes for a relatively lower caseload of Covid-19 in South Asia

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Abstract: In the wake of the ongoing spread of the Covid-19 pandemic, the number of affected persons has already surpassed 6 million globally. Advanced healthcare systems in North America and Western Europe have registered the highest number of cases. On the contrary, some of the weakest healthcare systems of the world, including those in South Asia, have observed significantly fewer cases of Covid-19. This article assesses the potential causes of a relatively lower caseload and lethality caused by Covid-19 in South Asia. Some of the key factors which might be creating favorable conditions for the relatively lower and less lethal spread of the virus in South Asia include an inconducive climate, reduced percentage of the elderly population, possible immunity due to existing disease trends, unfavorable blood group distribution, early lockdown restrictions, and lesser inbound and outbound movements as compared to Europe and North America. These observations are subject to discussion because most of the research is still preliminary, and the landscape of the disease is still shifting significantly on a daily basis. Lower incidence of Covid-19 in South Asia might well relate back to inadequate testing facilities and weak reporting protocols. The stigma associated with the illness and misinformation regarding treatment and healthcare administration might further lead to underreporting of the Covid-19 caseload. Various factors such as poverty, high population density, a large informal economy, and poor sanitation make South Asia particularly vulnerable. All these factors, combined with the recent easing of lockdown restrictions in the region, could lead to spikes in rates of Covid-19 infections. Therefore, we suggest the local governments collaborate and share technical and healthcare expertise to devise and implement comprehensive strategies to stop the spread of the disease. South Asia should swiftly mobilize local resources, quickly ramp up capabilities, and thoroughly implement the proposed guidelines. The public should practice prevention and precaution. The national governments (with the help of community elders and scholars) should

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address stigma related to Covid-19. Finally, the international community must increase its technical assistance to mitigate the threats of the pandemic in populous South Asia.

Article:

In the wake of the ongoing spread of the Covid-19 pandemic, the number of affected persons has surpassed 6.3 million globally.¹ The highest number of cases has been reported in the regions of North America and Western Europe, even though the healthcare systems of these regions have the highest per capita spending in the world.^{2 3} On the contrary, some of the weakest healthcare systems of the world, including those in Africa and South Asia, have observed significantly fewer cases of Covid-19 than Europe and North America.⁴ As of May 31, there are 331,346 confirmed cases (equivalent to 171 cases per million population)⁵ of Covid-19 in South Asia. In comparison, Europe and North America both have confirmed more than 2.03 million and 2.07 million cases, which is equivalent to 2,716 and 5,485⁶ cases per million of the population in these regions, respectively.⁷ Put differently, with a regional population of 1.9 billion, countries in South Asia (India, Pakistan, Bangladesh, Sri Lanka, Afghanistan, Nepal, Bhutan, and the Maldives) account for about one-quarter of the world's population but have only 5 percent of the global Covid-19 infections.⁸ One must wonder how South Asia is keeping the total number of cases low as compared to the regions of North America and Europe? This article will assess the potential causes of a relatively lower caseload of Covid-19 in South Asia.

Many⁹ attribute the low caseload of Covid-19 to weak healthcare infrastructure and inadequate testing facilities within the region.¹⁰ South Asian countries have thus far conducted a total of 5 million tests or 2592 tests for every 1 million people.¹¹ These numbers attest to the lowest rates of testing in South Asia; but, if the region's low testing capacity were masking a mammoth breakout, it could have appeared in other ways. As of now, 6.6% of Covid-19 tests in South Asia have been confirmed positive. On the other hand, the corresponding numbers in the major EU countries, such as in France, the UK, and the Netherlands are 13.64%, 19.8%, and 13.3%, respectively, whereas it is 10.4% in the United States.¹² The lower percentage of positive tests in South Asia indicates that Covid-19 is less prevalent in the region.

Alongside the number of confirmed cases, experts consider the number of deaths as a significant measure for the size of the outbreak. Here again, the data defies the notion of South Asia being in

the worst shape with a death count of 7,893 from Covid-19, as of May 31, 2020.¹³ In comparison, the United States has reported more than 106,195 deaths, while the UK and Italy have recorded more than 38,489 and 33,415 deaths, respectively.¹⁴ The number of casualties caused by the Coronavirus in the regions of Europe and North America (the US and Canada) is significantly higher than in South Asia.

Table 1: Coronavirus Cases, Deaths, and Tests in South Asia vs. North America vs. Europe

Date	Cases in South Asia	Cases in North America (US & Canada only)	Cases in Europe	Deaths in South Asia	Deaths in North America (US & Canada only)	Deaths in Europe	Tests in South Asia	Tests in North America (US & Canada)	Tests in Europe
NUMBERS AS OF MAY 31, 2020	331,346	1,928,117	2,029,389	7,893	113,490	173,904	5,022,076	19,338,398	37,609,285

(Source: Worldometer. May 31, 2020: <https://www.worldometers.info/coronavirus/>)

Potentially, the unreported number of deaths from Covid-19 could be higher in South Asia not only due to the stigma associated with the illness but also from the misinformation regarding treatment and healthcare administration. People might prefer to die in homes rather than in hospital wards. Secondly, not many deaths are medically registered in the region, thus leading to a low number of registered Covid-19 deaths (for instance, in India, over 75% deaths are not medically certified under normal situations).¹⁵ Regardless of the reasons behind the low number of deaths, data on hospital admission does not witness a massive surge, which again put South Asia in a favorable spotlight.

Table 2: Total Cases, Deaths, and Tests in all the Eight Countries Of South Asia (as of May 31, 2020)

South Asian Countries	Cases	Casualties	Number of Tests	Tests per million
India	190,962	5,411	3,837,207	2,783
Pakistan	72,460	1,543	561,136	2,545
Bangladesh	47,153	650	308,940	1,877
Sri Lanka	1,633	11	65,355	3,053
Nepal	1,572	8	180,691	6,211
Bhutan	43	0	17,344	17,344
Maldives	1,773	5	11,775	11,775
Afghanistan	15,750	265	39,628	1,020
Total	331346	7893	5,022,076	2592.708312
Positive Tests as total percentage of the population	0.017097581			
Cases per million	171.0614352			
Positive Cases as a percentage of Total Tests	6.59778944			

(Source: Worldometer. May 31, 2020: <https://www.worldometers.info/coronavirus/>)

Here we discuss some of the key factors which might be creating favorable conditions for the relatively lower and less lethal spread of the Coronavirus in South Asia.

The first notable factor could be the unfavorable climate of the South Asian region. Some initial research indicates that higher temperature and humidity correlates with a lower transmission of Covid-19.¹⁶ Countries with the highest number of Covid-19 patients are not as warm and dry as South Asia. The average temperature of South Asia is higher than that of Europe and North America. In other words, the South Asian regions are sunnier than Europe and Americas, which exposes the local population of South Asia more towards the sunlight and, consequently, towards obtaining a higher level of Vitamin-D naturally. As per a research article, a higher intake of Vitamin-D reduces the possibility of respiratory tract infections by fifty percent.¹⁷ Recent studies¹⁸ support the notion of Vitamin D preventing Covid-19.¹⁹ As basically, Covid-19 is also a respiratory tract virus; therefore, possibly, the people of South Asia may have developed a higher level of immunity from Covid-19 than what is possessed by the people residing in European and American

regions. Probably, this may be keeping the overall number of Covid-19 cases and resulting deaths significantly lower in South Asia.

Another possible reason for the low rate and mortality from Covid-19 in South Asia could be that the majority of people in the Indian Subcontinent (Pakistan, India, and Bangladesh) have an ABO blood type of B (B> O>A>AB) which is deemed favorable than A blood types.²⁰

While studying a possible association between ABO blood types and Covid-19²¹ in the Wuhan and Shenzhen cities of China, Zhou and colleagues report those with blood type-A have a higher risk of receiving infection as compared to those with blood type O, which has a lower infection rate.²² Specifically, the study shows that patients with an increased risk of Covid-19 and blood group A had an odds ratio (OR) of 1.279 (28% more chance), whereas patients with decreased risk of Covid-19 and blood group O had an OR of 0.680 (32% less chance).²³ While examining this similar question, researchers at New York Presbyterian Hospital pooled their data with the research by Zhao and colleagues. They confirmed the results and also found a significant drop in positive Covid-19 cases among blood type B individuals.²⁴

Higher susceptibility of blood group A and lower susceptibility of blood group O can be linked to the natural anti-blood group antibodies, more specifically, anti-A antibodies, which limit the adhesion of SARS-CoV S protein to ACE2 expressing cell lines.²⁵ These anti-A antibodies which limit adhesion are found on both O and B blood types, which might suggest why populations with these blood groups are responding better to Covid-19. Previous data indicate that the Norwalk virus and Hepatitis B have a clear blood group susceptibility, making type A blood types more prone to the infection.²⁶ This further alludes that the current outbreak of Covid-19 could have more to do with blood group type. More research is needed to assess the correlation between blood type and Covid-19 mortality properly.

Additionally, the South Asian demographic shows a reduced percentage of the elderly population in comparison to Europe and the Americas, possibly contributing to low mortality. South Asia has a 6% population²⁷ of those aged 65 and above as compared to 19.2% and 16% of Europe²⁸ and North America²⁹, respectively. Studies in China and the US confirm that despite Covid-19 being inclusive towards all demographics, it can be exceptionally fatal for those 65 years of age and above.^{30 31} This might be a reason as to why the highest number of Covid-19 casualties were

reported in Italy (32,610), UK (36,001), Spain (27,459), and the US (88,523), since these countries have an elderly population (>65 years) of 23.1%,³² 18%,³³ 17%,³⁴ and 22%³⁵ respectively as compared to only 6.2%, 4.3%, and 5.2% of the most populous countries of South Asia (i.e., India,³⁶ Pakistan,³⁷ and Bangladesh)³⁸.

Furthermore, international inbound and outbound movement also impacted Covid-19's transmission, as per studies documented in China.³⁹ Limited movements across borders in South Asia could lead to a slower spread of the disease. On average, the total annual inbound and outbound flights in South Asian countries is significantly lower than the number of annual flights observed in Europe and North America. According to the World Bank data, South Asia, excluding Afghanistan, had a total of 24,680 incoming flights in 2018, whereas the North American region of Canada and the US had 100,879 while the UK, alone, reported 36,316 incoming flights during the same year.⁴⁰ Fewer incoming flights to South Asian countries could have limited the exposure to foreigners carrying the illness, thereby reducing the spread of the virus. Thus, the possibility of transmission of the virus from foreign countries is significantly reduced, lowering the rate of transmission in South Asia as compared to the transmission rate in Europe and North America.

An earlier imposition of strict lockdown in South Asia might also have played a role in keeping the caseload of Covid-19 in check. According to the Covid-19 Government Response Stringency Index, at a scale of 0-100 (with 100 as the strictest lockdown stringency score), South Asian countries have the lockdown stringency scores in the 80s except for Afghanistan which has a score of 78.7.⁴¹ In comparison, the majority of the European countries, including Italy, have lockdown stringency scores in the 60s.⁴² Moreover, the South Asian countries imposed countrywide lockdowns soon after the reporting of the earliest cases of Coronavirus. For instance, Pakistan imposed a strict lockdown on March 23 with the assistance of army⁴³ when the total number of Coronavirus patients in the country was only 875.⁴⁴ Meanwhile, Western European countries such as Italy and the UK delayed the imposition of strict lockdown despite the Covid-19 cases were significantly surpassing daily.⁴⁵ That is, Italy imposed a lockdown⁴⁶ on March 8 when the nationwide Covid-19 cases had surpassed 7,375,⁴⁷ while the UK imposed a full lockdown⁴⁸ on March 24 at the time when the cases had crossed 8,000.⁴⁹ Moreover, in the initial phases of lockdown there, the locals did not follow the government's instructions.⁵⁰ They continued to come out of their houses, defying lockdown in the spirit of upholding their freedom.⁵¹ Unlike South

Asian countries, the European countries' local governments did not use force to restrict people to their homes. Subsequently, the Covid-19 cases spiked there, eventually becoming out of control, causing thousands of deaths within a few weeks.

Lastly, the prevalence of existing disease trends in South Asia can be a factor for better immunity. Preliminary research suggests a negative association⁵² between the incidence of malaria and Covid-19. Countries affected with malaria appear to be relatively safer from Covid-19 (the figure below shows this association).

Figure 1: Incidence of Malaria and Covid-19

[In the figure above, the Blue region represents countries where malaria has caused more than 0.1 deaths per million inhabitants. Yellow region shows countries where Covid-19 has caused a similar level of fatalities. (Source: Guerrini et al., 2020; Nasir et al., 2020)⁵³]

A possible explanation for such a correlation could be from the prolific use of antimalarial drugs within these regions. Although, there is a lack of consensus among researchers for the overall beneficial use of antimalarial treatment for Covid-19, certain antiviral drugs, such as remdesivir and chloroquine, were effective in controlling the infection *in vitro*.⁵⁴ Similarly, a study done in France with a limited sample size (36 patients were used, with 20 receiving the treatment and 16 serving as the control group) suggested that the use of hydroxychloroquine along with azithromycin was effective in reducing the viral load.⁵⁵

The use of these drugs as a part of a potential treatment plan for Covid-19 is controversial as some research highlights that not only does hydroxychloroquine (given with or without a macrolide, such as azithromycin) have no confirmed benefit but further increases the frequency of ventricular arrhythmias, possibly contributing to more in-hospital death.⁵⁶

The largest country in South Asia, India, is severely afflicted by malaria. According to the World Health Organization (WHO), in 2018, nineteen countries in Sub-Saharan Africa and India carried almost 85% of the global malaria burden.⁵⁷ As a result, South Asian (and African), as compared to the people in other regions, have consumed more antimalarial drugs. While anecdotal evidence in South Asia imply that antimalarial drugs contribute to Covid-19 recovery, greater research with far better randomized control trials is necessary before any treatments are established.

Likewise, research has confirmed a negative correlation⁵⁸ between the occurrence of tuberculosis (TB) and Covid-19.⁵⁹ Contrary to low-burden TB countries, high-burden TB South Asian countries have long had a national Bacillus Calmette-Guerin (BCG) childhood vaccination policy for everyone.⁶⁰ Countries without universal policies of BCG vaccination (*i.e.*, Italy, Spain, and the US) have been hit hard by Covid-19 relative to countries with universal BCG policies.⁶¹

BCG vaccinations have previously shown to decrease respiratory tract infections in non-Covid-19 patients as well. In 2005, Ohruu and colleagues conducted a prospective cohort study that points out that administering the BCG vaccine to the elderly (age > 65 years) decreases their risk of pneumonia regardless of their comorbidities.⁶² An additional case-control study by researchers in Bangladesh suggests that severely malnourished children with pneumonia and bacteremia had no prior vaccination to BCG, implying that the benefits of the vaccination might be far greater than its initial point of use.⁶³ Although these various studies show the benefit of BCG administration to

non-Covid-19 patients facing respiratory illnesses, alternative studies show patients with Covid-19 who were vaccinated with BCG had non-specific effects. These non-specific beneficial effects were the reduction of respiratory tract infections, antiviral effects along with reduced viremia which were tested previously in animal samples.⁶⁴ A further clinical investigation should focus on the impact of BCG and Covid-19 morbidity to assess why some countries who have a vaccination trend are doing better than those without such vaccination policies. A research article published by *Nature* magazine suggests that the extent of possible genetic mutation of Covid-19 in different geographic populations can also be the reason for different transmission rates.⁶⁵ Countries like Iran might have a mutated version of Covid-19, implying the death of many, but research also shows that Iran had a late policy of BCG vaccination, which began in 1984, thereby putting a lot of their senior population at risk and possible death.⁶⁶

The other side of the story:

Since the research behind the observations illustrated in this article is preliminary, the observations remain subjects for discussion. There can be other reasons, such as lack of Covid-19 testing facilities or low reporting protocols, which may be masking the actual Covid-19 patients in South Asia. In general, the South Asian countries have weaker healthcare systems and fewer healthcare budgets than those of Europe and North America (US and Canada). Prominent South Asian countries such as India, Pakistan, and Bangladesh have asked for testing kits from China and other countries as donations because they significantly lack those kits for testing their millions of people.

The weak healthcare systems of South Asia, coupled with other factors such as poverty, high population density, and lack of healthcare policy implementation, pose stringent risks of massive Covid-19 spread in South Asia. South Asia is home to millions of daily wagers working in an informal economy. Poverty can force daily wagers to come out of the lockdown sooner or later, which can spread the virus. This happened during the Spanish pandemic flu back in 1918, when the locals disregarded lockdown as they became tired of staying at their homes during the first wave of the pandemic. Consequently, the second wave of the Spanish flu emerged, causing the number of casualties to rise to 20 to 50 million from the first wave's casualties of 3 to 5 million.⁶⁷

In a recent episode of defiance of lockdown, already, thousands of migrant workers have made protests on the roads in Mumbai in India, maintaining that they are on the verge of dying from

hunger due to the lockdown.⁶⁸ Similarly, people are not following precautionary measures in Pakistan as they have started flocking into the markets, particularly in the major cities due to the recent softening of the lockdown by the local government. Many are not even wearing masks as they are now considering the threat of Covid-19 less stringent, primarily because the Covid-19 has not done as much damage in the region as it has caused in Europe and North America.

With the ease in lockdown, if people continue to come out of their homes without following the precautionary measures, then the crowding can result in spreading the Covid-19 vociferously. In particular, the existing high population density of South Asia can also increase the gravity of the risk of quicker and momentous spread of the pandemic in the region. Unfortunately, the existing healthcare systems of South Asian countries, particularly Pakistan, Afghanistan, Bangladesh, and Sri Lanka, have limited capacities to cater healthcare to the general population. They have a limited number of ventilators and healthcare equipment.⁶⁹ Thus, in such a scenario, the local healthcare systems will not be able to control the spread of the disease if the existing number of Covid-19 cases gets multiplied and crosses beyond the range which the local healthcare systems can manage.

We suggest that the local governments should sit together and decide on implementing immediate and effective measures to stop the further spread of the pandemic. They should collaborate and share technical and healthcare expertise to devise and implement comprehensive strategies to stabilize not only their existing healthcare systems but also stop the spread of disease. In this regard, the recent hosting of the joint virtual SAARC conference of South Asian countries by Pakistan, is a commendable step.⁷⁰ In the conference, the representatives of SAARC discussed strategies for preventing the spread of Coronavirus in the region.⁷¹ This conference is a fine example of regional cooperation in the times of the spread of the ongoing pandemic Covid-19.

Similarly, countries should help the poverty-stricken, especially daily wagers, through their emergency welfare governance assistance programs. Programs such as the ‘Ehsas Emergency Cash Program,’⁷² launched by the government of Pakistan aimed at providing a direct cash transfer to the daily wagers and those who have become unemployed due to the lockdown, can also prove to be beneficial for curbing the harmful impacts of the Covid-19.

In a nutshell, on the one hand, South Asia seems to be a region less affected by the Covid-19 due to several factors such as the warmer and sunnier climate, smaller percentage of the population of old age people, existing disease' trends, and lesser inbound and outbound movements as compared to Europe and North America. On the other hand, the South Asian countries have weaker healthcare infrastructure to control the pandemic. Moreover, poverty, high population density, and poor sanitation pose the threat of the spread of disease. All these factors, combined with the recent easing of lockdown restrictions in the region, could lead to spikes in rates of Covid-19 infections.

As long as there is no vaccine, there is no place for complacency in the fight against Covid-19. South Asia should prepare for the worst by swiftly mobilizing local resources, quickly ramping up capabilities, and thoroughly implementing the proposed guidelines. The public should practice prevention and precaution. The national governments should address stigma related to Covid-19. Finally, the international community must increase its technical assistance to mitigate the threats of the pandemic in populous South Asia.

Notes and References:

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⁴ For details, see: Coronavirus Cases, *supra* note 1.

⁵ The total number of Covid-19 cases in South Asia, as of 29 May 2020 are 298336; whereas, the total population of South Asia is 1.9 billion or 1937 million. Calculation gives 154 cases per million population in South Asia. For details about Coronavirus Cases in South Asian countries, see: Coronavirus Cases, *supra* note 1. For details about South Asian population, see: Southern Asian Population (LIVE). Worldometer. <https://www.worldometers.info/world-population/southern-asia-population/> Updated 22 May 2020. Accessed 22 May 2020.

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