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Community Medicine

COVID-19: FACTS AND FIGURES IN DEVELOPED COUNTRIES-AN OVERVIEW

KEY WORDS: COVID-19, Lock down, Developed Countries, Transmission, Doubling time

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ABSTRACT

The Pandemic has caused a panic among the developed countries, even though they had affluent health care facilities. Despite the fact that these countries have taken many precautionary measures, the number of cases and death trolls has been increasing day by day. There are many developed countries in the world. The top being Australia, Switzerland, Netherlands, United States of America, Germany, New Zealand, Canada, Denmark, United Kingdom and Italy based on indices like economy, technology and infrastructure.

We have critically analyzed the respective transmission rate, Death-to-case ratio, Doubling time, preventive measures taken by the administration and their efficacy. This study emphasize on the status of COVID-19 in developed countries like Australia, Switzerland, Netherlands, United States of America, Germany, New Zealand, Canada, Denmark, United Kingdom and Italy.

We concluded that the developed countries also have high rate of transmission. However the best preventive measures like Lock down, social distancing, hygiene habits, recognition of public hotspots, closure of all educational institutions, mass testing, self-regulation, decentralization, group immunity, self-quarantine are the game changers in the controlling the transmission of COVID-19.

INTRODUCTION:

A new corona virus was identified in the month of December 2019 at Wuhan, Hubei Province, China which resulted in a Pandemic outbreak throughout the world named Novel corona virus 2019 known as COVID-19 which is identified by symptoms like Fever, dry cough and respiratory distress. World health Organization declared it as public health emergency of International concern on 30-01-2020, as pandemic on March 11^{1,2} Covid-19 lead to serious mortality rates all over the world by mid-March. Though it started in China, it escalated to developed countries like United States of America, United Kingdom and Australia.

There are many developed countries in the world. The top being Australia, Switzerland, Netherlands, United States of America, Germany, New Zealand, Canada, Denmark, United Kingdom, Italy based on indices like economy, technology

and infrastructure³. The Pandemic has caused a serious health misfortune among the developed countries, even though they had affluent health care facilities. Despite many precautionary measures taken by these countries, the numbers of cases, transmission and death trolls have been increasing day by day.

This study emphasize the status of COVID-19 in developed countries like Australia, Switzerland, Netherlands, United States of America, Germany, New Zealand, Canada, Denmark, United Kingdom and Italy. We collected the day to day data from 30-03-2020 to 20-04-2020 through World Health Organization daily status reports and other reliable internet resources. These were critically analyzed regarding the transmission rate, death-to-case ratio, doubling time, preventive measures taken by the respective administration and their efficacy.

Status Of Covid -19 In Various Developed Countries: (table 1)
Table 1: Covid-19 Status In Developed Countries As On 20-04-2020

COUNTRY	POPULATION	FIRST CONFIRMED CASE ON	NUMBER OF CONFIRMED CASES	NUMBER OF DEATHS	NUMBER OF CASES RECOVERED	DEATH-TO-CASE RATIO	DOUBLING TIME(days)
USA	331,002,651	21-01-2020	792759	42514	72389	5.362789953	10.5
ITALY	60,461,826	31-01-2020	181228	24114	48877	13.30589092	20.5
GERMANY	83,783,942	27-01-2020	147065	4862	91500	3.306021147	10.5
U.K	67,886,011	31-01-2020	124743	16509	344	13.23440995	4.5
CANADA	37,742,154	25-01-2020	36829	1690	12586	4.58877515	7.5
NETHERLANDS	17,134,872	27-02-2020	33405	3751	250	11.22885796	9.5
SWITZERLAND	8,654,622	25-02-2020	27944	1429	18600	5.113799027	n/a
DENMARK	5,792,202	27-02-2020	7515	364	4312	4.843646041	6.5
AUSTRALIA	25,499,884	25-01-2020	6625	71	4258	1.071698113	n/a
NEWZEALAND	4,822,233	28-02-2020	1440	12	974	0.833333333	6.5

AUSTRALIA: Australia is a sovereign country and world's sixth largest country by total area. The Australia's population density is 3.3 people per square kilometer⁴. The first case in Australia was reported on 25-01-2020 from a person travelling from Wuhan, China. With local transmission on 20-04-2020, the number of confirmed cases were 6625, number of deaths were 71 and 4258 cases recovered. The Death to case ratio was 1.07 and doubling time couldn't be found as the cases were not doubled during the time frame of the study (30-03-2020 to 20-04-2020). The precautionary measures taken by the authorities were ban on international travel, prevention of international cruise, ships from docking, closure of all educational institutions, parks, recognition of public hot spot and social distancing⁵. The authorities implemented lock down from 10-04-2020 till further notice. During this lock down, the daily growth rate of confirmed cases had slowed down to 5 % compared to that of 23 % before lock down⁶.

SWITZERLAND: It is officially known as Swiss Confederation. It is a federal republic country situated in the confluence of Western, Central, and Southern Europe⁸. The Swiss climate is temperate and is diversified between the localities⁹. The population density in Switzerland is 567 people per Square mile¹⁰. The corona virus pandemic was first reported on 25-02-2020 from a traveler from Italy and then transmitted locally. The Swiss Authorities on 20-03-2020 announced that there will be no lock down, but any events, gatherings or meetings over 5 people were restricted and prohibited¹¹. The various preventive measures taken by the authorities were closure of bars, shops and other gathering places. The public transport was reduced but not halted¹². The number of confirmed cases were 27944, number of deaths were 1429 with 18,600 recoveries on 20-04-2020. The death-to-case ratio was 5.11 and the doubling time couldn't be calculated as the cases were not doubled during this time frame. Switzerland saw peaks of the confirmed cases on March 27th (1447 new cases), April 2nd (1128 new cases), since then cases have declined to around 30 % of their peaks¹³.

NEWZEALAND: New Zealand is sovereign island country in the southwestern Pacific Ocean. The climate is predominantly temperate¹⁴. The population density is 47 people per square mile. The first case of COVID-19 was reported on 28-02-2020 and transmitted locally country-wide. The number of confirmed cases were 1440, number of deaths were 12 and 974 recovered as on 20-04-2020. The death-to case ratio was 0.83 and the doubling time was 6.5 days. New Zealand authorities have imposed lock down on 26-03-2020. Aftermath effect of lock down, COVID-19 cases has dropped to 0.4 which was 2.5 earlier¹⁵.

NETHERLANDS: Netherlands informally known as Holland, situated in Western Europe. Netherlands had the eleventh highest economy as measured by GDP per capita and ranked tenth on human development index^{16, 17}. Netherlands has a mild maritime climate with moderately warm summers and cool winters and high humidity. The population density is 488 people per square kilometer. The first case was reported on 27-02-2020 from a traveler from Italy and within country transmitted locally. As on 20-04-2020, the numbers of confirmed cases were 33405, the numbers of deaths were 3751 and 250 people recovered. The death-to case ratio was 11.22 and the doubling time was 9.5 days. The authorities have imposed "intelligent-lock down" from 15-03-2020, giving some relaxations especially in business. The other measures taken by the authorities were self-regulation, decentralization and group immunity. This whole approach was described as "the 1.5 meter economy"¹⁸. With lock down measures, the admittance to hospitals and ICU's was steadily declined¹⁹.

UNITED STATES OF AMERICA (USA): United States of America commonly known as United States is the World's third- or fourth -largest country by total area²⁰. USA is a highly

developed country and is considered as world's largest economy by nominal GDP²¹. The population density is 94 people per square kilometer. The first case of COVID-19 was reported on 21-01-2020 from a person travelling from Wuhan. With local transmission, the numbers of confirmed cases were 792759; numbers of deaths were 42514, and 72389 people recovered on 20-04-2020. The death to case ratio was 5.36 and the doubling time was 5.5 by 05-04-2020 and by 16-04-2020 it declined to 10.5 days. The authorities have imposed Lock down on 19-03-2020. After implementing the lock down, social distancing and stay at home orders, many states in USA have been able to sustain an effective transmission rate of less than one, meaning there is remission.²²

GERMANY: Germany is officially known as federal Republic of Germany, a country in central and Western Europe. It is the world's fourth largest economy. The population density of Germany is 232 persons per square kilometer. The first case of COVID-19 was reported on 27-01-2020 from a person travelling from Italy and transmitted locally as on 20-04-2020, the numbers of confirmed cases were 147065, numbers of deaths were 4862 and 91500 people recovered. The death to case ratio was 3.30 and the doubling time was 10.5 days. The authorities of Germany imposed lock down from 20-03-2020. After the social distancing measures and lock down, the effective reproduction number has been as low as 0.7 in mid-April²³.

CANADA: Canada is a country in the northern part of North America and is the world's second largest country by total area. It ranks the tenth -largest advanced economy in the world. The population density of Canada is 4 people per square kilometer. The first case was reported on 25-01-2020 from a person travelling from China, with local transmission on 20-04-2020, the numbers of confirmed cases were 36829, numbers of deaths were 1690 and 12586 people recovered. The death to case ratio was 4.58 and the doubling time was 3.5 on 03-04-2020 and 7.5 on 12-04-2020. The lock down was imposed on 18-03-2020. The other preventive measures taken by the authorities were ban on international travel, closure of Bars, restaurants and other public hot spots, closure of educational institutions, self-quarantine, and social distancing.

DENMARK: Denmark is a Nordic country in the North West Europe. It has a mixed developed economy and is classed as a high income economy by world bank²⁴. The population density of Denmark is 134 people per square kilometer. The first case was reported on 27-02-2020 with local transmission. As on 20-04-2020, the numbers of confirmed cases were 7515, numbers of deaths were 364 and 4312 people recovered. The death to case ratio was 4.84 and the doubling time was 6.5 days. The authorities imposed lock down on 13-03-2020. In late march, the authorities declared that the strategy of mitigation had partially worked and efforts were increased for drive through testing, mass testing and local rapid testing for individuals as a preventive measure^{25,26}.

UNITED KINGDOM (UK): The United Kingdom of Great Britain and Northern Ireland is commonly known as United Kingdom or Britain. Based on the exchange rates, the United Kingdom is the fifth -largest economy in the world and second in Europe²⁷. The population density is 281 per square kilometer. The first case of COVID-19 was reported on 31-01-2020. As on 20-04-2020, the numbers of confirmed cases were 124743, numbers of deaths were 16509 and 344 people recovered. The death-to- case ratio was 13.23 and doubling time was 4.5 days as on 04-04-2020 and 7.5 days as on 12-04-2020. The authorities imposed lockdown on 23-03-2020. The reproduction time describes the number of people, on average, who will transmit a disease from a single infected person, if the reproduction number is less than 1.0, the epidemic will decline. After the lock down measures in UK, the reproductive time was declined to 0.62²⁸.

ITALY: Italy is known as Italian republic located in South-central Europe. It has an advanced capitalist mixed economy ranking eighth largest in the World²⁹. The population density is 206 persons per square kilometer. The first case of COVID-19 was first reported on 31-01-2020 and the transmission was local. As on 20-4-2020, the numbers of confirmed cases were 181228, numbers of deaths were 24114 and 48877 people recovered. The death to case ratio was 13.30 and the doubling time is 20.5 days. The authorities imposed lock down on 21-02-2020. As on 3-04-2020, there was 94% drop for retail and recreation places, an 85% drop for grocery shops and pharmacies, 90% drop for parks and beaches, 87% drop for public transit hubs, 63% drop for workplaces and a 24 % rise for residential places. This data forecasts that there may be a decline in the reproduction time leading to decline of pandemic in Italy^{30,31}. The effect couldn't be known because of unavailable documented evidence.

CONCLUSION:

This study concludes that lock down social distancing, hygiene habits, recognition of public hotspots, closure of all educational institutions, mass testing, local rapid testing, self-regulation, decentralization, group immunity, self-quarantine are the game changers in the controlling the transmission of COVID-19. Most of the developed countries have seriously affected as the number of confirmed cases were high because of inadequate standards of preventive measures taken. One of the developed country adopted intelligent lock down, which includes self -regulation, decentralization, group immunity showed successful results. This study also found that the transmission of first case in developed countries was from china and Italy.

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