

## Major challenges in combating epidemics like COVID-19 in the developing countries

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### **ABSTRACT:**

On the rise of the COVID-19 epidemic, the developing countries have been struggling severely due to heterogeneous challenges. This paper aims to identify those challenges and to find possible causes to help future disease control and management especially during such epidemics. The challenges are not straight forward rather these are results of inadequate medical facilities, disruptive mismanagement in the government ecosystem, financial strength, social problem and the list goes on. This paper is based on report, data and other studies from various sources. We observed that many problems are inter-linked and mainly results of lower economy. Some other problems like political issues, lack of awareness, superstitions are inherited social problems. This paper also discusses about the root causes which create and stimulate the problems. For the ongoing identified problems some precautions have been advised.

**Keywords:** COVID-19, Coronavirus, Developing Countries, Disease Control, Epidemic Disease, Disease Management, Healthcare Management

### **INTRODUCTION:**

The COVID-19 epidemic is a global concern for its degree of devastating effect on society. The present situation in compare to that in the beginning of the year is undreamed-of. The world has been going through the disaster for quite long period starting from the early December of 2019. The impact of COVID-19 is seen everywhere in the world. Huge death tolls, loosing of jobs, financial drought and many more are there to list as the result of the epidemic. Some of the developed countries' health care system has failed to manage the outbreak where many of the developed countries managed the situation well. As of now, since the epidemic is continuing the future condition is very unpredictable. On the other side, most of the developing countries, already burdened with low economy, are struggling to cope up with the disease. In contrast, some of the developing countries have managed it with limited resources. In this circumstance, it is important to identify the challenges that the developing countries must address with an emergency. Also, it is not enough to identify the challenges but the root causes must also be recognized. In this study, we aim to generalize the major

problems which the developing countries are facing. Many of the problems were unseen before and sparked as a result of the on ongoing crisis. Thus the study will help policy makers, funders and most importantly the governments to minimize the aftermath of the epidemic.

### **MOTIVATION:**

According to worldometers (<https://www.worldometers.info/coronavirus/>), the COVID-19 has already caused 414,528 deaths worldwide as on June10, 2020. United Nations labor agency reports that nearly half of the global workforce is at risk of job loss due to COVID-19 crisis<sup>1</sup>. The hospitality industry has seen thousands of closure<sup>2</sup>. Over 49 million people are falling into extreme poverty<sup>3</sup> due to the epidemic and the list continues. No doubt, the developing countries are more vulnerable to the epidemic and there are many reasons for which the developing countries are failing to handle the epidemic. The aim of the paper is to identify those concerns so that this epidemic can be managed efficiently based on data and existing studies.

In the following 12 sections, the paper discusses the major concerns that the developing countries must address to fight such epidemic in the current epidemic as well as in the future. It is to mention that the list is not limited to these problems also may lead to various unseen problems in the future. The paper also discusses an open question, opinions and observations and concludes with the discussion and conclusion section.

### **LOW TESTING RATE:**

The countries with abundant of testing kits fought well against COVID-19. It has been noticed that countries like Taiwan, Hong Kong, mainland China, Russia and Germany etc. controlled their countrywide COVID-19 outbreaks by doing excessive testing<sup>4-6</sup>. In contrast the testing rate is very low in the developed countries.

The confirmed cases of COVID-19 as far seen (till 10<sup>th</sup> June 2020) are getting worse in the developing countries. But the severity is underrated because of very low rate of testing. Most of the developing countries don't have capability to scale up the number of testing in accordance with their population and COVID-19 severity. The average test per million populations for developed countries is 24,143 whereas the same is only 1,867 for developing countries. This is one of the reasons the number of positive cases per million populations in developed countries (1,572) is much higher than that of developing countries (94)<sup>7</sup>. Therefore, it is unclear whether COVID-19 cases are relatively limited in developing countries or whether low numbers simply reflect limited testing<sup>8</sup>. But there is no doubt that the developing countries are more likely to spread the disease because of poor sanitization

The number of test is significantly depends on some issues of which we have identified the most important ones here.

### **WILLINGNESS TO TEST:**

Fears and worries mounts among common people refusing to test COVID-19 virus. In developing countries, people with enough symptoms trends to run away from hospitals which risk their surroundings<sup>9-12</sup>. Whereas in developed countries people are more cautious, disciplined and willing to test. In developing countries, especially in rural areas, people face social stigma to test COVID-19. Although 80% of COVID-19 patients need supportive care to fully recover from it, social stigma and hatred is obstructing mass testing in developing countries<sup>13-15</sup>. Countries like Bangladesh with 90% practicing Muslims are uncertain about after death rituals. It has been noticed that grave yards, mosques and other religious gatherings have been prohibited and restricted for COVID-19 pandemic. Therefore, to keep

the situation normal for availing those religious facilities, people trends to avoid mass testing. In addition, several cases have been found where tenants have been removed from rental houses and employees have been sacked for being COVID-19 positive<sup>13-15</sup>.

### **TESTING KIT AVAILABILITY:**

With higher economic solvency the developed countries are either producing or importing large number of testing kits for mass testing. Since developing countries can't effort enough testing kits their local governments are not able to conduct enough tests as required. As a result, the number of positive cases is less which misleads the real number of infected cases. This hiding of actual COVID-19 patient by means of less testing could be dangerous in the long run. Although developed countries maintained a higher testing rate in compare to the countries' total population, underdeveloped and developing countries failed to do so<sup>16</sup>.

### **TESTING KIT ACCURACY:**

Test kit accuracy is a vital factor which leads to higher testing rate. Country like China could produce test kit with 90% accuracy founded by a Danish institute<sup>17</sup>. Accuracy of another test kit (accuracy 50-60%) produced by Dr. David Ho, a leading infectious disease specialist at Columbia University in New York<sup>18</sup>. On the other hand, Dr. Bijon Kumar Sil, a lead scientist at the Gonoshasthaya Kendra developed a dot blot COVID-19 testing kit unlike traditional Reverse Transcription Polymerase Chain Reaction (RT-PCR). However, dispute with the Drug Administration, which questions the accuracy rate (30-40%), restricts the permit of this testing kit<sup>19</sup>. So it is noticed that accurate test kit is yet to come but product from China and South Korea is commanding the global market<sup>20-21</sup>.

### **DEFICIENCY OF TESTING CENTRE**

With high population, the infrastructure deficiency of test center has become another factor in fighting the COVID-19 outbreaks. For example, in Uganda, there are only 55 Intensive Care Units (ICU) for 43 million citizens, which is alarming<sup>22</sup>. To fight against this situation, developing countries have to turn hall room, stadium, super shop, and residential hotel etc. into COVID-19 treatment center. Many of the developed countries are also not in full comfort as they are also facing tremendous attack by the COVID-19.

Some statistics of few randomly selected developed and developing countries in terms of total COVID-19 tests and country's GDP is found here<sup>23-25</sup>. The countries with low test rate are all under developed countries having very low national GDP. To mention a few, Uganda, Ethiopia and Bangladesh are countries which could test only 10 people out of 1000 persons. In contrast,

countries like Iceland, Luxemburg, Finland could test around 100 people out of 1000 person. This huge difference also reflects variation in total number of deaths caused by COVID-19 among countries with different economies. For the infrastructure deficiency, long queues of patients, willing to test for COVID-19 test, are seen in the testing center<sup>26</sup>.

### **POOR HOSPITAL MANAGEMENT:**

Hospitals are the essential social-economic institutions. So an effective management is a must to avoid chaotic situations. This sector includes management of doctors, nurses, medical equipment, infrastructure, and patients etc. Developed countries like USA, Switzerland, Luxemburg and Norway spend a vast amount of money just to ensure citizens' health<sup>27</sup>. A hospital, the single most institution often run by government support in developed countries, whereas in underdeveloped countries, hospital mostly is managed by private investment. It has been noticed that even with limited resource a well-managed hospital can serve better during pandemic period<sup>28</sup>. In the following sub-sections, the major factors where the developing countries mostly failed are discussed.

### **MEDICAL UNIT MANAGEMENT:**

Every hospital authority should efficiently handle the emergency, general, quarantine, intensive care and isolation units. The authority should separate infrastructures for the aforementioned sections in order to reduce the COVID-19 spread. During the pandemic, different kinds of patients come to hospital. So a hospital should manage each section separately with different set of doctors, nurses and cleaners if possible. For each medical unit hospital can provide separate buildings if possible. In developing countries, with limited resources, both COVID-19 patients and normal patients are served under same building (in some cases under same roof) with inadequate safety<sup>29-30</sup>. Since COVID-19 growth rate can vary from 25% to 35% once the regional spread occurs, all units must gear up in time to prepare for any sudden rise of patients. Although ICU facility must maintain certain standard, this varies in country to country. For example, Bangladesh has only 1169 ICU as of 2020<sup>31-33</sup> where the total population is over 170 million.

### **EMPLOYEE SAFETY:**

In developing countries, scarcity of protective equipment results higher deaths and infection rate. Doctors and nurses have to work with inadequate protective measures. Alternatively, developed countries maintained multiple shifts, extra protection, higher salary to secure the doctors and nurses. World Health Organization (WHO) identified unavailability of Personal Protective

Equipment (PPE) is endangering the health workers across the world. According to WHO, total 89 million masks and 76 million hand gloves are required each month globally to maintain a minimum safety<sup>34-35</sup>.

### **LOGISTICS MANAGEMENT:**

During this outbreaks management of available Testing Kit, Ventilators, PPE, Oxygen cylinder, other logistics etc. are important. The hospital authority must maintain a publicly available online ledger so that nearby hospital can share emergency items. Most of the hospitals in developed countries have emergency fund which is rare in underdeveloped countries. In developed countries, hospitals are provided with ample money to finance their costs whereas in underdeveloped or developing countries hospitals are running with minimal resources (mostly depend on foreign aid). In addition, the PPE producing countries which are also intensely infected by the COVID-19 make the situation worst in medical logistics management<sup>35</sup>.

### **MEDICAL WASTE MANAGEMENT:**

Since this virus is highly spreading and can contaminate rapidly, management of medical waste needs extra care. In developed country there are specific places for dumping those wastages. In the developing countries, relatively poor and inexperienced workers manage those wastages leading high risk to contaminate the surroundings. Unplanned dumping and handling of PPE, masks and other medical equipment has become major cause of COVID-19 outbreaks in the least developed countries<sup>36</sup>.

### **INFORMATION MANAGEMENT:**

Availability of Information is one of the most significant factors for fighting against this virus. The information about infected patients, deployed doctors, testing kit, isolated patients and ICU etc. can be shared among all other medical institutions. It has been noticed in several cases that if aforesaid data is easily available then hospital management would be easier<sup>37</sup>. Maintaining a national portal or a data bank can help the hospital authority to prepare better for upcoming days. Few of the best practices of information sharing are stated here. *Firstly*, if information about the risky medical waste dumping place is circulated among all nearby hospitals then spread of the virus can be reduced many times. *Secondly*, if information about the nurse and doctors who are treating COVID-19 infected patients are available in a publicly available database then treatment for non-infected patients will be far more secure. *Finally*, if the data about available ICU, infected and tested patients and associated logistics are publicly available then both government and research institutes can collaborate among themselves.

**OTHER IMPORTANT FACTORS:**

Joseph J. Cavallo<sup>38</sup> mentioned few factors a hospital authority should be careful about during this COVID-19 outbreak. They are as follows: a special COVID-19 unit equipped with sufficient resources, sufficient test kits and drug supply, PPE, just in time supply management, information flow, respiratory therapist etc.

Centre for Diseases Control and Prevention (CDCP) under the U.S. Department of Health & Human Services<sup>39</sup> declared few compulsory tasks must practice the followings by their staffs:

- Stop the infection COVID-19 within the hospital facility.
- Identify and isolate patients with respiratory sicknesses followed by necessary broadcast to

public health authorities.

- Care for a limited number of confirmed cases.
- Care for a larger number of patients with high chance of escalating outbreak.
- Supervisor any doctors and nurses those might be exposed to the virus.
- Communicate effectively within the hospital management and plan for required outside communication in terms of COVID-19.

From the discussion in the above sub-sections and based on other resources<sup>40-44</sup>, this study identifies few factors (in Table 1) involved in hospital management in developed and developing countries all over the world to focus the important actions to ensure fighting the epidemic.

**Table 1: Significant differences in managing the COVID-19**

No	Factors	Developed Countries	Developing Countries
1	Willingness and responsibility by doctor	Doctors are willing to serve with adequate government support and positive mindset.	Doctors are mostly unwilling to serve with limited government support, negative mindset and inadequate protective equipment.
2	Willingness and Responsibility by Hospitals	Private medical centers are supporting government by providing services to COVID-19 patients.	Private clinics and medical centers stopped serving and making the situation tougher for the Government.
3	Supply of mask, PPE, ambulance, ventilator, test kits, logistics etc.	Mostly imported. Since the government is financially strong, logistic supply is almost enough.	Product like PPE, masks is domestically produced (in most cases low quality). However, ventilators and test kits are imported with budget limitation.
4	Availability of nurse and doctors	Hiring of new doctors and nurses are difficult for high wages.	Hiring of new doctors and nurses is easy with high unemployment rate and low salary structure.
5	Availability of infrastructure	Ample hospital infrastructure with isolation unit since population is low.	Difficulty in infrastructure and isolation unit since population is high.
6	Hospital fund and finance	Hospitals have enough funds to tackle an emergency situation like this.	Hospital does not have enough funds to tackle an emergency situation like this.
7	Doctors and nurse safety	Hospitals can manage and assure safety of nurse of doctors.	Hospitals cannot manage and assure safety of nurse of doctors.
8	Original and duplicate items like PPE and masks at regular and higher prices	All the citizens are ethically strong about items because of their financial strength. They sell the essential items at regular prices.	Duplicate items are sold by posting original stickers at higher rates.

Attendants of patients need to bring oxygen cylinders for the patients in hospitals since there is scarcity of oxygen cylinders in hospitals<sup>45</sup>. Doctors are afraid about giving treatments because of deficiency of emergency items<sup>41</sup>.

**INADEQUATE MEDICAL DOCTORS:**

Medical doctors play the leading role in combating the COVID-19. Even though doctors are at high risk to get infected if proper protective measure is not ensured. This

study shows that the developing countries are far behind than the developed countries in ensuring adequate human resource. It has been also observed that many developing countries failed<sup>46</sup> to supply PPE to doctors and other staffs which makes the scenario more vulnerable. The data obtained from WHO website<sup>47</sup> shows that country-wise average of medical doctors per million for developing countries is 11.16 whereas the same is 33 for developed countries. The result shows a significant reason where the developing countries fail.

**Table 2: Number of doctors for per million populations**

#Doctors per 1M	# Developing Countries	# Developed Countries
more than 50	2	6
between 41 to 50	3	7
between 31 to 40	3	21
between 21 to 30	17	20
between 11 to 20	23	5
between 6 to 10	20	0
between 2 to 5	19	0
between 1 to 2	15	0
Less than 1	20	0
<b>Total</b>	<b>122</b>	<b>59</b>

Table 2 clearly depicts the situation of developing countries. The data of 122 developing countries and 59 developed countries was obtained. There is a totally contrasting scenario where it can be seen that 74 of the developing countries have only less than 10 doctors per million population whereas all of the developed countries have more than 10 doctors per million population. The data also shows that there are only 8 (~6.5%) developing countries have more than 30 doctors per million population whereas there are 34 (~58%) developed countries have more than 30 doctors per million population.

The existing data indicates that the developed countries are struggling to manage main resources like doctors to handle epidemic diseases like COVID-19. The developing country must accommodate enough doctors to handle COVID-19 like health crisis in future.

#### **LACK OF AWARENESS:**

People of developing countries are instinctively less aware of their health. As the socio-economic status of developed countries is stable, even general people are well aware of their health issues. Alternatively, poor people of developed countries can hardly make their daily needs. So, they seem to be reluctant even during COVID-19 pandemic. Common factors and causes of lack social of awareness are outlined in the following sub-sections.

#### **SOCIAL LIMITATIONS:**

By nature, people from developing countries are more dependent on neighbors than its counterparts. People from the developed countries can easily spare their times by using social media and devices. Moreover, developed countries can facilitate their citizens to work from home which is quite impossible for under developed countries

as most of their works are physical. Therefore, developing countries are bound to relax quarantine, social distancing and other measures<sup>48-49</sup>. Religious obligations sometimes mislead to social unawareness. As an example, thousands of people attended a religious ritual in Bangladesh recently amid COVID-19 outbreaks<sup>50</sup>.

#### **ECONOMIC CRISIS AND FOOD SECURITY:**

Citizens with adequate saving and government support in developed countries are mostly staying at home and enjoying family time. However, the other part of the coin is so cruel. There are people who live hand to mouth with no savings cannot sustain a week without an aid. As an example, almost 60% people of Bangladesh fall in middle class or lower middle class who are in real trouble in this pandemic. For example, Bangladesh has surpassed 2400 cases, while Afghanistan and Djibouti have reported more than 800 COVID-19 positive cases<sup>51-53</sup>. Asian and African countries have suffered most monetarily during this pandemic. Countries like Bangladesh had to put economy over citizen's health results early garments reopening<sup>54-55</sup>.

#### **A NEW NORMAL:**

Online platforms served as the only source of recreation in many developed countries whereas in person gossip (preferably in tea stalls) is the only source of entertainment in poor countries<sup>56-57</sup>. Therefore, people are less aware and reluctant to isolation and quarantine. To avoid a countrywide famine, local governments of developing countries are easing the lockdown to mobilize economy<sup>54-55</sup>. In one side positive cases are rising, death tolls are getting high and the governments do not have any option but to easing shutdown. Although local governments are creating and announcing huge monetary funds for disrupted and

distressed people but that is not enough to satisfy these hugely populated under developed and developing countries. So, to underdeveloped and poor countries the COVID-19 has become a new normal to live with.

### **BASIC SANITIZATION FACILITIES:**

Hand washing is one of the best ways to prevent the spread of COVID-19<sup>58</sup>. Since, it is spread through droplets from a person coughing or sneezing, and effectively via contaminated surfaces. There is no alternative to maintaining good hygiene<sup>59</sup>. Washing hands frequently and most importantly at key moments is essential to controlling the pandemic.

The facility for washing hands remains out of reach for about 3 billion people globally. These people even don't have enough access to basic hand washing facilities which requires easy access to a clean and reliable water supply. The problem is immense especially in Sub-Saharan Africa where having clean water is a dream. At present, approximately 785 million people are living without a basic level of water service, and over 2 billion lack access to a toilet at home<sup>60</sup>.

The collected data includes population percentage with basic hand washing facilities at home<sup>61</sup> where data of 81 countries are available. Both data are available for 81 countries. The data shows that only 9 countries have more than 90% hand wash facilities whereas 40 countries have only less than 50% basic hand wash facilities. 28 of these countries only have less than 30% basic hand wash facilities. The statistics shows that the developing countries are severely vulnerable to epidemic diseases like COVID-19 due to lack of basic hand wash facilities.

### **UNCONTROLLED PUBLIC MOVEMENT**

To control outbreak of COVID-19 controlling contact rate is very important. In other words, it can be said that the mass interaction of people should be controlled. This strategy significantly depends on population densities<sup>62</sup> because implementing social distancing by lock down or other means is much easier to implement with low density population. As an example from recently experienced incidents, it can be seen that cruise ships are cases of highly populated structures in a confined space over a long period of time. The COVID-19-infected Diamond Princess had people with a density of around four times higher than that in Wuhan<sup>63</sup>. The infected cases also similarly increased. The developing countries generally having increasing growth rate of population cannot handle epidemic diseases efficiently because of economic barriers and other mismanagements. So the developing countries are on the verge of danger for the epidemic. Interestingly, it is seen from the data<sup>64</sup> that the country-wise average population

density per square kilometer for the developing country is 167 and that for the developed country is about 397. It doesn't mean that population density has not that devastating effect if the community transmission can be controlled. Rather it is seen from the data that there are some small developed countries or dependencies which has highly dense population like Monaco, Macao and Singapore.

To flatten the curve of positive cases of COVID-19, countries must impose social distancing (rather it is better to say physical distancing) and mass movements of population by implementing lockdowns<sup>65</sup>. Even if developing countries want to flatten the curve, they will lack the capacity to do so. If people must choose between a 10% chance of dying if they go to work and assured starvation if they stay at home, they are bound to choose work<sup>66</sup>.

### **ROLE OF LAW ENFORCEMENT AGENCIES**

There are many nice roles over the management of different parameters in COVID-19 pandemics situation management by law enforcement agencies. The education level of the people is not strong enough. There is lack of consciousness about the rules and regulations of a country. On the other hand number of law enforcement members is not enough. But it is good to see that the law enforcement communities can play some nice roles in the pandemic situations. Some of them are sketched below:

(i) Enforcement comply the norms of quarantine and lock-down especially in the third world countries where large number of are unaware and have negative tendency to rules and regulations. They are not aware of the sincerity in compliance of quarantine and lock down. In this case the law enforcement communities give pressure to comply all the rules and regulations. Since manpower in the law enforcement is limited during this epidemic, they with other government agencies can spread the awareness about COVID-19 precautions and the rules and regulations<sup>67</sup>.

(ii) A big number of people live below poverty level. They live from hand to mouth. They regularly go out from the houses for their work. In this regard relief work is thrown from the government. To keep it smooth and trustworthy the law agency forces can play a great role. On the other hand, in the developing countries, some dishonest people misuse or steal the relief items. In those cases law enforcement communities are more trustworthy as custody of the items as well as in distribution of the items. The policy and other law enforcement communities can also enforce physical distancing in local markets, shopping malls and also during relief distribution when people get rush.

(iii) Many irregular activities like hijacking, robbery,

kidnapping, and unethical activities are regularly being held in the third world countries for the survival. During lock down, the security condition sometimes goes down due to such incidents. To minimize such unrespectable events the role of law enforcement agencies are mentionable.

(iv) The law enforcement communities can also give their hand to help those who are old and differently abled. Law enforcement communities can force the incomers from abroad at the airports to keep themselves in institutional quarantine or in isolation if necessary.

(v) Sometimes they give social entertainment by singing songs on the roads eve by wishing some children on their birthdays or wishing some couples at their anniversaries. These are nice social management. Even they can help sometimes bringing some necessary commodities that are in necessity in the lockdown condition.

(vi). An excellent role has been observed that relatives of some dead COVID-19 patients don't want to do the rituals after death because of fears and stigma. The law enforcement agencies and other societies do the rituals according to different religions<sup>68</sup>.

### **HEALTH INSURANCE:**

In Bangladesh there are some nice initiatives by the government that play nice role in health insurances. Like Bangladesh most of the developing countries may apply the same role to attract and to inspire the essential services.

(i) Doctors, nurses, or medical staffs, if anybody become affected by COVID-19 then insurance will become active. If anybody dies from it then the amount will become multiple. It is a little bit incentive to health workers in giving services who are the front fighters at the crucial time<sup>69-71</sup>.

(ii) Similarly police, army, other government, semi government, autonomous who give emergency services are also the front fighters. Similar insurance policy is also active in Bangladesh<sup>69-71</sup>. Opinion: Insurance companies may open attractive and applicable policies for the clients that if anybody is affected then the policy will become active immediately. Same kind of policies may be applicable in any other pandemic situations. Disbursement of money should be prompt, trustworthy and effective.

### **POLITICAL ISSUES:**

There may have some political issues with any pandemic scenario. There may have some personal interests and benefits over upcoming elections by both ruling and opponent parties. Some arbitrary observations are being tried to be sketched out.

(i) Some nude politics may be held during the pandemic period. Governments are doing relief procedures. In that

cases opponent parties sometimes may spread lies against good works

(ii) There may be some news over social media that some government persons do some partiality in giving reliefs. Sometimes it may really occur.

(iii) Opponent parties may be trying to veto on some good works whereas ruling parties may be always busy in showcasing their works rather than real works.

(iv) Some violations of the same mentality may be sometimes overlooked even sometimes vaccinations may not be done at different places or may be done irregularly.

(v) Government may create a database or use the central database to maintain pandemic situation. They may use the same database in making clustering danger zone, safe zone; lockdown area, free area; nearby affected person etc. according to their interest and they may use the same database for other reasons against the member of parliaments by spreading bad news.

(vi) Government may open new hospitals on demand of COVID-19 pandemic according to their own plans and to attract the mass people.

(vii) Opponent persons may be always busy in spreading wrong news despite good things being happened.

### **MALNUTRITION:**

Since there is no vaccine or no drug against COVID-19 virus one needs to increase immune system by taking sufficient and balanced food. There are some guidelines by<sup>72</sup>. Since most of the people of the third world countries are not rich enough so it becomes difficult to meet all the nutrition demands at regular scales. People may satisfy their demand by alternative cheap foods. There exists also a guideline for cheap foods by UNICEF<sup>73</sup>.

(i) Protein: Protein plays a great role but foods consisting foods are most of the times expensive. In those cases, the poor can fulfill their requirements by making pulse, eggs, or less expensive food.

(ii) Vitamin C & D: The poor can fulfill the requirements by taking less expensive items like lemon etc. and sunlight is very much important for vitamin D. Most of the workers work under sunlight. They get vitamin D in huge amount. The cheap fruits like banana, guava, jackfruits etc. can also be eaten.

### **IMPACT ON POVERTY:**

While a pandemic disease like COVID-19 spreads, it infects people without reference to wealth, caste, nation and religion. However, the low-income people are mostly affected on account of time-honored segregation by race and income, marked down economic dynamism, and high medical cost. The less-earning communities are more prone to be expounded to the virus with higher mortality rates and economical sufferings. These

vulnerabilities are more noticeable for poor people, identified by race, gender, and immigration status during the economic emergency.

The impact of COVID-19 epidemic on poverty can be divided into two major tiers such as, in-epidemic tier, post-epidemic tier. At the beginning of the outbreak, all the governments around the world mainly focused on controlling the spread of virus instead of emphasizing on current and future economic value. As a part of stringent transmission control endeavor, many governments adopt policies like shutdown, locked-down, quarantine, and isolation. A third of the world population is on lockdown for COVID-19 by May 5, 2020<sup>74</sup>. However, low-income jobs like retail business, childcare, hospitality, day laboring industrial work, riding taxis and small vehicle cannot be performed remotely. As a result of lockdown, the low-income people fall into horn of dilemma. Because of safety issue all industries and workplaces are shutdown, on the other hand poor people suffer from starving as unavailability of work. How poor people can come out from this dilemma, is an open question for research.

Emerging data from invaded countries illustrates that the distributional impacts of COVID-19 and poverty are materializing fast and have dire consequences. A rapid phone survey was conducted to assess the impacts on livings in rural areas of China. The survey depicts that among 50% of villagers; per family have average income losses ranging from \$282 to \$704 over the last month. Likewise, in Bangladesh 93% of individuals

surveyed experienced an average 75% income losses over the last month and 72% of respondents have lost their jobs or faced reduced economic opportunities. As a result, the number of people living under the poverty line has increased from 35% to 89%<sup>75</sup>. Not only the middle or low-income countries suffer for poverty but also the developed countries. About 40.6 million people are struggling with poverty in United State where 18 to 21 percent of Hispanic and Black people are living under poverty along with 8 percent white people<sup>75</sup>. As a consequence of COVID-19 outbreak, there will be increase of new poor people. Recent statistics estimate that South Asia is going to have 16 million new poor people and 23 million in Sub-Saharan Africa. Middle-income countries are going to face 22 million of the anticipated new poor. Concurrently, the number of extreme poor is projected to rise of 17 million in the poorest countries who are served by the World Bank<sup>75</sup>. The people living in poverty have no savings to tackle the lack of income. On the other hand, stoking up food and other necessary goods can result in financial hurdle. As a post epidemic consequence COVID-19 will affect occupants in several ways, including job firing, remittance losses, price hike, rationing of basic goods along with food and so on. According to the PovcalNet<sup>76</sup> data, the global poverty rate was expected to decline from 8.1% to 7.8% in 2020 as the forecasted before COVID-19 outbreak. However, latest predictions estimates that, COVID-19 outbreak is increasing the number of people who have daily income less than \$1.90 up to 8.6% in 2020 which was 8.2% in 2019 (depicted in the Figure 1)<sup>77</sup>.

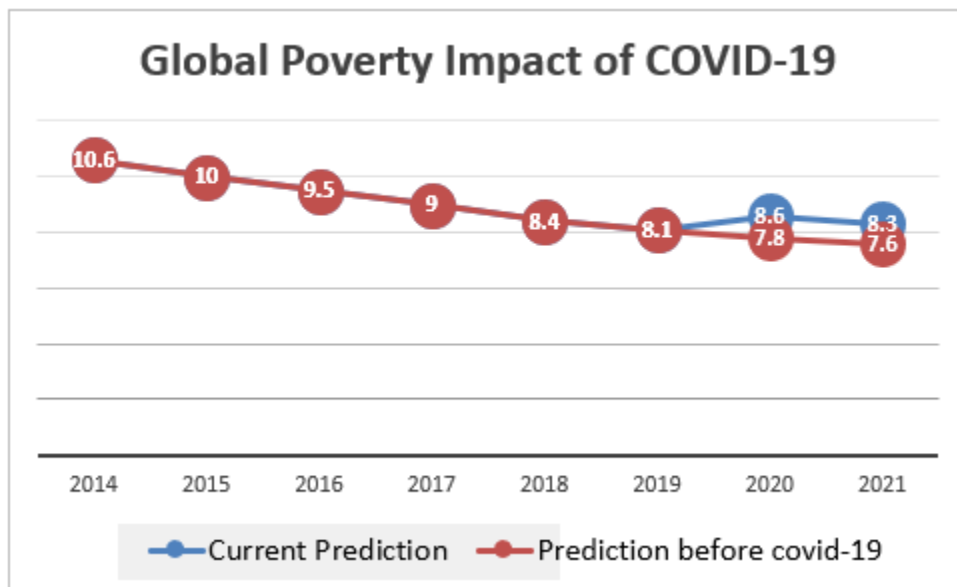


Figure 1: Global poverty impact of COVID-19

**SUPERSTITIONS:**

There exist some superstitions with COVID-19virus

with respect to the beliefs of social and religious perspective<sup>78-81</sup>. Some of them are being tried to be sketched out with references and with arbitrarily.



- (i) Cow-urine and cow-dung may release COVID-19. Even sometimes the people take bath by them<sup>78</sup>.
- (ii) Villagers resort to superstitions to fight COVID-19.
- (iii) Some worship is being performed to get remedy from COVID-19virus.
- (iv) There exists an inversely proportional relationship between the COVID-19virus spread and wireless 5G network.
- (v) It is being believed somewhere that babies don't get COVID-19. It is also believed somewhere that the poor don't get COVID-19since they don't live in air conditioner systems.
- (vi) In the third world countries some fundamentalists believe that the pious don't be affected by COVID-19.
- (vii) At higher temperatures COVID-19 virus do not harm deadly.
- (viii) COVID-19virus may spread from dead bodies. But theory says the negative result<sup>83</sup>. Hence in developing countries somewhere dead bodies are thrown away or kept open without any funeral or any disposal. It actually happens in developed countries also because of fear to be affected<sup>83</sup>.

#### **OPINIONS AND OBSERVATION:**

How can it be possible that False Positive result from any test? Because if blood and samples does not contain no COVID-19virus then how could a kit get positive?

#### **OPINION:**

- (i) It is recommended to test by antibody rather than PCR because of massive test in a third world country it is too costly to afford. On the other hand, if antibody does not grow then it may not be harmful to the body.
- (ii) We need to keep our lung sound by not smoking or by any forms. It has been observed that many persons got benefitted by taking vapor of hot water.
- (iii) Taking Vitamin C and D may play great role because Vitamin C works well against cold and Vitamin D works well in building immunity.
- (iv) COVID-19 situation shows that no country in the world is stronger than any natural disaster. The world should be ready with technology to maintain pandemic situations. ICU supports and ventilation supports may be done by Robots because nursing at ICUs are very much risky for medical staffs. Telemedicine and emergency surgeries should be trained to the robots. Besides this issue during this period some medications are very risky like anesthesia by spray, nebulizing because they may aerosolize the virus.
- (v) Mask Design: Two layers, i.e., more layers masks are more secured. Because aerosolized droplets cannot easily enter into them. It is dependent to frequency and wavelength of the droplets.
- (vi) Sea food and any kind of bird should be strictly prohibited. Some countries are throwing the dead bodies

into the oceans and seas that are being eaten by the fishes. On other animals that may affect them. Similarly, birds are moving to and fro, and they eat different foods. So, it should be strictly prohibited to eat them by human beings during the period.

#### **OBSERVATION:**

It has been observed that many persons get benefit by drinking warm water. There is a logical argument in this regard that in case of COVID-19dealing symptomatic treatment is executed. Warm water plays great role against cold. Also it is observed that honey also plays a nice role because honey consists of heterogeneous ingredients. But extreme hot may damage tissue. There may existence of another logical argument in this regard that it warm water may possible the protein structure over the virus wall and can possibly kills them. Another point is that frequent drinking water may push the viruses into stomach from throat and acid inside the stomach may possibly kill them because viruses stay in the throat over some days before attacking the lung.

#### **DISCUSSION AND CONCLUSION:**

COVID-19 has affected the world in worst possible way. This pandemic has been heavier for people with low income and social security. This study identified and discussed several COVID-19 factors which vary from developed to least developed countries. Our study explains the effect of social, economic, spiritual, religious engagement exaggerating COVID-19outbreaks in low incoming countries (i.e. Bangladesh, Uganda, Nepal, Myanmar etc.). The study outlined that lack of social awareness along with socio-economic limitations obstructingCOVID-19treatment. Alternatively, higher availability of PPE (due to local production) and low wages (doctor and nurses) help country like Bangladesh to increase medical facility. Religious obligation, social dogma, cultural difference sometime increases personal hygiene in under developed countries. In short, this study actually identified unnoticed issues that driving COVID-19differently in deferent countries. Due to COVID-19 outbreak, the low-income people are in trouble loop of earning and stay safe from virus. The pandemic limits the work scopes for maintaining social distance that results in business losses along with job scarcity. Current data and earlier study illustrate that, the global poverty rate is increasing instead of declining which will cause major economic disaster for developing countries. Proper strategy is required to accelerate the wheel of economy along with virus control.

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