

Original Research Article

Prevalence of COVID symptoms, their severity and duration: a gender based analysis

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ABSTRACT

Background: COVID -19 is the most important public health problem of recent time. Approximately (60%) of those infected develop symptoms. Study is needed to assess the prevalence of COVID-19 symptoms, their severity and duration, secondary attack rate and COVID-19 appropriate behaviour for prevention and control of infection. The aim was to assess the prevalence of COVID-19 symptoms, secondary attack rate and COVID-19 appropriate behaviour of infected person.

Methods: Present cross sectional study was done among patients who recovered from COVID-19 in Meerut district. After obtaining mobile numbers of patients, they were asked about their experience about pre-COVID, COVID and post-COVID period. Total 100 patients were contacted using simple random sampling and information was collected on predesigned Google form.

Results: Out of total respondents 98% developed one or more symptoms. Fever was reported to be most common problem (72%) followed by body ache (62%). Most classified their symptoms as mild and moderate (36% and 43% respectively). There was no statistically significant difference for duration and severity of illness based on gender. While 21% categorized their symptoms as severe and very severe. All 100% patients followed COVID-19 appropriate behaviour post infection frequent hand washing and use of sanitizer being the most common behaviour (79%). Other commonly followed COVID-19 appropriate behaviours were use of face mask (68%), maintaining distance of more than 6 feet (65%).

Conclusions: COVID-19 symptoms are common among patients but are usually less severe. Most of the patients are following COVID-19 appropriate behaviour to lessen burden of infection to others. Results also highlight the need of early testing to reduce infection in family members.

Keywords: COVID-19, Post COVID symptoms, Cross sectional study, nCoV, SAR

INTRODUCTION

COVID-19 is the most important public health problem of recent time. It is the disease caused by a new corona virus called SARS-CoV-2. Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several corona viruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East respiratory

syndrome (MERS) and severe acute respiratory syndrome (SARS). The most recently discovered corona virus causes corona virus disease COVID-19.¹ Very little is known regarding percentage of people who remain asymptomatic or develop symptoms. In this regard as per one evaluation of records in China approximately 60% of patients develop symptoms.²

WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of viral pneumonia in Wuhan, People's Republic of China.³

There are studies conducted in different part of world to evaluate symptoms associated with COVID-19. The most common symptoms of COVID-19 were fever, dry cough, fatigue.³ Other symptoms that were less common and affected some patients included loss of taste or smell, nasal congestion, conjunctivitis (also known as red eyes) sore throat, headache, muscle or joint pain, different types of skin rash, nausea or vomiting, diarrhea, chills or dizziness.⁴ The disease is usually having mild to moderate symptoms. However some patients may develop severe disease. The symptoms of severe COVID-19 disease include shortness of breath, loss of appetite, confusion, persistent pain or pressure in the chest, high temperature (above 38°C).⁴

Other less common symptoms were irritability, confusion, reduced consciousness (sometimes associated with seizures), anxiety, depression, sleep disorders, more severe and rare neurological complications such as strokes, brain inflammation, delirium and nerve damage.⁴

People of all ages who experienced fever and/or cough associated with difficulty breathing or shortness of breath, chest pain or pressure or loss of speech or movement should seek medical care immediately.⁴

Ministry of health and family welfare had issued guidelines for COVID-19 appropriate behaviour. It had been suggested in guidelines that if someone had any symptoms suggestive of COVID-19, he must call his health care provider or COVID-19 hotline for instructions and find out when and where to get a test, stay at home for 14 days away from others and monitor your health. If local guidance recommended visiting a medical centre for testing, assessment or isolation, patient must wear a medical mask while travelling to and from the facility and during medical care. He/she must keep at least a 2 metre distance from other people and avoid touching surfaces with his/her hands. This applied to adults and children both.⁷

Being new corona virus (noble CoV), all the people who were in contact with primary case were susceptible with almost nil immunity. Only natural infection or vaccine can provide some kind of protection. Very less reports were available regarding secondary attack rate (SAR). In one evaluation in China they have calculated SAR approximately 35%.⁷

Over past one year we have progressed in many aspects of COVID-19 prevention and treatment. India has developed and maintained a large infrastructure for successful treatment of patients suffering from COVID-19, we have also progressed in field of vaccination. For successful prevention it was very important to understand actual magnitude and severity of problem, COVID-19

appropriate behaviour taken by patients and secondary attack rate associated with infection.

Present study had been conducted to assess prevalence of various symptoms in COVID-19 positive patients, to assess their COVID appropriate behaviour to save self and other household members, to calculate secondary attack rate among household members and reason behind completion of their isolation.

Aims and objectives

The aims and objectives were to assess the prevalence and severity of COVID-19 symptoms; to evaluate gender based difference in severity of disease produced and duration of symptoms; to assess COVID-19 appropriate behaviour of patients and to calculate SAR among household members.

METHODS

Present cross-sectional study was conducted in urban area of Meerut. List of COVID-19 positive patients was obtained from L. L. R. M. medical college. Both hospital admitted and home isolation patients were included in the study. All positive patients (RT-PCR, Trunat positive and rapid antigen positive patients) were included. A Google form regarding variable parameters patient experienced during course of illness was developed in Hindi.

Sample size was calculated assuming prevalence of COVID-19 symptoms as 50%, 10% absolute allowable error and 95% confidence interval using the formulae,

$$N = \frac{(1.96)^2 PQ}{D^2},$$

sample size thus calculated came out to be 96. However this was rounded about to 100.

The list of patients with their mobile number was obtained from medical record department L. L. R. M. medical college and 100 patients selected randomly using random number table. Thereafter all the selected candidates were contacted telephonically and explained in detail about motive of study and information regarding filling and submitting Google form was given. Google form sent on their registered mobile number. Responses collected as above method were analysed and result obtained.

RESULTS

In present study total 100 patients have submitted the response. Out of these 58 %were males and 42% were females.

Among various age group 57% patient belong to 20-40 age group, 35% belong to 40-60 age group while only 8%

were 60 years and above. No patient was below 20 years of age.

Out of total respondents 98% developed one or more symptoms. Fever was reported to be most common problem (73%) followed by body ache (62%). Cough, loss of taste, anosmia and sore throat was reported in 52%, 46%, 44% and 41% of the respondents. Other symptoms reported were breathlessness, chest tightness, running nose, diarrhoea, vomiting, headache and backache. 2% of the patients did not develop any symptom at all.

Most of the respondents classified their symptoms as mild and moderate (35% and 44% respectively) as per WHO guidelines. While 21% of respondents categorized their symptoms as severe and very severe.

When compared regarding severity of symptoms total 98 (98%) participants developed one or more symptoms. All the female participants of study reported symptoms. In mild symptoms male and female proportion was 17.3% and 19.4% respectively. In comparison to this for moderate symptoms male and female proportion was 26.5% and 16.3%. For severe symptoms male and female proportion was 13.3% and 7.1% respectively. However these gender based differences were not significant statistically ($p > 0.05$).

Regarding duration of symptoms, 83.7% of the respondent informed to suffer from symptoms for less than 10 days while 17.3% of the respondent suffered symptoms for more than 10 days. When we made comparison between male and female 47.9% of the males and 35.7% of female experienced symptoms for less than 10 days. However for symptoms more than 10 days the values for males and female were 9.2% and 7.1% respectively. The difference between male and females with regards to duration of symptoms was statistically non-significant ($p > 0.05$).

74% of the respondents answered that their daily routine hampered while rest 26% denied that symptoms hampered their daily activity (Figure 1).

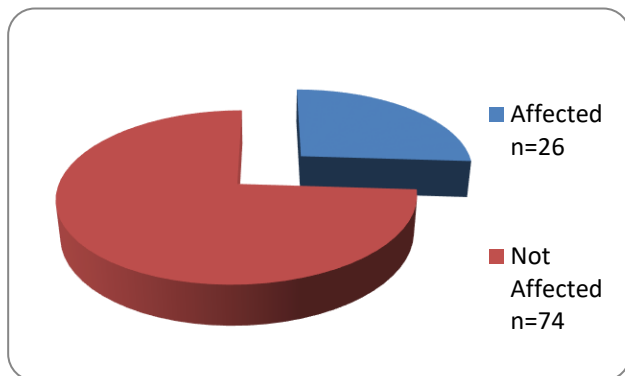


Figure 1: Effect on daily activities.

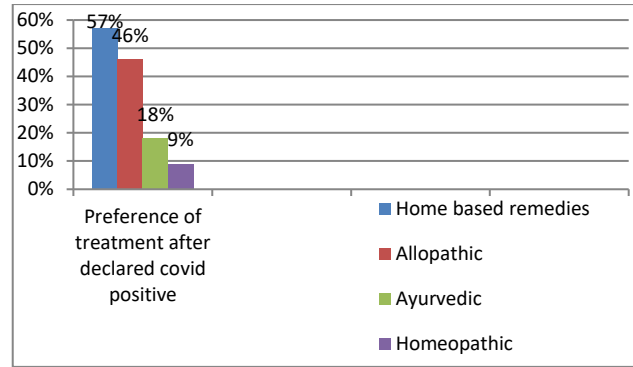


Figure 2: Preference of treatment (multiple response).

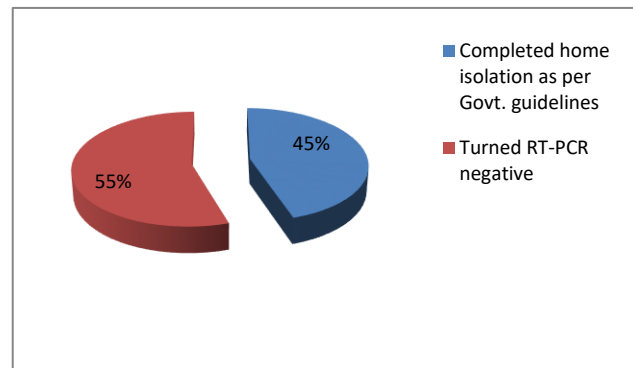


Figure 3: Reason for isolation completion or discharge from hospital (multiple choice).

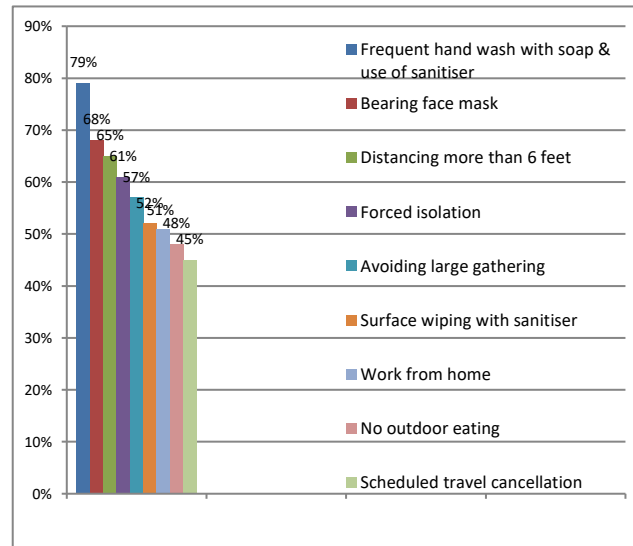


Figure 4: COVID-19 appropriate behaviours following COVID-19 infection.

In the study 57% of participants reported that they have opted for home based remedies as a first modality of treatment (Figure 2). However among treatment modalities allopathic treatment was preferred by almost half of the COVID-19 positive individuals (46%). Ayurvedic and Homeopathic was opted by 18% and 9% respectively.

Table 1: Prevalence of COVID-19 symptoms*.

Type of symptoms	No. and % (N=100)
Fever	73
Body ache	62
Cough	52
Loss of taste	46
Anosmia	44
Sore throat	42
Breathlessness	32
Chest tightness	22
Running nose	13
Diarrhea and vomiting	13
Headache	2
Backache	2
No symptoms	2

*Multiple response.

Table 2: Perception of patients regarding severity of COVID-19 symptoms (WHO).

Severity of COVID-19 symptoms	No. (%)
Moderate	43 (43.8)
Mild	34 (34.69)
Severe	20 (20.4)
Very severe	1 (1.02)
Total	98 (100)

When inquired the reason for discharge from hospital/or completion of home isolation, 55% participants informed that their RT-PCR report became negative while 45% reported that their isolation period completed as per Government guidelines (Figure 3).

Table 3: Severity of symptoms and relationship with gender.

Sr. No.	Severity of symptoms	Male N (%)	Female N (%)	Total N (%)
1.	Mild	17 (17.3)	19 (19.4)	36 (36.7)
2.	Moderate	26 (26.5)	16 (16.3)	42 (42.86)
3.	Severe	13 (13.3)	7 (7.1)	20 (20.4)
4.	Total	56 (57.1)	42 (42.9)	98 (100)

df=2; χ^2 tabulated=5.99; χ^2 calculated=2.32 (p>0.05 non-significant).**Table 4: Duration of symptoms and their relationship with gender.**

Sr. No.	Duration of symptoms	Male N (%)	Female N (%)	Total N (%)
1.	Less than 10 days	47 (47.9)	35 (35.7)	82 (83.7)
2.	More than 10 days	9 (9.2)	7 (7.1)	17 (17.3)
3.	Total	56 (57.1)	42 (42.9)	98 (100)

df=1; χ^2 tabulated=3.841; χ^2 calculated=0.06; p>0.05 not significant.**Table 5: SAR.**

Sr. No.	Total number of household members	Total number of susceptible after excluding primary case	Total number of patient underwent COVID-19 testing	Total susceptible became positive	Secondary attack rate (%)
1.	480	380	315	135	42.8

In the study we also asked total number of household members and out of those how many became positive. Total household members of all the 100 participants were 480. After excluding primary case the number of susceptible came out to be 380. Out of these 380, total 315 undergone COVID-19 testing. A total of 135 members became positive. SAR was calculated to be 42.8%.

It was evident from survey that almost 100% patients followed one or other COVID-19 appropriate behaviour with frequent hand washing and use of sanitizer being the most common behaviour (79%) (Figure 4). Other

commonly followed COVID-19 appropriate behaviours were use of face mask (68%), maintaining distance of more than 6 feet (65%), steam inhalation (64%) and saline gargle (62%). Apart from these other frequently practiced behaviours in decreasing order were forced isolation (61%), avoiding large gathering (57%), surface wiping with sanitizer (52%), work from home (51%), no outdoor eating and avoiding physical contact with others (48% each) and scheduled travel cancellation (45%).

On inquiring further that whether they were observing same level of COVID-19 appropriate behaviour before getting infected 78% of respondent reported that there

was a reduced level of these practices previous to getting infection.

DISCUSSION

Out of total study participants 58% were males and 42% were females. While in a study done by Helpin et al males were 54% and females were 46%.⁴ Chaolin et al also observed that male were 52%.⁵

Among various age group 57% patient belong to 20-40 age group, 35% belong to 40-60 age group. When it was compared with corona virus cases in India as of 9 July 2020, it was observed that maximum patients belonged to 60-74 years age group and 45-59 years age group (40.2% and 35.1% respectively).⁶ Median age was found to be 57 years by Chaolin et al.⁵

In our study 98% of the participants developed one or more symptoms. Fever was reported to be most common problem (72%) followed by body ache (62%). Cough, loss of taste, anosmia and sore throat was reported in 52%, 46%, 44% and 41% of the respondents. These findings were in accordance with information provided by WHO which stated that the most common symptoms of COVID-19 were fever, dry cough, fatigue.³

Almost similar type of results were reported by Xiong et al from Wuhan China in which they described fever (85.3%), dry cough (52.6%), fatigue (51.7%), dyspnea (44.8%), anorexia (43.1%) and chest discomfort (43.1%).⁶

In the meta-analysis of reports from 9 countries Grant et al concluded that most prevalent symptoms were fever (78%), cough (57%) and fatigue (31%).⁷

In our study most of the respondents classified their symptoms as mild and moderate (35% and 44% respectively). While 21% of respondents categorized their symptoms as severe and very severe. These findings were in accordance as stated by WHO which said that among those who developed symptoms, most (about 80%) recover from the disease without needing hospital treatment. About 15% became seriously ill and required oxygen and 5% became critically ill and needed intensive care. So total 20% became seriously ill.³

In our study when compared regarding severity of in mild symptoms group 17.3% of the male and 19.4% of female developed mild symptoms. In comparison to this for moderate symptoms male and female proportion was 26.5% and 16.3%. For severe symptoms male and female proportion was 13.3% and 7.1% respectively. However these gender based differences were not significant statistically ($p > 0.05$).

In contrast to our study as per one article available at website of UKRI though males and females though had equal chance to get infection, the severity and mortality

of disease is more in males. This article was available at <https://coronavirusexplained.ukri.org/en/article/cad00077>.

As per another meta-analysis of data by Peckham et al the severity of disease with ITU admission and subsequent mortality was significantly higher in male sex.⁸

In our study regarding duration of symptoms 83.7% of the respondent informed to suffer from symptoms for less than 10 days while 17.3% of the respondent suffered symptoms for more than 10 days. When we made comparison between male and female 47.9% of the males and 35.7% of female experienced symptoms for less than 10 days. However for symptoms more than 10 days the values for males and female were 9.2% and 7.1% respectively. The difference between male and females with regards to duration of symptoms was statistically non-significant ($p > 0.05$). We could not find any study regarding duration of symptoms based on gender to compare.

In our study regarding need of treatment, 27% participants reported that they have not taken any treatment at all and their symptoms improved on their own without any treatment, while 63% of them had taken treatment. In the study 57% of participants reported that they have opted for home based remedies as a first modality of treatment. However among form of medicine practice as treatment modalities, Allopathic treatment was opted most often by most of the people after being COVID-19 positive. Ayurvedic and Homeopathic was opted by 18% and 9% respectively. So as an illness from COVID-19, most of the people were being recovered either by home based remedies or by their own. It was also evident from study that same person had opted a mixture of various treatment modalities.

In our study 55% respondents reported that their RT-PCR report became negative while 45% reported that their isolation period completed as per Government norms as a reason for discharge from hospital/and or completion of home isolation,

In the study 74% of the respondents agreed that these symptoms hampered their daily routine activities while 26% denied for any activity hampering.

The importance of COVID-19 appropriate behaviour cannot be stressed upon. On many forum from time to time government of India through various IEC and mass media campaign had stressed on this measure for infection control. MOHFW had also issued guidelines for various COVID-19 appropriate behaviours.¹⁰ The recent massive surge in COVID-19 cases in India had been attributed to lack of COVID-19 appropriate behaviour by public.¹¹ It was evident from our study that post-infection almost 100% patients followed one or other COVID-19 appropriate behaviour with frequent hand washing and use of sanitizer being the most common behaviour (79%). Other commonly followed COVID-19 appropriate

behaviours were use of face mask (68%), maintaining distance of more than 6 feet (65%), steam inhalation (64%) and saline gargle (62%). This finding also reflected the importance of family in Indian society as one infected person tried to save other family members. Participants also agreed that they were following COVID-19 appropriate behaviour less intensively before they got infected. This observation outlined the importance of COVID-19 appropriate behaviour in general public that each one must follow it religiously.

In our study 137 (SAR-42.8%) household members became infected from primary case. These findings were in contrast to study done by Madewell et al where they estimated mean secondary attack rate of 19.0% (95% CI: 14.9-23.1%) in a household and 18.1% (95% CI: 12.9-34.8%) among family contacts.¹²

In another study in Hong Kong by Lau et al estimated that secondary infection occurred in 14.9% of all households and 8% of all household members.¹³ Almost similar trends were observed by Goh et al in Singapore where they estimated secondary attack rate of 12.3%. Household transmissions occurred within 2-11 days (mean 5.3±2.6 days) after the onset of symptoms in the index cases.¹⁴

In one more study from India Meerut by Chopra et al showed secondary attack rate of 27.41%. They also stated that association was found in occurrence of secondary cases in relation to joint family, overcrowding, nonuse of mask and infrequent hand washing. The cause of higher secondary attack rate in our study may be attributed to delayed testing and ignorance of symptoms.¹⁵

CONCLUSION

98% of respondent developed symptoms. Fever was reported as most common symptom followed by body ache. In our study moderate and severe symptoms were found in male patients, however this difference was not significant statistically. In our study we found that male were recovering early from disease, however this gender based difference was statistically non-significant.

Recommendations

Home based remedies were preferred by most of respondent for symptomatic cure however amongst various treatment modalities available Allopathic treatment was preferred by most of people as first choice. COVID-19 appropriate behaviour must be followed all the time for effective infection control and treatment. 78% of the respondent agreed that level of COVID-19 appropriate behaviour was less before infection than after the infection, highlights importance of COVID-19 appropriate behaviour. Early testing must be done to prevent spread of infection in household members.

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