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Impact of COVID-19 on Chandigarh-Its causes, consequences and role of community in preventing its transmission

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Abstract

Present research study demonstrates the current international problem of rapid spread of COVID -19 Virus with special emphasis focused on Chandigarh residents. The response of Chandigarh residents towards lock-down period, their role in dealing and handling of problems and preventing further transmission of Virus has been discussed in detail. The different impact of lock-down period on people staying in different areas of Chandigarh is observed. Variations in life styles of Chandigarh residents with unique revolution followed by some community people during lock down period suggest requirement of well utilization of emergency situations in wise and patient manner. A comparative study of lock down period impact on air quality and COVID-19 reports on Chandigarh, Panchkula and Mohali residents has been done. Panchkula has been reported to show best results in both air quality as well as COVID-19 report results, with better results observed for Chandigarh city and least results for Mohali.

Keywords: Corona, lockdown, Chandigarh, Panchkula, Mohali, emergency situations

1. Introduction

The current international pandemic threat sweeping across the humanity due to transmission of COVID-19 Corona virus has affected the whole globe. It is a strong contagious deadly disease that is transmitted through an infected person via his/her respiratory droplets [1, 2]. However, these droplets are heavy enough and can't be transmitted beyond 1 meter distance. Therefore, it is suggested to maintain at least 1 m distance from an infected person. But, in spite of all these precautions and preventions, it has caused a great disaster worldwide. This is due to lack of complete knowledge about this Virus including its active time to spread infection, proper symptoms, which makes difficult to detect the infected person, improper sanitization conditions and lack of knowledge. The major drawback is unavailability of COVID-19 vaccine and treatment and its spreading through respiratory droplets, which is common and easily transferrable through social communications. On account of its ease of spreading through social communication, which is mandatory for humans as a man is a social creature, who needs to communicate with society for his survival in one way or the other, it has become a prior international problem of concern and issue.

Although, it is believed to be originated from Chinese people, but it has widespread across the world, especially through international migrants. In India, first COVID-19 positive case was reported on 30th January, 2020 in Kerala having an International travel history. During initial stages, people took precautions while wearing masks, washing and sanitizing their hands regularly. They were guided and motivated to maintain personal hygiene and prevent transfer of infection from hands to mouth, nose and skin and wearing masks at public places. The use of soap solution and high alcohol content sanitizers was suggested as they have strong tendency to remove the lipid protecting layer around COVID-19 virus making it ineffective and water removes it completely from the skin. But ease mode of transmission of COVID-19 made it mandatory to maintain social distancing. From the observation of the deadly effects and rapid spread of COVID-19 across the world, India managed to control the Virus spread by making "Stay home Stay safe" and social distancing mandatory for all Indians. However, all essential facilities, including food, health and security are provided respectfully at normal prices are made accessible to public at their door steps.

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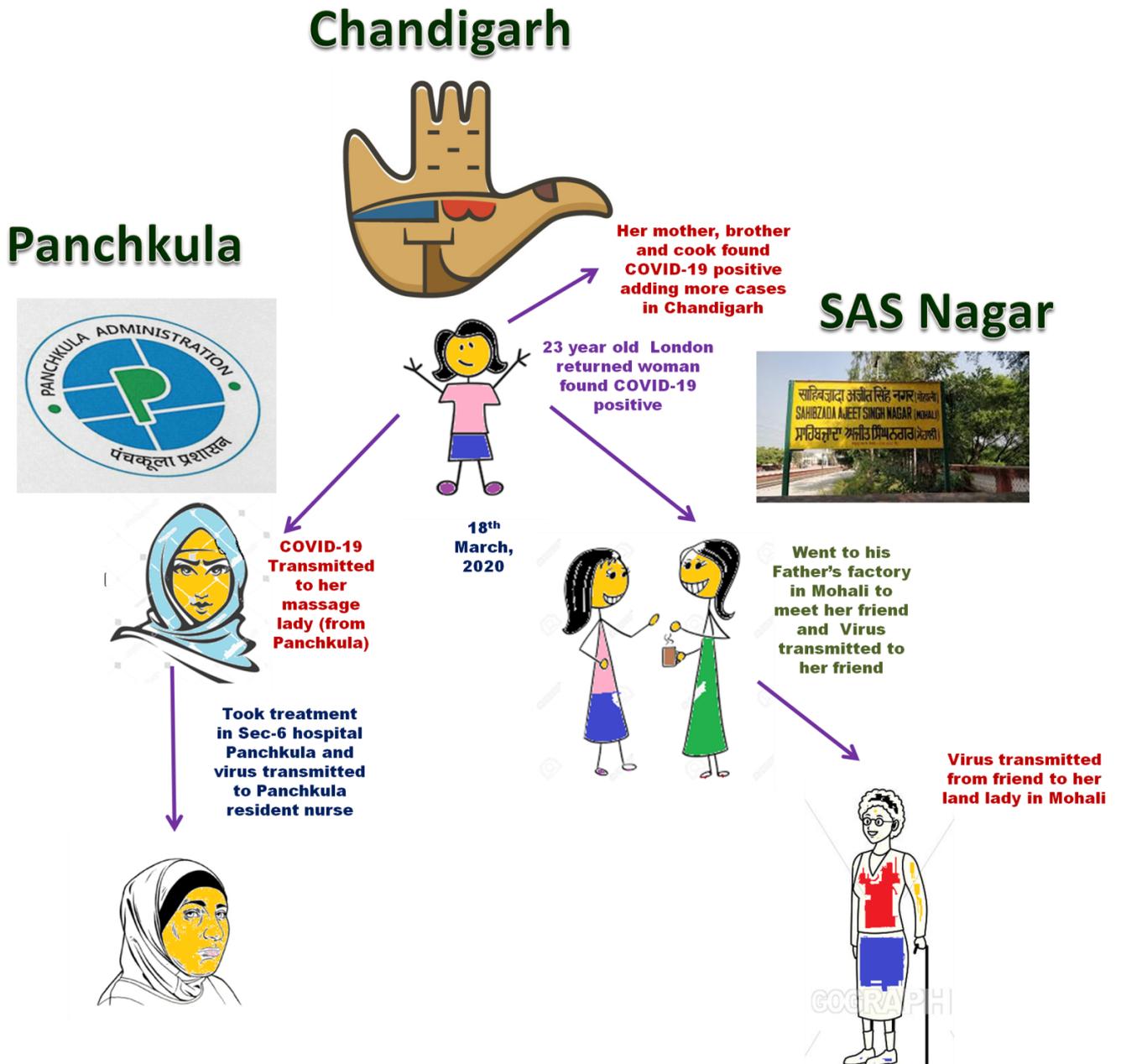


Fig 1: Origination of COVID-19 positive tests in Chandigarh Tricity

Therefore, a well organized and well planned lock down has been declared by India by our respected Prime Minister Narendra Modi.

In the present study, we aim to discuss the impact of lock down on Chandigarh residents, their handling criteria of the problem and contribution in preventing the spread of virus. On 18th March, 2020 first COVID -19 positive case was reported in Chandigarh of a 23 year old London returned woman who showed COVID -19 positive symptoms on 16th March, 2020 [3]. This 23 year old patient had come in direct contact with 12 persons (As depicted in Fig. 1). On 20th March, mother, brother and cook of that infected women were also tested positive. However, her father and driver was tested negative [3] (Fig. 1). Therefore, this woman became source of COVID -19 in Chandigarh tricity and on account of its social communications. Another 26 year old London returned woman was reported the fifth positive case in Union Territory [3]. Till 20th March, 2020 no COVID-19 positive case was reported in Panchkula. But this virus was further transmitted to Panchkula and Mohali districts as

depicted in Fig. 1. In Mohali, first COVID-19 positive case was reported of a 69 year old UK returned woman, who further infected her sister, making another positive case in Mohali. On 23rd March, 80 year old woman (landlady of the Chandigarh girl infected friend) as depicted in Fig. 1 was reported as fifth positive case in Mohali. In the wake of five positive COVID-19 cases, 50% of the U.T. Administration employees were ordered to stay at home and work from home. On account of its effective contagious nature, till 20th March, 42 Chandigarh residents were home quarantined and educational institutions were closed in order to avoid further spread of Virus. In addition, to prevent the spread of COVID-19, UT administration started pasting stickers outside the houses of suspected individuals, who had been home quarantined to intimate people not to visit their places. Moreover, the list of persons, who had been home quarantined was also uploaded on Administration's website. The administration had decided to restrict gatherings at all social, cultural, sports, political and religious events to 50 till March 31. The curfew in Chandigarh tricity was imposed

on 23rd March, 2020 Monday midnight without any relaxation by Chandigarh Administrator and Punjab Governor, V P Singh Badnore [4]. DM Mandeep Singh Brar ordered implementation of Section 144 CrPc, so that the guidelines of home quarantine are strictly followed in the city. Manoj Parida, Adviser to the Administrator stated that the essential service men related to food, health and security will be given relaxation, but under special passes with proper discipline and supervision of security staff. All transport facilities were also withdrawn from 25th March, 2020 onwards. On 25th March, 2020 there was an article in newspaper highlighting curfew like situation in Panchkula [5]. Hence on 26th March, 2020 air quality index of Panchkula has reached green zone (discussed in next section) [6, 7]. On account of lock down and curfew, it was reported in 27th March, 2020 newspaper that there was a significant crime dip [7]. Therefore, lock down and social distancing not only improved air quality but also decreased crime rates. Various sanitation kits were also distributed to people and sanitation tunnel was also established in Sector-26 grain market of Chandigarh. This grain market was given special attention as most of the vendors who were allowed to provide door step delivery of vegetables and fruits purchased these items from Sector-26 grain market. Therefore, there was a strong need to maintain the required social distancing and hygienic condition in this area to prevent COVID-19 transmission in Chandigarh tricity. In addition, Monday was declared as sanitation day and grain market was completely closed for public to allow for doing its full sanitization. Apart, from this, confectionary shops comprising essential items and banks were allowed to open from 11 am to 3 pm daily under proper supervision of a security staff and policemen to maintain decorum of social distancing and hygienic conditions. The positive environment and full cooperation coupled with patient behaviour of grocery shop staff as well as Chandigarh and Panchkula residents made this task easy to manage. In spite of all essential accessible facilities, the social distancing has resulted a tremendous mental pressure on society, had raised various challenges to each citizen to cope up with the current emergency scenario. Therefore, the present study deals with analyzing the impact of social distancing during lock down period on mental health of Chandigarh tricity community belonging to different professions, areas, age groups having versatile lifestyles.

2. Methodology

On account of lock down period, it was difficult to conduct interview analysis from home to home and in different places. Therefore, to analyze the varied responses, response of people in neighborhood, social media videos, skype videos, phone calls with friends, news channels and newspapers were taken as source of collecting information. Therefore, most of the observations reported in manuscript are focused on Chandigarh with special focus on Panjab University, Chandigarh. The effect of lock down period on air quality index of Chandigarh, Panchkula and Mohali were analyzed and comparative study was made based on the reported cases and the way of people dealing with the lock down situation of Chandigarh, Panchkula and Mohali residents, respectively. For this purpose, air quality index data was collected from 13th March, 2020 to 14th April, 2020. This is because lock down period begun from 22nd March, 2020 and transport services were terminated on 21st

March, 2020 [3-7]. In addition people were also locked down during this period in their home; therefore no spurious manmade contaminations were added to the air. But, inspite of same rules implemented by the U.T for all tricity residents, there were variations observed in the air quality index of Chandigarh, Panchkula and Mohali (as discussed in next section). Day by day variations in positive and negative COVID -19 test cases report analysis were done (From 22nd march, 2020 to 13th April, 2020) in the 21 days lock down period, while making observations of the cases reported in the areas and its causes. Recovered cases were observed after 14 days lock down period, i.e. 5th April, 2020 and were found to increase with increase in lock down period days (discussed in next section). This again highlighted the role of tricity residents in contributing towards COVID-19 fight.

3. Results and Discussions

3.1. Effect of lock down period on social behaviour of Chandigarh tricity

The first and foremost positive impact of lock down on people was a feeling of equality amongst people. This is because; they all were locked down for common cause. In addition, motivational speeches by our respected Prime Minister and other celebrities played a vital role in developing a feeling of patriotism and equality amongst community people. Moreover, all people in the neighborhood appeared at the same level, irrespective of their designation, profession and their financial status. This is because, no maids, no servants or cleaner were allowed to enter during lock down period. Therefore, all people worked alike, completed their home tasks on their own. This made a feeling of equal status amongst people of the locality, as in normal days, living standard, and their servants, which can be afforded in one family but may not be afforded in the other family made them a bit differentiated. Apart, from this it was also observed that each family member in a particular family started making some contribution in household work. This made strong bond and interaction between family members, which was missing during normal busy hectic days. It helped in developing feeling of affection love and care amongst family members. In addition, the home cooked food is always more hygienic and healthy, that supports health of family members. Moreover, the routine work made them physically fit as just sitting idle makes a person lazy and causing mental stress. However, some challenges were faced by parents having small children. This was because, it became difficult to stop children to maintain social distancing with their age mates and friends and more challenging to make them understand the need of social distancing. People followed proper discipline and maintained appropriate distances while doing essential items shopping from nearby open stores and wore proper masks. In addition, regular inspection and supervision was done by police and security staff in Panjab University campus to maintain the proper precautions to prevent people from virus transmission during shopping of essential items. Even the shopkeepers also allowed one person at a time to enter their shops and sanitized their hands before allowing them to enter their shop. In addition, aerial surveillance was conducted and time to time disinfectant sprays were sprayed on the residential areas of Chandigarh from time to time. The proper security check up and cooperative behaviour of Chandigarh residents coupled with well educated staff of

Chandigarh shops made handling of this emergency situation easier with control of virus spread in Chandigarh. As every coin has a head and tail, every positive effect is coupled with a negative one. In this crucial COVID-19 problem, in spite of tremendous effect of each family to maintain an optimistic approach, after around one week time, some panic and stress levels were observed amongst community people on account of abnormality occurring in society. Especially, watching news channels for longer time created more panic. This stress had to be handled by family members amongst themselves. Some personal problems amongst family members sitting idle increased more, resulting in some stress. However, people managed to handle problems by sharing their stress on phone and skype videos with stress counselors. But, prolonged lock down period created as sort of metal stress amongst people, especially for those, whose works were suffering and were daily wagers. To overcome stress, people started doing morning walks at around 4 am to 5 am in the morning, but on account of strict curfew, they were stopped from doing that. They were motivated to do yoga and relaxing exercise practices at their terrace to overcome stress and manage health fitness.

3.2. Effect of lock down period on air quality of Chandigarh tricity

Fig. 2 represents the variations in air quality index of Chandigarh, Panchkula and Mohali from week before lock down period (13th March, 2020 to 20th March, 2020) to 21 days lock down period (from 23rd March, 2020 to 13th April, 2020). X-axis represent the number of days considering 13th March, 2020 as Day 1 and 14th April, 2020 as 33rd day with day by day intervals in between and Y axis represent the variation in air quality index from normal days to lock down period days. From the results, we find that before the lock down period, best air quality is observed for Panchkula, followed by Chandigarh and least air quality for Mohali. The better air quality for Chandigarh is on account of its advantage of maintaining its clean and green city environment but slightly less than Panchkula on account of its more population as compared to Panchkula. This implies that mankind is a strong contributing factor of diminishing air quality index, irrespective of similar weather and other natural and artificial facilities.

From Fig. 2, we observe that with increase in days of lock down period, air quality increases as can be indicated from decrease of air quality index with increase in number of lock down days. This can be concluded from increase in air quality of Chandigarh, Panchkula and Mohali by 60%, 31% and 62%, respectively after 14 days lock down period. It is interesting to note a steep increase in air quality index values from 17th March-19th March, 2020 (as compared to normal observed values of 69, 59 and 80, or Chandigarh, Panchkula, Mohali, respectively on 6th March, 2020) indicating a strong diminishing of air quality during beginning stage of lock down period. This was arisen due to a panic created during this time period, which resulted in higher increase in travel record of people to return to their homes due to emergency situations. Educational and other working institutions had instructed students and staff to vacate hostels. Panjab University Chandigarh which comprises a large number of student's population had declared the same emergency and students started migrating to their home places from 16th March onwards. This led to

major contribution of air contamination from mankind in the form of pollution due to excess population travel in comparison to normal situations.

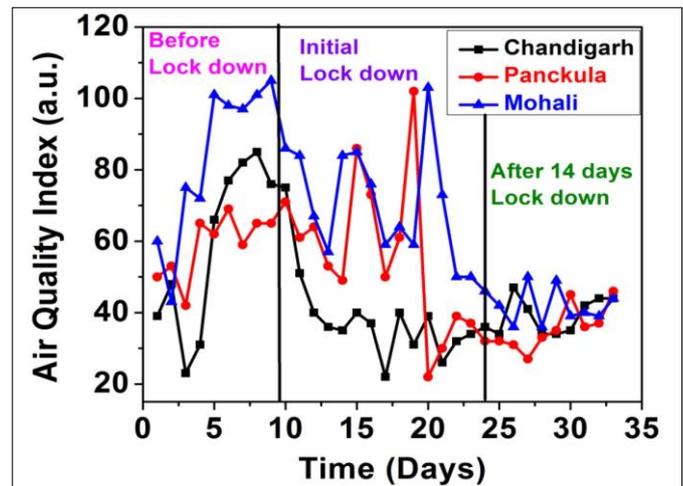


Fig 2: Variation of air quality index with increase in lock down period.

In the initial lock down period (as labeled in graph of Fig. 2), we observe that air quality of Chandigarh has improved to a greater extent as compared to Panchkula and Mohali. This indicates a strict and discipline follow up of lock down by Chandigarh residents in the initial stages of lock down. This can be concluded from the fact that as mentioned earlier, mankind is a strong source of contaminant in air quality of a particular area. Chandigarh residents followed strict lock down and stayed inside their home. This can be observed from the air quality results and reported increase in negative COVID-19 cases of Chandigarh with increase in number of lock down days (Fig. 3) (discussed in next section). This has also been reported in various newspapers. This was also observed in our neighborhood areas of Panjab University, Chandigarh, where people maintained proper social distancing, open playing of children in groups was stopped from 1st day of lock down period. Morning and evening walks were stopped and residents started doing morning exercises in their respective open terraces with their family members while maintaining the desired social distance. People had completely stopped using their vehicles and preferred to take grocery and essential items at their doorsteps by ordering online or on phone call from the nearby confectionery shop. Neither sweepers nor any other outsider (except essential item vendors with proper passes) were allowed to enter Panjab University gates. Moreover, Panjab University had closed its two entry gates (Gate no. 1 and 3, respectively (out of 3 gates)) to ensure complete obstruction of any trespassers during lock down period. In addition, proper and strict security staffs were recruited at each gate to keep proper check of any trespasser and residential people to maintain the lock down decorum. Proper security staff was also made on duty for 24×7 on the sole open gate (Gate no. 2) to ensure entry and exit of essential services people with proper passes and permission.

3.3. Effect of lock down period on COVID-19 test reports of Chandigarh

Fig. 3 represents the effect of lock down period on COVID-19 test reports of Chandigarh. From the results, we find a strong linearity in negative test cases with increase in lock

down period. Therefore, we can say that lock down has not only amended the air quality of Chandigarh but also maintained health status of people. Moreover no increase in positive cases has been observed in Chandigarh.

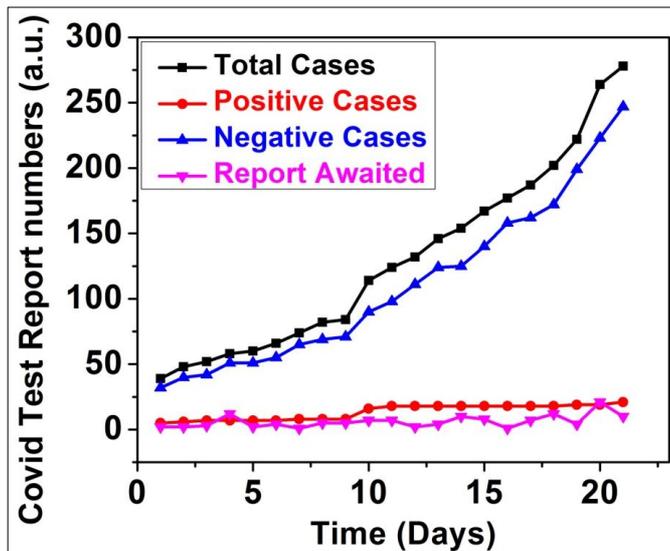


Fig 3: Variation in number of COVID-19 cases with increase in lock down period.

The origin of COVID-19 in Chandigarh was international travel history, but the data reveals absence of any communicable transmission. This can be attributed to the wise handling of this emergency situation and home quarantining people at appropriate times, with full cooperative behaviour by Chandigarh and Panchkula residents. The recovery cases reported after 14 days quarantine period and recorded from 5th April, 2020 onwards also showed linearity with lock down period with saturation observed after 7th April, 2020 (as indicated in Fig. 4). The availability of better medical facilities like PGMIR and Government medical college and Hospital (GMCH-32) in Chandigarh as compared to Panchkula and Mohali also made the best contributing factor in recovering Chandigarh COVID-19 positive patients. The full dedication of medical staff of Chandigarh and other states deserve a great applause during this emergency situation.

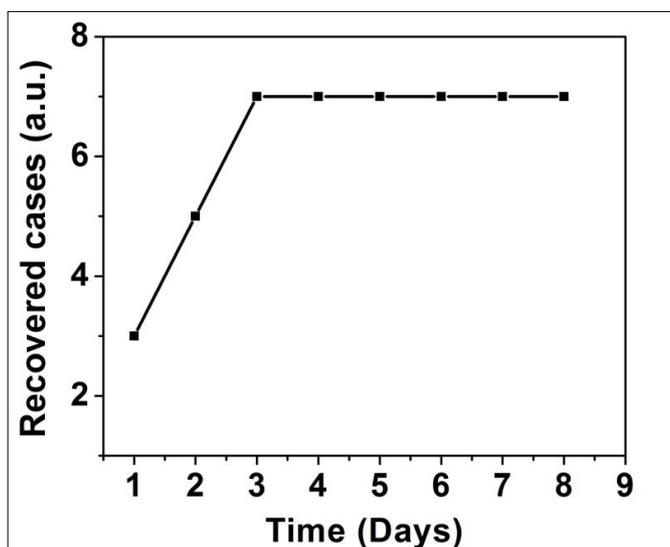


Fig 4: Variation in recovered cases of Chandigarh with increase in lock down period.

Till the completion of first phase of lock down period, from 22nd March, 2020 to 14th April, 2020, no communicable transmission case of COVID-19 was reported in Chandigarh. Each positive tested patient had some sort of travel history (National or International) and got infected due to that. This clearly indicates that Chandigarh residents followed complete lock down period with no emergence of any spurious emergency. This led to prevention of communicable transmission of COVID-19 amongst residents. Therefore, lock down period has proven to be a great source of fight against COVID-19 in Chandigarh.

3.4. Comparison of effect of lock down and social distancing on COVID-19 test reports and air quality of Chandigarh, Panchkula and Mohali.

Table 1 lists the comparative study of tricity COVID-19 reports on the final day (14th April, 2020) of completion of first phase of lock down period (from 22nd March, 2020 to 14th April, 2020). From the results, we observe that Panchkula showed best results amongst the three districts, with least number of positive cases and more negative cases as compared to both Chandigarh and Mohali. Moreover, its total samples tested are also more as compared to both Chandigarh and Mohali. In addition, number of active cases is also least for Panchkula, confirming lesser probability of getting positive COVID-19 cases in future. Numbers of active cases in Mohali are more as compared to Chandigarh and Panchkula, indicating greater risk of transmission of Virus through social communication in future. Therefore, Chandigarh and Panchkula have successfully completed the lock down period and have lesser active cases indicating better security and safety in future from COVID-19, while maintaining the same precautions and hygienic conditions in future.

Table 1: COVID-19 test reports of Chandigarh Tricity

City	Total Cases	Positive Cases	Negative cases	Recovered cases	Reports Awaited	Active cases
Chandigarh	295	21	261	7	13	14
Panchkula	458	5	369	2	74	3
Mohali	832	54	742	5	36	49

However, significant impact of lock down in air quality of Mohali has been observed. Highest improvement of 62% in air quality is reported for Mohali as compared to Panchkula (60%) and Chandigarh (31%), respectively. But probably proper social distance and other hygienic discipline amongst Mohali community people were not followed properly, which led to communicable spread of virus in Mohali residents.

4. Conclusions

Present study aimed at analyzing the effect of lock down period and social distancing on Chandigarh tricity with special emphasis on Chandigarh and Panchkula. Their way of dealing the lock down period and maintaining proper social distancing and hygienic practices reported positive impact of lock down on air quality and health on Chandigarh and Panchkula residents. A feeling of equality and patriotism has been found to develop during lock down period. A strong family bonding was observed in most of the families, with small stress levels enhancement in certain families after one week lock down period. The greatest advantage of lock down can be viewed from absence of any

socially communicable report of COVID -19 positive till first phase of lock down period (from 22nd March, 2020 to 14th April, 2020) in Chandigarh. Panchkula had reported best results in both air quality as well as COVID-19 test reports followed by Chandigarh city. However, Mohali could not report satisfactory results in comparison with Chandigarh and Panchkula, but has shown significant amendment in its air quality.

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