

## COVID-19: The Odds against Resource-poor Countries

### Background

The coronavirus disease of 2019 (aka. COVID-19) was stealthily announced by China on 29<sup>th</sup> December, 2019, and so, many countries did not properly estimate the huge toll that it would take. The World Health Organization (WHO) declared COVID-19 a pandemic on 12<sup>th</sup> January, 2020 and code-named the index RNA virus as SARS-CoV-2.<sup>1</sup> Four months after the outbreak, with some 35 mutations of the virus, more than 4 million people had tested positive, worldwide, and still counting, as the figures rise on an hourly basis.

### Worldwide Impact of COVID-19

At the top was USA with 1,095,019 confirmed cases and 63,856 deaths; followed by Spain with 239,639 cases and 24,543 deaths; and Italy 205,463 cases.<sup>2</sup> Africa's first case was confirmed from Egypt on 14<sup>th</sup> February, 2020, and by the end of April, 52 of Africa's 54 countries were already infected, and 39,713 were confirmed, with 1,638 deaths. South Africa with 5,647 cases, was the worst hit, then, Egypt 5,537, and Morocco 4,423 cases. However, Algeria with 450 deaths, had the worst outcome. Ghana was 5<sup>th</sup> with 2,074, cases; Nigeria 6<sup>th</sup> with 1,932, and Cameroon 7<sup>th</sup> with 1,832 cases; *see Table 1.*<sup>3</sup>

**Table 1.** Africa's Top 5 countries with COVID-19

Countries	Confirmed Cases	Recoveries	Deaths
South Africa	5,647	2,073	103
Egypt	5,537	1,381	392
Morocco	4,423	984	170
Algeria	4,006	1,779	450
Ghana	2,074	212	17

### African Immunity by Default?

As the pandemic spread, three factors appeared to protect Africa, viz. hot climate - since SARS-CoV-2 showed a predilection for cold climates, a viral strain causing milder disease, and low population of elderly persons, due to low life expectancy. In subsequent weeks, however, it became obvious that these variables may just be confounding factors.

### Healthcare Capacity in Africa - WHO Recommendations

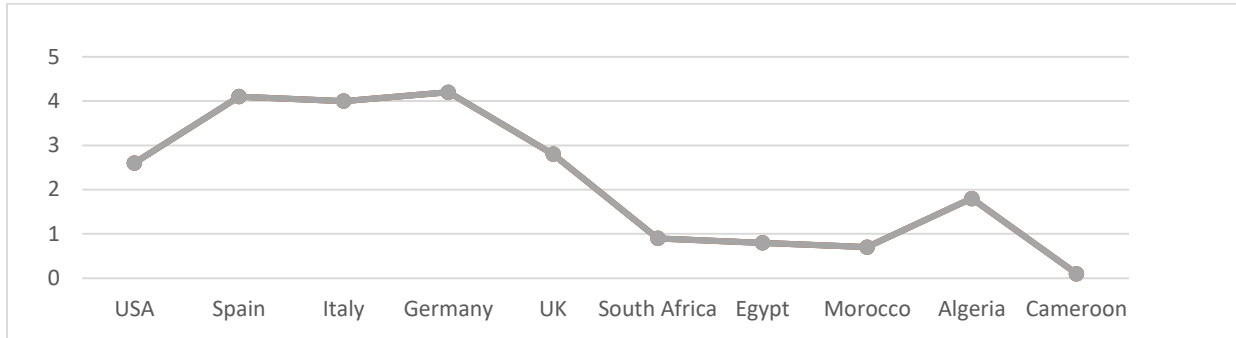
The total number of COVID-19 cases in Africa (*population 1.2 billion*), was 3.63% the figure for USA which has just 25% of Africa's population.<sup>4</sup> This advantage is rapidly annulled by the lack of expertise, equipment and infrastructure, for the care of critical cases, in Africa.

At the April 2001 Abuja Declaration, African Heads of Government resolved to allot at least 15% of their annual budgets to health.<sup>5</sup> After the first decade, only one country met that target, while 11 countries actually reduced their budgets. Nigeria's health budget ranged 4-6% since the Declaration.

And, WHO recommends 1 doctor to 1,000 persons; 1 nurse to 1 critical patient in ICU, and 1 nurse /500 persons; one ICU bed/10,000 persons, and a 50-bed hospital/100,000 persons. In Africa, only Algeria met that target, with 1.8 doctors/1,000 persons. The rest did not; South Africa 0.9, Egypt 0.8, Morocco 0.7, Nigeria 0.4 and Ghana 0.2/1,000 persons; *see Figure 1 and Table 2.*<sup>5</sup> Meanwhile, Spain and Germany had 4.1, Italy 4, UK 2.8 and USA 2.6/1,000. Kenya, had 200

intensive care [ICU] beds for 50 million citizens, i.e. a ratio of 0.4 bed to 100,000 citizens; whereas, USA had almost 40 beds per 100,000 citizens, 100times disparity.<sup>6</sup>

**Figure 1.** Graphic illustration of Doctors-per-1,000-Persons ratios amongst World's Top-5 and Africa's Top-5 COVID-19 infected countries



Nigeria had about 370 mechanical ventilators for 206 million citizens; an average of 0.184 to 100,000 persons, Senegal had 1.25/100,000, South Africa 10/100,000, and Egypt 6/100,000. Meanwhile, USA had 150,000 ventilators for 331 million, a ratio of 45/100,000 persons; see Table 2.<sup>7</sup> And the ventilator is a major back-up against failing respiration, in severe COVID-19.

**Table 2.** Comparison of Ventilator-to-Persons ratio between countries

Country	Population (millions)	Total No. of Ventilators	Ventilator Ratio /100,000
Senegal	16	200	1.25/100,000
Nigeria	206	370	0.184/100,000
South Africa	59	6,000	10/100,000
Egypt	102	6,000	6/100,000
USA	331	150,000	45/100,000

**African Initiatives**

On account of the enormous resource challenges facing Africa, many countries began to adopt self-help initiatives to contain COVID-19. Madagascar produced an organic drink from the antimalarial, artemisia, reported to reduce mortality from COVID-19.<sup>8</sup> Senegal, with UK and Bill and Melinda Gates Foundation, adapted the screening kit originally used for Dengue Fever to make a cheap \$1 COVID-19 quick diagnostic kit.<sup>9</sup> Senegalese researchers, also, designed an affordable ventilator, costing \$60 each, as against \$16,000 for each imported unit.<sup>10,11</sup>

Recently, Professor Sharif Sultan, published some ground-breaking findings, recommending a paradigm shift from positive end-expiratory pressure [PEEP] ventilation to the cheaper plasmapheresis and packed cell transfusion, as the effective treatment for the Cytokine Storm known to cause respiratory insufficiency and death in critically ill COVID-19 patients.<sup>12</sup>

Amongst the 52 African countries with COVID-19, Sultan’s advocacy for plasmapheresis and packed cell transfusion could be 400times cheaper than the cost of procuring expensive and unavailable mechanical ventilators, since Africa’s highest income per capita (Algeria \$15,293) is just 25% of USA’s (\$59,928).

**Recommendations**

On account of the formidable challenges facing them, resource-poor countries will do better by:

- adopting the protective measures outlined by WHO viz. mandatory use of face masks, sanitizers, regular washing of hands under running water with soap, non-touch of facial orifices, isolation in suspected cases, a high index of suspicion and personal protection equipment;
- resisting the temptation to lift the social lockdown under any pretext by politicians;
- adopting a phased ease-up of lockdown to allow a few days, at intervals, for businesses to provide essential products, and lockdown again;
- adopting the Madagascar Artemisia syrup combined with drugs currently in use for treatment e.g. hydroxychloroquine, azithromycin, zinc, antiviral favipiravir;
- adopting the Senegalese models of cheap \$1 test kits and local ventilators, to provide some affordable capacity for COVID-19 management;
- exploring the prospects of plasmapheresis/packed cell transfusion as a cheaper protocol for critically ill patients, instead of unavailable ventilators.

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