

How safe/unsafe is it to allow home quarantine for covid-19 positive patients for themselves and their immediate contacts: a study within home quarantines of Kamrup Metropolitan, Assam, India

Abstract

In Covid 19 pandemic during the 1st wave in India which made people to remain in home quarantine. More than 25000 people within Guwahati Metro had been in Home Quarantine. Transmission of SARS-CoV-2 can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings.¹ We wanted to understand whether during this 'waiting period' until they received the RTPCR Reports, whether they spread the infection to other person(s) living closely with them at home environment and what were the probable high risk behaviour. The aim was to understand, "How safe/ unsafe was it to allow Home Quarantine of covid-19 positive patients for themselves and for their immediate contacts?"

Study population: Home quarantines of Kamrup Metro, Assam, India

Inclusion Criteria: Confirmed covid-19 positive cases by RT-PCR who consented to participate in the study

Exclusion Criteria: Who declined to participate/not within Kamrup Metro

Duration of study: 27th May 2020 till 25th July 2020

Materials: Data collection was done using 2 sets of formatted Questionnaire through Google form submission at 'docs.google.com'. One set was a general performa for all quarantines with home quarantine related questions, persons identification, including household conditions with basic amenities, rooms, toilets, use of masks, cleaning of high risks areas, query of members of family, covid tests result etc. (This remote model of monitoring was conceived and design by 1st and 2nd Author).

Methods: Volunteers involved with the Covid sentinel project of Pratishruti Cancer and Palliative Trust and Assam police initially identified covid positive persons during distant monitoring over phone and video call.

Results: Total persons monitored 25000 where total SARS Cov-2 positive by RT PCR was 0.5%. Symptomatic 18%, asymptomatic 82%. Transmission within family members 4.06%.

Conclusion: We found it was safer for covid positive persons both asymptomatic and mildly symptomatic to be home quarantined.

- The family members had increased risk of getting infection however it could be minimized by strictly adhering the home quarantine norms.
- The presence of co-morbidity was associated with presence of severe symptoms were not found as it could be due to largest proportion of covid positive between 20 to 40 years age group.
- The sharing of common toilets by family members and living within the facility were found to be the high-risk behaviour.

Keywords: SARS Cov2, home quarantine, RT PCR, transmission, high risk, monitoring

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Abbreviations: CISF, central industrial security force; RT PCR, polymerase chain reaction

Introduction

In Covid 19 pandemic during the 1st wave in India had made people to remain in home quarantine. More than 25000 people within Guwahati Metro had been in Home Quarantine. Under certain conditions quarantines were allowed to directly isolate themselves at

their homes by Government of Assam, subject to certain conditions. Assam Police was taking voluntary participation of civil society to help them to monitor the people under quarantine. Renowned NGO 'Pratishruti Cancer and Palliative Trust' had partnered with Assam Police under the "Covid sentinel project" and was monitoring the home quarantines and educating them on quarantine rules. At the same time, the NGO was providing psychosocial counselling by experts, Offering Telemedicine consultations for those with health issues and was also providing regular ration requirement data and SOS inputs in

emergency. All requests were routed through District Administration through Guwahati Police. Such people who were quarantined at home got their Covid swab test reports within 4 to 14 days (in positive cases it was generally less than 10 days).

Transmission of SARS-CoV-2 could occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings.¹ We wanted to understand whether during this ‘waiting period’ until they received the reports did they spread the infection to other person(s) living closely with them at home environment and what were the probable high risk behaviour. The aim was to understand,

‘How safe/ unsafe was it to allow Home Quarantine of covid-19 positive patients for themselves and for their immediate contacts?’

This research question has a bearing on following issues

- Was it safer for covid positive persons to be home quarantined/ isolated?
- Whether the family members were at an increased risk of contracting the infection?
- What was the relation of symptomatic/ asymptomatic cases and subsequent infectivity among the members in the family?

Results

Table 1.

Table 1 Parameters

Parameters	Numbers	Comments
Total cases covid positive	123[0.5%]	Against 25000 home quarantines
Symptomatic	22[18%]	Found in quarantine confirmed by RT-PCR
Asymptomatic	101 [82%]	No change of their normal well-being till 14th day
Evidence of transmission case to family members	5[4.06%]	Mild symptoms –fever cough sore throat, malaise, diarrhea
Total persons with co-morbid conditions	26%	High BP, Cancer, Diabetics, Liver ,Heart disease
Days required to receive PCR reports	4-10days Average 7days	Equal to total days of exposure to family members
Intensive care required during Hospital stay	Nil	All symptomatic cases were treated by paracetamol, cough syrups and vitamins
Age groups		
<18 years[children]	3.50%	
<20 years	5.70%	
21-30 years	35.70%	81% cases with 20-50years age group
31-40 years	26.60%	
41-50 years	18.90%	
51-60 years	9.00%	
>61 years	4.10%	
Males	67.40%	
Females	32.60%	
Mean age	31.2years	Majority of people within the values of 30 to 35 years who returned from outside home state (Assam) outside Assam means from different parts of India and Abroad who are permanent resident of Assam and so were quarantined.
Mode age	33years	
Median age	32.6years	
People use individual toilet	39.20%	
People use family toilet	41.50%	
People use public toilet	19.30%	
Agencies quarantine facility positive cases [CRPF,BSF, ITBP etc]	22[18]	cases tested positive only in second test which indicates cross infection borders.
	39	
	[31%]	

- Whether co-morbidity was associated with presence of severe symptoms?
- Whether use of common toilets and spread to close contacts had independent relation to transmission?

Materials

Data collection using 2 sets of formatted Questionnaire through Google form submission at ‘docs.google.com’. One set was a general performa for all quarantines with home quarantine related questions, persons identification, including household conditions with basic amenities, rooms, toilets, use of masks, cleaning of high risks areas, query of members of family, covid tests result etc. The second form was filled up only when the person completely recovered along with his family related history of tests to covid-19 with detail history.

Methods

Volunteers involved with the Covid sentinel project of Pratishruti Cancer and Palliative Trust and Assam police initially identified covid positive persons during distant monitoring over phone and video call. Then Investigators spoke to covid positive persons to get further medical history and other data along with verbal consent of participation in the study. The investigators continued to follow up till last RT PCR reports of persons under quarantine and immediate contacts at home.

Discussion

The common symptoms among symptomatic cases were cough, fever, sore throat, malaise, diarrhoea headache etc. No cases had any breathing difficulty in our study. They all were cared in covid-19 care centers or in hospitals; however none of the cases required intensive care. SARS-CoV-2 transmission appears to mainly be spread via droplets and close contact with infected symptomatic cases.¹ One of the biggest concern of covid-19 virus was that of extremely high infectivity rate. Four independent studies from Brunei, Guangzhou China, Taiwan and the Republic of Korea found that between 0% and 2.2% of people with asymptomatic infection further infected someone else, compared to 0.8%-15.4% of people with symptoms.²⁻⁴ Systematic reviews suggests that individuals without symptoms were less likely to transmit the virus than those who develop symptoms.^{1,2,5-8}

There were series of debates on whether asymptomatic cases spread to others or not. Transmission from infected people without symptoms is difficult to study. Definition of asymptomatic means, no symptoms or physical discomfort experienced by covid-19 virus test positive person in entire duration of 14 days of quarantine. Once World Health Organization commented that symptomatic patients doesnot transmit and then later changed their stand. This change in statement was because some studies did not clearly describe how they followed up with persons who were asymptomatic at the time of testing to ascertain if they ever developed symptoms. Others defined "asymptomatic" very narrowly, as persons who never developed fever or respiratory symptoms at a particular point of time, rather than as those who did not develop any symptoms at all.^{9,10}

In an analysis of 75,465 COVID-19 cases in China, 78-85% of clusters occurred within household settings, suggesting that transmission occurs during close and prolonged contact.¹¹ A study of the first patients in the Republic of Korea showed that 9 of 13 secondary cases occurred among household contacts.¹² Our study showed very small percentage of transmission 4.08 % [5 cases] within house hold setting as 4th case was not in household setting, Index case means first case detected in the family and transmission from him to others was confirmed by second or subsequent tests in family members after exposure from him.

Case report 1

The first Covid positive [Symptomatic] person who had travelled with his family was quarantined along with 2 small children and wife. During quarantine, he developed fever and cough. His report came as positive after 6 days and second tests for 2 children and wife were done. The children report came as positive after 13 days who were asymptomatic and still wife was negative in spite of living with the children.

Case report 2

Second person was symptomatic, a health care worker, working from home tested Covid positive and along with another member of his family, indicating that he was the source. They had used family toilet. The source could be surface, droplet or toilet anything within family.

Case report 3

Another [asymptomatic] person who had travelled with minor son was quarantined at home. His result came as positive and son was negative. The second test was positive for son and another 2 members in the family. Probably the common toilet was the source of infection. Index person also had physical disability.

Case report 4

CRPF Personnel and their family members had different kind of common quarantine facility. One couple with 2 kids was quarantined. Their 1st test results were negative. The family was retested as some other person in the common facility had turned positive. During second test, the father in the family become positive and in second tests the kids were tested positive who were symptomatic. Finally, the mother was tested positive in 3rd test. This spreading could be due to 2 factors, the mother was likely to have contracted from the symptomatic children, while the kids contracted from their father. Source of infection for the father remains obscure. The CRPF quarantine centre maintained good social distancing in living and there were good regulations of movement, however, the big issue was the use of common toilet. So, it was highly likely that they all got infection from the common toilet.

It was observed that the caveat of many studies was wrong categorization of symptomatic /asymptomatic cases. If the categorization was done at the time of testing in pre symptomatic period, then it is likely that a proportion of cases later become symptomatic and was wrongly categorized as 'asymptomatic' due to lack of feedback hoping of the changed status in the studies to rectify. But this study incorporated the data with complete follow up information of not only index covid positive persons but also of that of their family members or close contacts.

Indian reports showed 69-80% cases were asymptomatic and our data also showed similar trend within this range [82%]. However, 'The Center for Disease Control and Prevention, USA' reported 20-40% people as asymptomatic among their population.

Current evidence suggests that the transmission of SARS-CoV-2 occurs primarily between people through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions, or through their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings.¹ When we detailed the 4 families household conditions, we found that their common factor was the common toilets for all members. The nature of transmission of 4 families suggests a strong possibility of transmission through use of common toilet. Three studies have cultured SARS-CoV-2 from stool specimens.¹³⁻¹⁶ Multiple families were using common toilets in case no 3 and large number of individuals use random toilets in quarantine facility in case no 4. The members in a single family [case no 4] sequentially tested positive from an unknown source whereas their first tests after travel were negative. From the data of special quarantine facilities of CISE, BSF, ITBP with common toilets, we found that the majority of them turned positive after a few positive cases were detected in quarantine. So, it strongly indicates that the common toilets were major source of spread, irrespective of symptomatic or asymptomatic clinical condition of the index cases.

The prevention of transmission was best achieved by identifying suspect cases as quickly as possible, testing, and isolating infectious cases.^{17,18} In addition, it was critical to identify all close contacts of infected people¹⁸ so that they could be quarantined¹⁹ to limit onward spread and break chains of transmission. However, as the literature reflected 7 out of 13 could be infected in home contacts, which was a very high infectivity rate, so merely home quarantine will not prevent transmission. Thus, the education on quarantine rules [social distancing within with in home etc], safe hygiene practices and monitoring of home quarantined population to ensure was a critical aspect. Very low infectivity in our study could be linked to 82%

asymptomatic cases, education of home quarantine rules and strict monitoring by voluntary agency on the job. The study also found home quarantine is safer if conditions laid down by Indian Council of Medical Research Guidelines are followed.²⁰

Summary of answers against 5 key questions

- a. We found it is safer for covid positive persons both asymptomatic and mildly symptomatic to be home quarantined.
- b. The family members have increased risk of getting infection however it can be minimized by strictly adhering the home quarantine norms.
- c. The relation of symptomatic/ asymptomatic cases and subsequent spread of infection in the family is not much clear as other confounding factors were not controlled [it is not a case control study].
- d. The presence of co-morbidity is associated with presence of severe symptoms were not found as it could be due to largest proportion of covid positive between 20 to 40 years age group.
- e. The sharing of common toilets by family members and living within the facility were found to be the high-risk behaviour.

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Conflicts of interest

The authors declared that there are no conflicts of interest.

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