



Impact of Lockdown on COVID-19 Affected People-Analysis in Pakistan by the Year 2020

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/AJRID/2023/v14i2287

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/103038>

Original Research Article

Received: 23/05/2023

Accepted: 25/07/2023

Published: 31/07/2023

ABSTRACT

Objective: The study has been carried to find impact of lockdown on spread of COVID-19 by evaluating number of affected cases in lockdown and post-lockdown period. The study was conducted to analyse whether lockdown has limited spread of disease or otherwise.

Methods: The study has been conducted retrospectively between 23rd March 2020 to 12th November 2020 on number of affected cases reported in Daily Jang Newspaper of Pakistan. Since lockdown period was 47 days, therefore data was collected in multiple of 47 days to evaluate results in lockdown and post lock down period.

Results: Immediately after lockdown data has shown an increase in percentage (47.04), increase of affected cases (531.46), growth factor (6.31) and frequency of distribution (164244). Lower incidence was observed in lockdown with a number of 26010 bearing percentage of 7.45.

Conclusion: The lockdown has limited spread of new viral disease (SARS-CoV-2) with reduced number of affected cases and huge increase in number of cases were observed immediately after lockdown. The number of affected cases were found to be subsequently reduced unless start of second phase of pandemic. On removing limitations due to lock down growth factor and frequency of distribution also indicate higher incidence of new viral disease.

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Keywords: COVID-19; lockdown; affected cases; unknown etiology; International Health Regulations; growth factor; pandemic.

ABBREVIATIONS

COVID-19 : Coronavirus disease of 2019
SARS-CoV-2 : Severe acute respiratory syndrome 2
IHR : International Health Regulations
OECD : Organization for Economic Co-operation and Development
HIV/AIDS : Human Immunodeficiency Virus/Acquired immunodeficiency syndrome

1. INTRODUCTION

The coronavirus disease (COVID-19) emerged in Wuhan Hubei province of China where large number of patients presented with pneumonia of unknown etiology. Later between December 2019 to early 2020 disease spread nationwide and across the world. The World Health Organization (WHO) announced outbreak of novel coronavirus disease as a public health emergency of international concern under the International Health Regulations (IHR) on 30th January 2020. It was declared as a pandemic on 11th March 2020 with affecting 169 countries and almost all continents [1].

In order to curb the spread of coronavirus disease (COVID-19) almost all countries has taken preventive measures such as lockdown and restrictions of movements. The government implemented complete lockdown, closure of businesses and mosques, restriction of movements and working at home to promote social distancing for stopping spread of disease [1].

Many steps were taken by governments including Pakistan to tackle disease and minimize the damage caused by the pandemic. One of the first steps that government of Pakistan took was to limit spread of virus within the community by imposing well-planned lockdowns in all major cities which was imposed during different hours in different regions and most of the public spaces [2].

It was found that more than 500 students from Pakistan were living in affected area of China and assurance was given for care of students however yet it was demanded to remove the citizen from affected country. In the light of Hadith, Muslim Scholars stated that it was not advisable to remove student of Pakistan from affected areas in Wuhan city of China. The advice of Muslim Scholars was based on the fact that it was advised in Muslim Sharia that in the epidemic area no person should be entered nor

any body to leave so that spread of disease can be controlled [3].

Based on communicable nature of disease many preventive remedies has been taken globally to control spread of disease where one of the primary measure was isolation and lockdown to limit the new disease with a target of reduction of affected people and minimizing mortality rate due to pandemic.

1.1 Objective of Study

It has been seen that as compared to post lockdown period cases of COVID-19 and growth factor shows a declining trend in lockdown in an observational analysis of 27 countries [4].

A global lockdown has been imposed almost all over the world after declaration of COVID-19 disease as a pandemic. The purpose of lockdown was to control the spread of disease. It has been suspected that by implementation of lockdown spread of disease would have been controlled. The study has therefore been carried out in Pakistan to evaluate that whether lockdown has limited the disease or otherwise.

1.2 Null Hypothesis & Alternate Hypothesis

The Null Hypothesis (H₀) in our study has proposed that there was no relationship between lockdown and affected cases whereas alternate hypothesis (H₁) has been stating that there is relationship between lockdown and affected cases.

1.3 Research Question

The research question of the study has been defined that whether lockdown implementation would result in reduced number of affected cases due to COVID-19 or otherwise.

1.4 Review of Literature

The disease started in Wuhan Hubei province of China and apparently it looks that lack of limiting

new viral disease affected persons in quarantine have resulted in spread of disease globally and attained shape from an outbreak to pandemic in the world. One of the major remedy used to control new viral disease was lockdown which has been implemented almost all over the world.

Xiaolin et al. found in their study that lockdowns are an effective way of reducing reproduction of COVID-19 virus and controlling spread of the disease in local communities. COVID-19 becomes more severe among older adults. The evaluation of data in their study data has indicated toward the observation that increased mobility within counties is associated with increased affected cases in pandemic [5].

Dhamija et al. found in their study that person to person spread of a highly infectious disease can be reduced by social distancing. Although lockdown is a most draconian but when implemented appropriately then it has temporarily decreased disease transmission by limiting human contact at scale. Public health campaigns do not get built overnight and lockdown has provided officials with ample time to strategize and come up with systematic plans to control the spread of COVID-19. Lockdowns has given a temporary emergency measures to improve medical infrastructure which may otherwise be overwhelmed by immensity of the problem [6].

Nazia et.al has stated that majority of the participants took appropriate preventive measures against COVID-19 by avoiding to crowded and religious places. The percentage of males visiting crowded places was higher than females. In local setting generally male population is involved in repeated outside movements for household, financial trading and transportation purposes. Risk of exposure among males was therefore higher than females in Pakistan. Females as compared to males are usually more likely to self-quarantine when sick with fever or cough. Association between educational level and reduction of outdoor activities for prevention and safety was assessed and found that there was negative association between education level and reduction of outdoor activities. As with increased education level, the tendency of going out seems to be reduced [7].

Panagiotis et.al. found that due to high prevalence of virus governments all over the world has been taken restrictive measures such

as social distancing, local and national lockdowns, quarantine and home isolation which radically changed people's daily lives & habits. In addition from very first stages of pandemic it has been suggested that health facilities and hospitals were mostly high transmission hotspots of virus resulting in an adjustment of health services provision with an emphasis on minimizing the contacts of patients with health personnel. The combined effect with fear and reluctance of citizens to come at health facilities due to the increased likelihood of exposure and infection with new coronavirus disease as well growing shortages of available medical staff led to delayed services for prevention, treatment and rehabilitation [8].

Organization for Economic Co-operation and Development (OECD) was of opinion that COVID-19 crisis placed significant pressure on social protection which is inclusive of elderly and dependent people, those with chronic or long term illnesses, poor & low income families, homeless persons, un-insured people, informal workers, migrants, people with disabilities etc [9].

Erum et.al found in their study that mostly social life and mental health were affected therefore counseling should have been considered in general population during pandemics or public health emergencies. Economically COVID-19 has created high level of uncertainty and job insecurity among the population. Unemployed people are not only in need of financial help but also mental health counseling [10].

Muhammad Aledh et.al studied on pandemic and said that unprecedented crisis caused by the novel coronavirus 2019 (COVID-19) brought about an outbreaks of a highly infectious viral disease where exposed people across all demographic groups in almost whole of the world suffered with possible health hazards and increased number of infected persons within a relatively short period of time. Older people were found to be highly vulnerable to deadly virus with possible negative psychological impact [11].

The study of literature has given an indication that new viral disease has spread globally in short period of time which has affected whole of the community however elderly were found to be more affected probably due to lower immunity. In early period of pandemic when no vaccination or specific treatment was available lockdown has mostly shown to be an effective strategy to compete the crisis.

2. METHODOLOGY

The study has been conducted retrospectively where data pertaining to number of affected cases has been examined during and after lockdown period. A content analysis of affected cases has been made quantitatively to see outcome of lock down on COVID-19 pandemic [3].

The study period was conducted from 23rd March 2020 to 12th November 2020 where “235” days were divided in five (5) equivalent segments and each segment was in equivalence of lock down period i.e., 47 days.

The Daily Jang has been a leading newspaper in Pakistan and selected as an instrument of study to find out number of reported affected cases of COVID-19 during and after lockdown.

Since the lockdown period was pertaining to “47” days therefore data has been collected in multiples of 47 days after lockdown. First segment of 47 days was taken from 23rd March 2020 to 8th May 2020 because lockdown was implemented in Pakistan on earlier date and later date was the last day of complete lockdown period. Afterward data has been taken in multiple of 47 days till 12th November 2020 which has indicated start of second and end of first phase of pandemic.

2.1 Data Analysis

The data has been evaluated for independent/dependent variables, lock down, percentage of increase/decrease, increase/decrease in number of cases, growth factor and frequency of distribution.

Independent variable is the cause while dependent variable is effect [12]. Lockdown has therefore been labeled as a causative factor in the shape of independent variable whereas presence or absence of lockdown on different outcome factors has been taken as dependent variable consisting of affected cases, percentage of increase, growth factor and frequency distribution.

Increase/Decrease in Number of Cases have found by calculating as; Increase in Number of Cases = No of cases in desired post lockdown period - No of cases in lock down period/No of cases in lockdown period*100 (Table-2)

The growth factor has been the ratio by which a quantity multiplies itself over time where it equals to number of cases attained on daily cases divided by cases on the preceding day. A growth factor of more than 1.0 indicates an increasing pattern of prevalence whereas values between below 1.0 show a declining pattern.[4](Table-3)

In analyzing frequency of distribution maximum number of cases has been placed in descending pattern to observe occurrence pattern of disease in pandemic.(Table-4)

3. RESULTS

It has been seen that number of affected cases were at lower side during lock down period with percentage of 7.45 whereas highest percentage (47.04) was observed in period immediately after lockdown which was found to be subsequently reduced unless start of second phase of pandemic which was started by the end of September 2020 (Table-1).

Table 1. Percentage of Number of Cases

LockdownPeriod	Date	Affected Cases	Percentage
47 days Lockdown	23-03-2020 to 8-5-2020	26010	07.45
1 st 47 Days after Lockdown	9-5-2020 to 24-06-2020	164244	47.04
2 nd 47 Daysafter Lockdown	25-06-2020 to 10-08-2020	93966	26.91
3 rd 47 Daysafter Lockdown	11-08-2020 to 26-09-2020	24565	07.03
4 th 47 DaysAfter Lockdown	27-09-2020 to 12-11-2020	40411	11.57

Table 2. Increase/Decrease in Affected Cases

LockdownPeriod	Date	Affected Cases	Percentage
47 days Lockdown	23-03-2020 to 8-5-2020	26010	NA
1 st 47 Days after Lockdown	9-5-2020 to 24-06-2020	164244	531.46
2 nd 47 Daysafter Lockdown	25-06-2020 to 10-08-2020	93966	261.26
3 rd 47 Daysafter Lockdown	11-08-2020 to 26-09-2020	24565	-05.55
4 th 47 DaysAfter Lockdown	27-09-2020 to 12-11-2020	40411	55.36

Table 3. Growth Factor

LockdownPeriod	Date	Affected Cases	GrowthFactor
47 days Lockdown	23-03-2020 to 8-5-2020	26010	NA
1 st 47 Days afterLockdown	9-5-2020 to 24-06-2020	164244	06.31
2 nd 47 Daysafter Lockdown	25-06-2020 to 10-08-2020	93966	00.57
3 rd 47 Daysafter Lockdown	11-08-2020 to 26-09-2020	24565	00.26
4 th 47 DaysAfter Lockdown	27-09-2020 to 12-11-2020	40411	01.64

Table 4. Frequency of Distribution

Frequency	Lockdown Period	Dated	AffectedCases
1	1 st 47 Days afterLockdown	9-5-2020 to 24-06-2020	164244
2	2 nd 47 Days afterLockdown	25-06-2020 to 10-08-2020	93966
3	4 th 47 Days After Lockdown	27-09-2020 to 12-11-2020	40411
4	47 days Lockdown	23-03-2020 to 8-5-2020	26010
5	3 rd 47 Days afterLockdown	11-08-2020 to 26-09-2020	24565

It has been observed that a huge percentage of increase has been observed immediately after lockdown and found to be 531.46 percent which is subsequently reduced till end of September 2020 indicating initiation of second wave of pandemic (Table-2).

Growth factor of COVID-19 cases indicate that maximum growth (6.31) occurred in the

immediate post lockdown period which has subsequent decrease till start of second phase of pandemic 2020 (Table-3).

The analysis of data regarding frequency of distribution indicate that maximum number of cases (164244) has been seen immediately in segment after lockdown which found to be reduced till end of first phase (Table-4).

4. DISCUSSION

Nadia Noreen et.al found that absolute lockdown resulted in slowing down of infection rate but due to the frail economy and the vulnerable class lockdown restrictions were eased in phases since Mid-May, resulting in a burst of infections at the end of May 2020. It is agreed as we also observed same findings in our results which have shown reduced affected cases during lockdown period which increased to around sixty percent immediately after end of lockdown [13].

It has been found by Ghosal et.al. that lockdown has proven to be an effective strategy in slowing down SARS-CoV-2 disease which was progressing in both ways consisting of spread of infection and death rate exponentially. The same finding has been observed in our study where it has been seen that infection was found lower in lockdown period which has shown a huge surge immediately after release of lockdown [14].

Shafiun Nahin Shimul et.al has suggested that relaxation of lockdown measures negatively impacts the epidemic. We have found the same findings where it has been seen that relaxation of lockdown has shown huge increase in number of cases as well death [15].

It has been found by Shimul et.al about negative impact of prolong lockdown measures on health and economy and recommended a balanced approach by taking economy in under consideration. In this regard we are of opinion that any strategy on the name of economy which put the lives at risk of mortality can't be recommended and therefore a balanced approach should be critically evaluated and concluded to formulate any strategy [15].

It has been pointed by Jinan Abdul Ameer Abbas about importance of emphasizing need for proper planning and management of the region resources as well as environmental protection for sustainable development. We agree with Abbas that by proper planning and utilization of resources in justified manner could be major factor in control of not only outbreak or epidemic but as well as a bigger pandemic like COVID-19 [16].

Andrew J. Stier stated in their study that early pandemic COVID-19 case growth rates increase with city size and found that early in the outbreak COVID-19 spread faster in larger cities. Our data

has not been limited to larger cities but rather it was taken from whole of the country where we have also found same finding about higher growth rate in early outbreak which found to be reduced with passage of time in the pandemic [17].

Sawsan et.al found about increasing number of Kawasaki-like disease in patients with COVID-19 and continued to be reported worldwide. It was pointed by them that possibility of facing the emergence of COVID-19 post -infective complications high, urges us to set a systematic clinical, biological and echocardiographic follow-up of all patients who had infected with COVID-19. We have observed second phase of pandemic at the end of 2020 and are of opinion that existence of post COVID-19 complications can be controlled with regular follow up of infected patients from new viral disease [18].

Ahasan Ullah Khan et.al stated that COVID-19 has spread rapidly to sixty four districts in Bangladesh. The continuing occurrence of COVID-19 infections has emphasized the importance of the quick laboratory diagnoses to limit the spread as well as befittingly treat the disease. In this situation people should avoid public gathering places as much as possible and return home as soon as possible after finishing work. We agree with Khan where it has been seen in our study that about 50 percent of observed cases occurred in immediate post lockdown period and as well 531.46 percentage increase has been seen after lockdown indicating rapid spread of disease and suggesting limitation of movement particularly in public gatherings due to contagious nature of disease [19].

It is proved by Bushra Shamshad et.al from canonical correlation analysis that adequate knowledge regarding communicable disease like HIV/AIDS leads to sympathetic attitude towards infected persons. Due to false conception regarding transmission it was recommended to conduct workshops on the awareness in educational programs. We agree with Shamshad that carrying out workshops on importance of lockdown and preventive measures to enhance awareness would have not only reduce the stigma but as well as reduction in the incidence of disease [20].

Study carried out by Shahid, R., Zeb et.al has shown occurrence of second phase of pandemic from 28th October 2020 with 750 cases per day. Our study has also shown start of second phase

of pandemic in fourth 47 days period which was lying between 27th September 2020 to 12th November 2020 and indicate the same period with almost similar number of cases [21].

The result have shown that lockdown has decreased number of cases as evident from data where percentage of affected cases raised from 7.45 percent in lockdown period to 47.04 percent immediately after end of lockdown which however afterwards shown to be invariably reducing pattern unless second wave of COVID-19 started in December.

5. CONCLUSION

The lock down has resulted in limiting spread of disease and huge surge in number of COVID-19 affected cases were observed immediately after lockdown. The number of affected cases were found to be subsequently reduced unless start of second phase of pandemic. On removal of limitations of lockdown, growth factor and frequency of distribution has also indicated toward higher incidence of new viral disease. The results has therefore suggested for conclusion that there is reciprocal relationship between number of affected cases and lockdown.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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