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Analysis and understanding the progress, trend and consequences of Covid -19 pandemic over a seven days period across different countries of the world.

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ABSTRACT

Background/Aim: For almost two years, the world has struggled in different ways to cope with the consequence of this highly infectious and deadly disease. This work is aimed at analyzing and understanding the progress, trend and implications of Covid -19 pandemic over a seven days period across different countries of the world.

Method: Data from one hundred and seventy countries were collected across different continents and region of the world. Information was retrieved from United Nations Geoscheme, WHO. results were studied and subsequently compared to the values obtained for USA.

Result: America, Asia and Europe have a sustained effect of the viral infection, while most African countries have a downward progressive control. It was observed that most African countries even when infected have lower chance of mortality when compared to most developed countries. Also, the USA have seems to have make great stride in the preventing and management of the infection.

Conclusion: Most underdeveloped countries have developed a natural mechanism to survive the viral onslaught. Therefore, medical intervention, particularly vaccine, is very important for every person, but special attention may be assessed based on severity and infectivity of cases

Keyword: continents, countries, Africa, USA, COVID-19

I. INTRODUCTION

Coronaviruses (CoV) is among the family of viruses that cause illness ranging from less severe to more severe diseases. nCoV is a new variant that has not been previously identified in humans (1). The new virus was subsequently named the "COVID-19 virus. The novel virus was first identified in Wuhan, a city in China, in December of 2019; an immediate lockdown in Wuhan and other surrounding cities failed to contain the outbreak, resulting in it spread to different parts of the word(2,3). On 30 January 2020, The World Health Organization (WHO) declared an international Public Health Emergency on pandemic (2,4). different variants of the virus have since emerged and become dominant in many countries since the outbreak, with the Alpha, Beta, Gamma, Delta variants and Omicron being the most prevalent per period(5). COVID-19 symptoms range from simple to life-threatening. Studies have shown that severe illness is more likely in elderly patients and those with underlying co morbidity diseases(6). Transmission most times occurs when people breathe in virus contaminated air by droplets and airborne particles. The risk of infection via breathing in is more when people are in close proximity, but the virus can also transmit, over longer distances, particularly closed and in poorly ventilated areas. Transmission can also rarely occur, through contaminated surfaces, equipment or fluids. They are contagious for about

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20 days, and can still spread the virus without developing symptoms (7).

Scientists are still puzzled by the outbreak. Some believed that the virus began in animals while others think it's from Wuhan lab. At some point one or more humans acquired infection from an animal or laboratory leakage to affect humans, and those infected humans may have transmitted the original or mutated viral version to other humans (8). It can also be transmitted through contact with hands or surfaces that have been previously exposed by the virus and touch the body opening with the contaminated hands (9,10).

Their serious concern and study on the different waves of the disease has. This may be due to change in weather and continuously mutated strain of the virus that has been identified (11). There is the need to study this cases per country and region with respect to the virulent and spreadability of the mutated strain. Also, some interesting studies has been carried out on the dermographic, nature and strength of the virus, but analyzing an updated information per time is also predicated in managing the trend (12,13,14,15). The aim of this study is to analyze and understand the progress, trend and consequences of Covid -19 pandemic over a seven days period across different countries of the world.

II. MATERIAL AND METHOD

One hundred and seventy (170) nations from different continents and regions of the world were picked. Data used where obtained from period of October 25 to October 31, 2021 from United Nations Geoscheme and WHO (16). The Data obtained for these countries over 7 days per 100000 populations, were analyzed and compared directly with the values gotten for USA. USA was used as a Comparism Factor (CF) or Oyepata Factor (OF) because it a populous country with one of the best health system and also has highest COVID-19 cases with a relatively large population in the world.

STATISTICAL ANALYSIS

In this work markers as cumulative cases and cumulative cases of death per 100000 population were compared against values of USA. Bivariate analysis, was used and Chi-square test, to compare proportions of all variables. In reporting this study, country observations are scaled to present a comparison of two countries similar in all other respects. Thus, rate ratios less than one insinuate that lesser levels of a given characteristic are associated with lesser rates of infection or mortality and vice versa.

III. RESULT AND DISCUSSION

America, Asia and Europe appeared to have a sustained effect of the viral infection, while most African countries have a downward progressive control. Also it was observed that most African countries even when infected, have lower chance of mortality when compared to most developed countries. Also, the USA have seems to have make great stride in the preventing and management of the infection (Table 1).

Table 1: cases and death of COVID-19

	Name	WHO Region	Cases - last 7 days	CNRPPMP(A)	Deaths - last 7 days	DNRPPMP(B)	A/151.37	C/2.65
1	USA	Americas	501025	151.37	8785	2.65	1.00	1.00
2	India	South-East Asia	96040	6.96	3725	0.27	0.05	0.10
3	Brazil	Americas	80535	37.89	2237	1.05	0.25	0.40
4	The United Kingdom	Europe	285028	419.86	1097	1.62	2.77	0.61
5	Russian	Europe	272147	186.49	7938	5.44	1.23	2.05
6	Turkey	Europe	182027	215.83	1493	1.77	1.43	0.67
7	France	Europe	38372	59.00	184	0.28	0.39	0.11
8	Iran	Eastern Mediterranean	64541	76.84	1074	1.28	0.51	0.48
9	Argentina	Americas	8989	19.89	127	0.28	0.13	0.11
10	Spain	Europe	7329	15.48	43	0.09	0.10	0.03
11	Colombia	Americas	10996	21.61	226	0.44	0.14	0.17
12	Italy	Europe	29978	50.26	272	0.46	0.33	0.17

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13	Germany	Europe	131393	157.99	629	0.76	1.04	0.29
14	Indonesia	South-East Asia	3879	1.42	170	0.06	0.01	0.02
15	Mexico	Americas	22443	17.41	1930	1.50	0.11	0.56
16	Poland	Europe	52320	137.84	552	1.45	0.91	0.55
17	Ukraine	Europe	152897	349.61	3857	8.82	2.31	3.33
18	South Africa	Africa	2554	4.31	249	0.42	0.03	0.16
19	Philippines	Western Pacific	30374	27.72	1379	1.26	0.18	0.47
20	Malaysia	Western Pacific	39926	123.36	512	1.58	0.81	0.60
21	Peru	Americas	5807	17.61	198	0.60	0.12	0.23
22	Netherlands	Europe	47744	274.27	84	0.48	1.81	0.18
23	Iraq	Eastern Mediterranean	9175	22.81	201	0.50	0.15	0.19
24	Thailand	South-East Asia	61032	87.44	461	0.66	0.58	0.25
25	Czechia	Europe	33410	312.42	125	1.17	2.06	0.44
26	Japan	Western Pacific	5926	4.69	69	0.06	0.03	0.02
27	Canada	Americas	13663	36.20	207	0.55	0.24	0.21
28	Chile	Americas	13220	69.16	88	0.46	0.46	0.17
29	Romania	Europe	86103	445.46	3072	15.89	2.94	6.00
30	Bangladesh	South-East Asia	1558	0.95	40	0.02	0.01	0.01
31	Belgium	Europe	33118	287.42	110	0.96	1.90	0.36
32	Israel	Europe	4415	51.01	28	0.32	0.34	0.12
33	Pakistan	Eastern Mediterranean	4400	1.99	80	0.04	0.01	0.01
34	Sweden	Europe	4629	44.82	7	0.07	0.30	0.03
35	Serbia	Europe	45344	654.63	442	6.38	4.32	2.41
36	Portugal	Europe	5354	52.00	27	0.26	0.34	0.10
37	Kazakhstan	Europe	11886	63.30	198	1.05	0.42	0.40
38	Cuba	Americas	6251	55.19	54	0.48	0.36	0.18
39	Morocco	Eastern Mediterranean	1884	5.10	61	0.17	0.03	0.06
40	Viet Nam	Western Pacific	32182	33.06	410	0.42	0.22	0.16
41	Switzerland	Europe	7173	82.88	23	0.27	0.55	0.10
42	Hungary	Europe	19594	200.56	237	2.43	1.32	0.92
43	Jordan	Eastern Mediterranean	11060	108.40	87	0.85	0.72	0.32
44	Austria	Europe	30554	343.26	77	0.87	2.27	0.33
45	Nepal	South-East Asia	2841	9.75	46	0.16	0.06	0.06
46	United Arab Emirates	Eastern Mediterranean	634	6.41	7	0.07	0.04	0.03
47	Greece	Europe	25165	234.78	296	2.76	1.55	1.04
48	Georgia	Europe	27007	677.01	303	7.60	4.47	2.87
49	Tunisia	Eastern Mediterranean	888	7.51	89	0.75	0.05	0.28
50	Lebanon	Eastern Mediterranean	4027	59.00	46	0.67	0.39	0.25

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51	Guatemala	Americas	6737	37.60	395	2.21	0.25	0.83
52	Bulgaria	Europe	32962	474.17	885	12.73	3.13	4.80
53	Belarus	Europe	13942	147.55	115	1.22	0.97	0.46
54	Costa Rica	Americas	3728	73.18	83	1.63	0.48	0.61
55	Saudi Arabia	Eastern Mediterranean	366	1.05	17	0.05	0.01	0.02
56	Sri Lanka	South-East Asia	4428	20.68	103	0.48	0.14	0.18
57	Azerbaijan	Europe	14820	146.17	180	1.78	0.97	0.67
58	Ecuador	Americas	227	1.29	6	0.03	0.01	0.01
59	Bolivia	Americas	3875	33.20	27	0.23	0.22	0.09
60	Myanmar	South-East Asia	5099	9.37	137	0.25	0.06	0.10
61	Slovakia	Europe	27335	500.84	131	2.40	3.31	0.91
62	Panama	Americas	1131	26.21	8	0.19	0.17	0.07
63	Croatia	Europe	25023	616.61	182	4.49	4.07	1.69
64	Paraguay	Americas	305	4.28	16	0.22	0.03	0.08
65	occupied Palestinian territory, including east Jerusalem	Eastern Mediterranean	2358	46.22	50	0.98	0.31	0.37
66	Ireland	Europe	15479	311.80	67	1.35	2.06	0.51
67	Kuwait	Eastern Mediterranean	147	3.44	1	0.02	0.02	0.01
68	Lithuania	Europe	20469	732.58	235	8.41	4.84	3.17
69	Venezuela	Americas	6572	23.11	84	0.30	0.15	0.11
70	Uruguay	Americas	1689	48.62	6	0.17	0.32	0.07
71	Denmark	Europe	11186	192.11	16	0.28	1.27	0.10
72	Dominican Republic	Americas	5395	49.73	22	0.20	0.33	0.08
73	Honduras	Americas	1233	12.45	48	0.49	0.08	0.18
74	Republic of Korea	Western Pacific	13297	25.94	86	0.17	0.17	0.06
75	Ethiopia	Africa	3313	2.88	118	0.10	0.02	0.04
76	Libya	Eastern Mediterranean	3774	54.92	96	1.40	0.36	0.53
77	Mongolia	Western Pacific	4930	150.38	51	1.56	0.99	0.59
78	Republic of Moldova	Europe	10021	248.42	292	7.24	1.64	2.73
79	Slovenia	Europe	15767	752.29	23	1.10	4.97	0.41
80	Egypt	Eastern Mediterranean	6351	6.21	350	0.34	0.04	0.13
81	Armenia	Europe	11371	383.74	271	9.15	2.54	3.45
82	Oman	Eastern Mediterranean	136	2.66	2	0.04	0.02	0.01
83	Bahrain	Eastern Mediterranean	268	15.75	0	0.00	0.10	0.00
84	Bosnia and Herzegovina	Europe	5067	154.44	182	5.55	1.02	2.09
85	Kenya	Africa	665	1.24	21	0.04	0.01	0.01
86	Qatar	Eastern Mediterranean	707	24.54	2	0.07	0.16	0.03

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87	Latvia	Europe	14766	774.03	209	10.96	5.11	4.13
88	Nigeria	Africa	1592	0.77	39	0.02	0.01	0.01
89	Zambia	Africa	93	0.51	2	0.01	0.00	0.00
90	Algeria	Africa	608	1.39	32	0.07	0.01	0.03
91	Norway	Europe	3215	59.90	5	0.09	0.40	0.04
92	North Macedonia	Europe	2664	127.87	74	3.55	0.84	1.34
93	Singapore	Western Pacific	25730	439.80	92	1.57	2.91	0.59
94	Estonia	Europe	11930	897.68	70	5.27	5.93	1.99
95	Botswana	Africa	1675	71.23	10	0.43	0.47	0.16
96	Uzbekistan	Europe	2394	7.15	19	0.06	0.05	0.02
97	Albania	Europe	3635	126.31	46	1.60	0.83	0.60
98	Puerto Rico	Americas	665	23.25	13	0.45	0.15	0.17
99	Kyrgyzstan	Europe	696	10.67	18	0.28	0.07	0.10
100	Australia	Western Pacific	11992	47.03	97	0.38	0.31	0.14
101	Kosovo[1]	Europe	127	7.07	2	0.11	0.05	0.04
102	Finland	Europe	2681	48.52	1	0.02	0.32	0.01
103	Afghanistan	Eastern Mediterranean	270	0.69	19	0.05	0.00	0.02
104	Mozambique	Africa	68	0.22	2	0.01	0.00	0.00
105	Montenegro	Europe	3287	523.36	38	6.05	3.46	2.28
106	Zimbabwe	Africa	329	2.21	9	0.06	0.01	0.02
107	Ghana	Africa	485	1.56	6	0.02	0.01	0.01
108	Namibia	Africa	85	3.35	6	0.24	0.02	0.09
109	Uganda	Africa	461	1.01	15	0.03	0.01	0.01
110	China	Western Pacific	513	0.04	1	0.00	0.00	0.00
111	Cyprus	Europe	1064	119.82	6	0.68	0.79	0.26
112	Cambodia	Western Pacific	750	4.49	54	0.32	0.03	0.12
113	Cameroon	Africa	2210	8.33	86	0.32	0.05	0.12
114	Rwanda	Africa	329	2.54	8	0.06	0.02	0.02
115	Jamaica	Americas	755	25.50	57	1.93	0.17	0.73
116	Maldives	South-East Asia	713	131.90	3	0.56	0.87	0.21
117	Luxembourg	Europe	887	141.67	1	0.16	0.94	0.06
118	Senegal	Africa	26	0.16	1	0.01	0.00	0.00
119	Angola	Africa	599	1.82	13	0.04	0.01	0.02
120	Malawi	Africa	37	0.19	4	0.02	0.00	0.01
121	Côte d'Ivoire	Africa	114	0.43	5	0.02	0.00	0.01
122	DRC	Africa	119	0.13	7	0.01	0.00	0.00
123	Trinidad and Tobago	Americas	1892	135.19	57	4.07	0.89	1.54
124	Fiji	Western Pacific	127	14.17	1	0.11	0.09	0.04
125	Madagascar	Africa	4	0.01	3	0.01	0.00	0.00

126	Syrian Arab Republic	Eastern Mediterranean	1924	10.99	68	0.39	0.07	0.15
127	Sudan	Eastern Mediterranean	0	0.00	0	0.00	0.00	0.00
128	Malta	Europe	98	19.05	1	0.19	0.13	0.07
129	Mauritania	Africa	312	6.71	2	0.04	0.04	0.02
130	Gabon	Africa	924	41.51	15	0.67	0.27	0.25
131	Guinea	Africa	27	0.21	0	0.00	0.00	0.00
132	Papua New Guinea	Western Pacific	1820	20.34	35	0.39	0.13	0.15
133	Tanzania	Africa	120	0.20	1	0.00	0.00	0.00
134	Togo	Africa	79	0.95	0	0.00	0.01	0.00
135	Benin	Africa	71	0.59	0	0.00	0.00	0.00
136	Haiti	Americas	50	0.44	0	0.00	0.00	0.00
137	Bahamas	Americas	137	34.84	1	0.25	0.23	0.10
138	Seychelles	Africa	130	132.19	0	0.00	0.87	0.00
139	Somalia	Eastern Mediterranean	729	4.59	28	0.18	0.03	0.07
140	Lesotho	Africa	51	2.38	2	0.09	0.02	0.04
141	Burundi	Africa	138	1.16	0	0.00	0.01	0.00
142	Mauritius	Africa	669	52.60	23	1.81	0.35	0.68
143	Barbados	Americas	2422	842.80	23	8.00	5.57	3.02
144	Congo	Africa	802	14.53	29	0.53	0.10	0.20
145	Tajikistan	Europe	0	0.00	0	0.00	0.00	0.00
146	Mali	Africa	229	1.13	5	0.03	0.01	0.01
147	Aruba	Americas	103	96.47	0	0.00	0.64	0.00
148	Andorra	Europe	112	144.96	0	0.00	0.96	0.00
149	Burkina Faso	Africa	0	0.00	0	0.00	0.00	0.00
150	Iceland	Europe	515	141.43	0	0.00	0.93	0.00
151	Djibouti	Eastern Mediterranean	34	3.44	0	0.00	0.02	0.00
152	Equatorial Guinea	Africa	202	14.40	4	0.29	0.10	0.11
153	South Sudan	Africa	109	0.97	0	0.00	0.01	0.00
154	Central African Republic	Africa	61	1.26	0	0.00	0.01	0.00
155	Gambia	Africa	11	0.46	1	0.04	0.00	0.02
156	Yemen	Eastern Mediterranean	117	0.39	42	0.14	0.00	0.05
157	Eritrea	Africa	27	0.76	0	0.00	0.01	0.00
158	Sierra Leone	Africa	1	0.01	0	0.00	0.00	0.00
159	Niger	Africa	91	0.38	5	0.02	0.00	0.01
160	New Zealand	Western Pacific	851	17.65	0	0.00	0.12	0.00
161	Guinea-Bissau	Africa	2	0.10	0	0.00	0.00	0.00
162	Grenada	Americas	31	27.55	2	1.78	0.18	0.67
163	Liberia	Africa	1	0.02	0	0.00	0.00	0.00

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164	Bermuda	Americas	35	56.20	5	8.03	0.37	3.03
165	Chad	Africa	0	0.00	0	0.00	0.00	0.00
166	Saint Vincent and the Grenadines	Americas	101	91.04	6	5.41	0.60	2.04
167	Dominica	Americas	275	381.99	2	2.78	2.52	1.05
168	Sint Maarten	Americas	20	46.64	0	0.00	0.31	0.00
169	Sao Tome and Principe	Africa	15	6.84	0	0.00	0.05	0.00
170	Monaco	Europe	27	68.80	1	2.55	0.45	0.96

Key: CNRPPMP = Cases - newly reported in last 7 days per population of 1000000

DNRPPMP = Deaths - newly reported in last 7 days per population of 1000000

Data used were obtained from WHO/World meter's from 25th Octoer to 31st October, 2021 Figures obtained for USA were used in determing the comparism factor (CF) or Oyepata Factor which is a ratio of figure obtained to that of a particular country population divided by that of the USA.

Values of CF1 (or OF1) and CF2 (or OF2) represent case/incidence and mortality index.

Factor of more than 1 = very high infection and mortality index

Factor of approximately 1 = high infection and mortality index

Factor of ≤1 but ≥0.5 = moderately high infection and mortality index

Factor of ≤ 0.5 but ≥ 0.1 = low infection and mortality index

Factor of <0.1 = very low infection, mortality and recovery index

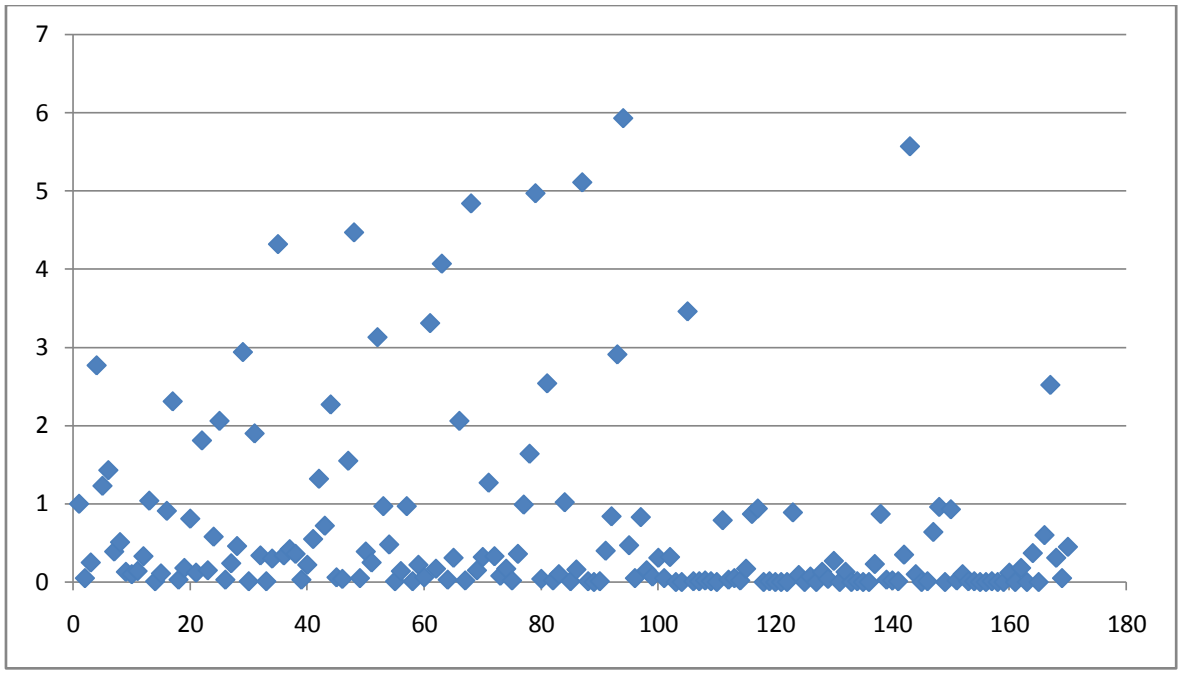

Figure 1: graph showing7 days infection case per country relative to USA

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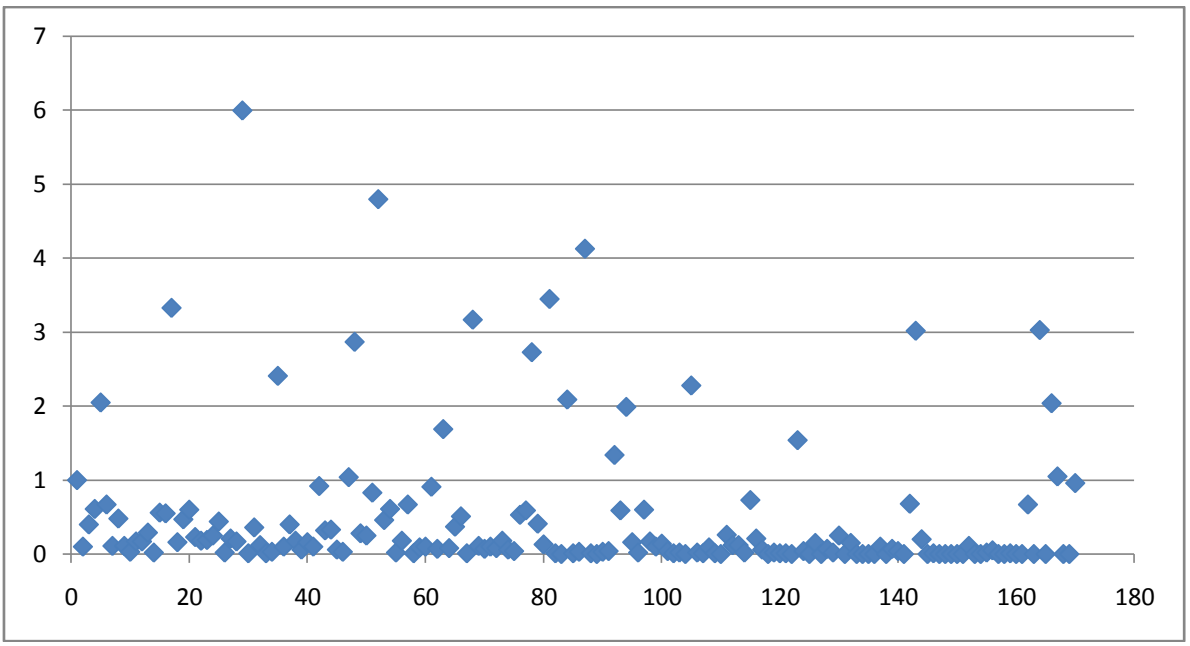

Figure 2: graph showing death over 7 days caused by Covid-19 for each country relative to USA

IV. DISCUSSION

The socio-economic devastation caused by the pandemic has affected millions of people, while the number of poorly rnourished people, are estimated at nearly 690 million and could increase by over 130 million by 2021 (17,18). It represents an unprecedented burden to public health, food and world workforce (19). Various variant have been indentified in several countries, and it could potentially affect thousands to millions of deaths if not properly handled (20).

Development of vaccine has greatly help in reducing cases and death from the infection (21). Vaccines are attenuated or inactive sections of an organism (antigen) that provokes an immune response in the body. More recent vaccines contain the blueprint for producing antigens rather than the antigen itself (22). The weakened version is not expected to cause the disease in the receiver of the vaccine, but it will trigger the immune system to responded appropriately much as if its first reaction to the actual pathogen attack (23). Some vaccines may require more than one doses to be administer over a period of time. This is sometimes necessary so as to give room for development of long-lived antibodies and establishing of memory cells. Hence, the body is trained to combat specific infection-causing organism (26,27,28).

In this study, America, Asia and Europe continents suffered most from the pandemic, while Africa, seems to be least affected with the health effect of Covid-19 (15,29,30). These observations remain consistent with previous works on the cumulative effect of the virus. Africans appear to be spared from this lethal unleash. Also, Africans over time showed potential to have lesser mortality relative to case of the infection (31,32). This can be indicative of the body more progressive, robust and faster immune response that reduces possible chances of the virus causing disease related complication. Compared to previous cumulative observation, though mortality rate remained same, USA has made remarkable stride in preventing and reducing the cases of infection compared to several other countries that suffered same fate from the virus. From available data, Africa which generally is classified as third world or clearly underdeveloped do not have severe medical effect of the infection, and when infected tends to recover faster with lower chance of complications and mortality.

Also, majority of Africans settle as a community and in dense clusters which is obviously different to most western countries that exhibit more of a solitary system (33,34). Thus, there is a higher tendency than most individual in Africa may have been exposed to the virus without knowing or developing major symptoms. Reasons for this furtunately unexpected result has puzzled many analyst around the world. Studies have shown, that because of poor health and environment, the immune systems of African children tends to develop faster and more robust compared to Dutch children (35,36). Childhood Exposure to pathogenic organism may have boasted the immune system and protect children

from developing certain allergies and other infectious diseases, on later exposure to the similar allergen or pathogen(37,38). This view is also supported with data and comparism factor obtained from Haiti. Haiti is currently the poorest country in the Latin America and Caribbean region and among least developed countries in the world (39,40). They have one the least case of infection and mortality resulting in little to no significant value of comparism factor. Thus, childhood or early exposure to some diseases in poor countries may have encouraged a more robust immune response to same or related infection. Therefore, several African countries be both vulnerable and potentially more defensive against the coronavirus.

V. CONCLUSION

COVID-19 has severely affected the global economy and financial system. At some point the world to stood still, struggles and watch the unending unleash by the virus. Africans have been severely affected more by fear from COVID-19 than the actual infection caused by the virus. Reasons why Africa seems least affected against major expectations is not fully understood. Africa is known to be an acceptable home to several diseases such as dengue fever, small pox, measles chicken pox, Ebola, and polio disease against which vaccine may have bben administered or the body immune system to successfully defend against this pathogens. In many cases childhood vaccination against these diseases may have help the body to fight this microorganism. This may have resulted in direct or indirect immunity that may have become beneficial on exposure to same, similar or different viral infection which may also include the novel disease.

Also, there is the possibility of the virus spreading fast across the population within a minimal period of time causing a large proportion Africans to have been exposed to the virus without showing conspicious symptoms and may have possibly recovered fully. Therefore, there is need for a more robust COVID-19 testing; antibody testing, which will explain who has been exposed than the popular antigen testing which only provides active disease state. This will greatly affect the quantity and quality time and resources that a give region need.

Africa needs vaccine, compared to other continents, vaccine may not be it most important need. This is because most individuals in African countries may have been naturally and unconsciously immune. More studies and analysis need to be done to further understand, the virus and how significant it is to Africa and by extension to the rest of the world.

Conflict of Interest

The authors declare that there are not any potential conflicts of interest

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Authors' contributions

Joseph OS and Joseph OT were involved in collection of data and development of model for analysis. Joseph OS, Joseph OT and Sebastine AZ were responsible for analysis and writing of this manuscript..

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