IJHSRP

International Journal of Health Services Research and Policy

www.dergipark.org.tr/ijhsrp

e-ISSN: 2602-3482

Research Article

THE SYMPTOMS AND CO-MORBIDITIES OF COVID-19 PATIENTS AT HOME ISOLATION IN INDIA

***Sujata MURARKAR*[1] *Sudhanshu MAHAJAN**[2] *Jayashree GOTHANKAR*[3]

[1]Dept. of Community Medicine, Bharati Vidyapeeth (Deemed to be University) Medical College, Pune, India.
[2*]Dept. of Community Medicine, Bharati Vidyapeeth (Deemed to be University) Medical College, Pune, India.
[3]Dept. of Community Medicine, Bharati Vidyapeeth (Deemed to be University) Medical College, Pune, India.
[*]Corresponding Author; sudhavaibhav1311@gmail.com

Abstract: *Indian Government has issued the guidelines on home isolation for very mild/pre-symptomatic COVID-19 cases based on a proposal of the Directorate of Public Health and Preventive Medicine. This has originated when COVID-19 designated hospitals started to shift asymptomatic and stable patients to quarantine facilities to reserve beds for those in need of treatment. To determine the prevalence of symptoms and co-morbidities of COVID-19 positive patients at home isolation OPD. This cross-sectional study was conducted at a designated COVID-19 tertiary care hospital in Pune, India, which had included all COVID-19 positive patients enrolled for the home isolation care from the 15th July to 15th August 2020. There were total 639 adults out of which 362 were males and 277 females. The most common presenting symptom present in 49.4% cases was fever. Hypertension was the most prevalent comorbidity noticed in 10% of patients followed by Diabetes in 6.7%. The maximum time lag of positive COVID-19 test to registration for home isolation OPD of 8 days was observed in only 1 patient. The significant association was seen between symptom of fever with the adults (males) and in the age group of 31-50 years($p<0.05$). Home isolation could be considered a classic model for COVID-19 patients in resource constrained situation. Home isolation can substantially reduce health care expenses for the asymptomatic and mild symptomatic COVID-19 multitude.*

Keywords: *COVID-19, Home isolation, Co-morbidities*

Received: December 8, 2020 Accepted: August 03, 2021

1. Introduction

A breakout of pneumonia of unknown aetiology was reported in Wuhan City, China, in December 2019 which was eventually traced to the Huanan Seafood Wholesale market.[1] On February 11, 2020, WHO gave the authorized name COVID-19 for this disease caused by SARS-Cov2, a novel virus genetically related to the corona- virus responsible for the 2003 SARS outbreak.[2] Afterwards, on March 11, 2020 COVID-19 was declared a worldwide health pandemic.[3] It has further caused a huge economic catastrophe everywhere on the World.

WHO recommends that all persons with suspected COVID-19 who have severe acute respiratory infection be triaged at the first point of contact with the health care system and based on disease severity emergency treatment should be started.[4] Those presenting with mild illness, hospitalization may not be possible because of the burden on the health care system, or required unless and until there is concern about rapid deterioration.[5] The patients with only mild illness can be cared and followed up by family members.

The Indian Ministry of Health and Family welfare has issued guidelines for home isolation of very mild and asymptomatic COVID-19 patients in which a patient can stay at home however must be in contact continually with the District Surveillance Officer and a registered hospital and has to sign an undertaking. [6] It involves telecommunication with the doctors and self-monitoring of health by the patients and their relatives while staying in home isolation.

Current study has undertaken at Pune in the Maharashtra state, India, with the following objectives:

1. To assess the prevalence of common symptoms and associated co-morbidities of COVID-19 patients at home isolation OPD.

2. To determine the time lag from test positive to registration for home isolation of COVID-19 patients

3. To find out the association of common symptoms with age and gender of COVID-19 patients.

2. Material and Methods

This cross–sectional observational study was undertaken in a Home Isolation Out Patient Department (OPD) at a designated COVID-19 tertiary care hospital in Pune, India, for a period of 1 month from 15th July to 15th August 2020 after obtaining approval from the Institutional ethics committee. Total 639 COVID-19 laboratory confirmed positive patients were recruited in this study. Informed written consent was procured from all the patients. The study tool was a predesigned and pretested questionnaire filled by the investigators by interview method. Before enrolling patients to home isolation programme, parameters like SPO2 level, pulse, blood pressure and temperature of each patient were recorded. Based on these readings if Spo2 level is 95% and above, after a three-minute walk test, pulse, blood pressure and temperature readings are within normal limit then the patient was enrolled for home isolation programme. After that as per Indian government guidelines, infrastructure triage form, undertaking for home isolation form were filled by patients/relatives. Home isolation eligibility form was filled by investigators after taking detailed interview of each patient.

Those patients with SPO2 level below 95% after 3 minutes' walk test, patients with random blood glucose level more than 150 and patients with systolic hypertension more than 150 mmHg and less than 80 mmHg were not eligible for home isolation and so were excluded from the study.

Home isolation period was of 17 days. Out of this 17 days, during first 10 days' patients were received a phone call daily from doctor to enquire about health of the patients. During this phone call, patients could tell about his or her temperature, pulse rate, oxygen saturation and new symptoms if any. Between days 11 to 17 patients were requested to self-monitor and call doctor only if patient had any health issues. On the 17th day, the patient could collect their discharge cards from the home isolation OPD.

Patients enrolled at home isolation OPD was provided "Home isolation kit" incorporated with digital thermometer, portable pulse oximeter, mask, gloves, disinfectant tablets and hydroxychloroquine tablets. This kit was explained by the doctors to the patients. Patients/care giver were requested to keep a watch for any of the following symptoms- difficulty in breathing, chest pain or discomfort, bluish discoloration of lips or nails, feeling confused or excessive sleepiness, shortness of breath after 3-minute walk, fever > 100F slurred speech weakness or tingling in face or limb. In case of any warning signs or emergency at any time, the patients were given an emergency contact number and asked to come immediately at the hospital's flu OPD which was open 24X7. In addition to the above, in children excessive irritability, crying or lethargy were considered to be danger signs.

Data analysis was performed using SPSS statistical software version 25. The results were presented in tabular format. For qualitative data, various rates, ratios and percentages (%) were

calculated. Chi-square test was used to find out the association of common symptoms of COVID-19 with sociodemographic variables of COVID-19 patients.

2.1. Ethical Statement:

This study was approved by Institutional Ethics Committee of BHARATI VIDYAPEETH Medical College (Deemed to be University), Pune, India. (Date: 06/07/2020; Ref: BVDUMC/IEC/3)

3. Results

Total 639 patients were enrolled in home isolation OPD. Out of these, 362(56.7%) were males and 277(43.3%) females. Details are given in Table 1.

Table 1. Age and gender wise distribution of patients enrolled at home isolation OPD

	n	%
Age		
1-10	47	7.4
11-20	60	9.4
21-30	132	20.7
31-40	184	28.8
41-50	112	17.5
51-60	74	11.6
>60	30	4.7
Gender		
Male	362	56.7
Female	277	43.3
COVID-19 symptoms		
Present	340	53.2
Absent	299	46.8
Total	639	100

The mean age of the diagnosed patients was 34 years. By seeing the age-wise distribution of patients, it is clear that young and reproductive age group constituted a significant percentage. Approximately 5% of the COVID-19 patients belonged to geriatric age group.

Table 2. Symptom wise distribution of patients enrolled at home isolation OPD

Symptoms[a]	**n**	**%**
Fever	168	49.4
Cough	160	47.1
Cold	45	13.1
Headache	46	13.5
Loss of smell	36	10.6
Loss of taste	19	5.6
Throat pain	42	12.4
Generalized weakness	61	17.9
Loose motions	22	6.5
Nausea, vomiting	12	3.5
Decreased appetite	1	0.3
Body ache	36	10.6
Co-morbidities		
Diabetes	43	6.7
Hypertension	64	10.0
Hypothyroid	19	3.0
Angioplasty	6	0.9

[a]Multiple responses

Table 2 shows co-morbidities and symptoms wise distribution of patients enrolled at home isolation OPD. Fever was the most common presenting symptom being present in 168 (49.4%) cases, followed by cough and generalized weakness in 160 (47.1%) and 61 (17.9%) patients, respectively. Only 1 patient presented with decreased appetite. Cold was encountered in 45 (13.2%) patients. Hypertension alone was present in 64 (10%) of the patients and 43(6.7%) had diabetes.

Table 3. Distribution of COVID-19 patients according to Infrastructure triage

Infrastructure triage	Number	%
Lives within 5-10 km from tertiary care hospital hospital	619	96.9
Has a lift/elevator in the building	366	57.3
Has a 24/7 care giver available	615	96.2
Has a place to quarantine other family members	573	89.7

Table 3 conceded that approximately 96% of the patients had a 24/7 care giver available at their home. Approximately 58% of the patients stated that they had at least one lift in their place of residence, varying from 3 to 15 floors. Majority of the patients (96.9%) were located from 5 to 10 km away from the tertiary care hospital.

Table 4. The time lag from COVID-19 test positive to registration for home isolation of Covid 19 patients

Time lag in days	n	%
0	326	51.0
1	233	36.5
2	54	8.5
3	19	3.0
4	1	0.2
5	3	0.5
6	2	0.3
8	1	0.2
Total	639	100

Maximum patients, 51%, came on the same day to registered themselves in the home isolation OPD after they found positive followed by 37% came on the next day. (Table 4)

Table 5. Association of gender with symptoms of COVID-19 patients at home isolation OPD

Symptoms	Male (209)	Female(131)	p
Fever	114	54	**0.017**[a]
Cough	93	67	0.232
Cold	28	17	0.911
Headache	27	19	0.677
Loss of smell	22	14	0.963
Loss of taste	14	5	0.260
Throat pain	24	18	0.538
Weakness	33	28	0.192
Loose motion	16	6	0.262
Nausea, vomiting	6	6	0.406
Decreased appetite	0	1	0.206
Generalized body ache	21	15	0.683

[a] Statistically significant at $p<0.05$ level according to Chi-Square test results

As per Table 5 fewer was the most common presenting symptom reported by 114 of males as compared to females ($p<0.05$). There was not a significant difference between male and female groups according in presence of cough, cold or other symptoms reported by patients with symptoms of COVID-19 patients at home isolation OPD. According to the results of the study males, compared with females, more often reported cough, cold, headache, loss of smell and loss of taste as a presenting symptom, but this finding was not statistically significant ($p>0.05$).

Table 6. Association of symptoms with age (in years) of COVID-19 patients at home isolation OPD

Symptoms	1-10	11-20	21-30	31-40	41-50	51-60	>60	p value
Fever	13	11	31	39	39	26	9	0.001 [c]
Cough	3	16	28	56	32	19	6	0.217
Cold	4	1	6	15	10	6	3	0.31
Headache	1	3	12	14	12	3	1	0.581
Loss of smell	0	0	10	19	5	1	1	0.017 [b]
Loss of taste	0	0	7	6	5	1	0	0.295
Throat pain	1	3	13	12	7	6	0	0.483
Weakness	0	2	17	17	16	8	1	0.105
Loose motion	1	2	6	5	3	3	2	0.764
Nausea, vomiting	1	2	2	4	1	2	0	0.788
Decreased appetite	0	0	0	1	0	0	0	0.905
Generalized bodyache	0	0	8	18	7	2	1	0.092

[b] Statistically significant at $p<0.05$ level according to Chi-Square test results; [c] Statistically significant at $p<0.01$ level according to Chi-Square test results

As per Table 6 fewer was the most common presenting symptom reported by 31-40 and 41-50 age groups and this finding was statistically significant according to chi-square test results ($p<0.01$) . According to the results of the study, loss of smell was higher in 21-30 and 31-40 groups as a representing symptom of COVID-19 patients at home isolation OPD, and this finding was statistically significant ($p<0.05$). Dry cough, cold along with headache and generalized weakness were all common in the age groups 21 to 50 years, but this finding was not statistically significant according to chi-square test results.

4. Discussion

The novel Corona Virus Disease 2019 is the paramount public health burden in the world. Due to this disease, the morbidity and mortality of the worldwide community is definitely increasing every now and then. Owing to the sudden witnesses widespread Coronavirus contamination cases in several major government and private hospitals, there has been shortage of hospital beds and quarantine facilities. Therefore, for a large number of people who have tested positive for COVID-19 but showed no or mild symptoms, the Union Health Ministry has given the option for home isolation OPD.

The present study represents a study about clinical manifestations and co morbidities in the confirmed Covid-19 patients attending home isolation OPD.

The common COVID-19 symptoms are fever, sore throat, dry cough, blocked nose, shortness of breath and loss of smell and taste. [7] In our study we found that, the prevalence of fever is 49%. An observational study of 1420 patients by European Centre for Disease Prevention and Control also reported fever by 45.4%.[8] A study conducted by Chaolin Huang, et al in China[9] concluded that fever

and cough were the most common symptoms. This observation is in line with our findings whereas a large meta-analysis and systemic review of 148 studies from 9 countries [10] also confirmed that fever and cough were the most prevalent symptoms of adults infected by SARS-CoV-2. Lu et al. [11] conducted a study to look for non-respiratory symptoms in COVID-19 patients and described that out of 72,314 COVID-19 patients, 889 had no symptoms at all. Some patients had mild urticarial.

Italy and Spain were the world's two hardest hit countries in European nations by the COVID-19 pandemic. [12] Maximum of the COVID-19 deaths in Italy were male while in Spain about twice as many men as women have died. [13]

The present study suggests that there were 56.7% males and 43.3% of females were affected by COVID-19, which is similar to the figures reported in the systemic review and meta-analysis of clinical characteristics of COVID-19. [14] The existing findings are because of the gender life style behaviour such as high level of smoking and drinking among men as compared to women. Moreover, the females have more responsible attitude towards the prevention of any disease.

Depending on current information and clinical expertise, it was observed that comorbidities increase the chances of COVID-19 infection. [15] Based on the random effect model after the inclusion of 7 studies including 1576 infected patients which is published in 2020 concluded that hypertension is the most prevalent co-morbidity followed by Diabetes in the confirmed COVID-19 patients. [16] This study supports our findings. A meta-analysis study of total 1786 COVID-19 patients conducted by Adekundle Sanyaolu et al [15] identified hypertension was the most common comorbidity. People with underlying uncontrolled medical conditions such as diabetes; hypertension; lung, liver, and kidney disease; cancer patients on chemotherapy; smokers; transplant recipients; and patients taking steroids chronically are at increased risk of COVID-19 infection.

A narrative review conducted by Daneil P Oram [17] on prevalence of asymptomatic SARS-CoV-2 infection concluded that approximately 40% to 45% of those infected with SARS-CoV-2 remained asymptomatic. In our study also we found that 46% of the COVID-19 patients were asymptomatic.

The present study revealed that majority i.e. 51% of the COVID-19 patients registered themselves on the same day in the home isolation OPD after they found positive. This shows improved awareness about COVID-19 among the patients and being a responsible citizen. Social platforms especially for social distancing and home quarantine played the crucial role during the COVID-19 outbreak.

Home isolation was not the best strategy in Wuhan and all the patients should be brought to a hospital for further line of treatment said by the Chinese government. [18] They did not try the classic model of home isolation due to a hypothetical risk of secondary transmission of the infection to other family members at home. But home isolation can substantially reduce health care expenses for the masses while utilising expertise of physicians in treating patients with moderate to severe disease. There were few limitations of our study. We didn't consider secondary attack rate among household contacts and the details of how many patients didn't enrol due to unavailability of triage. From the present study, it can be concluded that home isolation for asymptomatic and mild symptomatic COVID-19 patients is possible both for the medical health care sector and the patients.

Acknowledgment: We would like to express our gratitude to Principal of our Medical College for permitting us to carry out this research project. We would also like to thank Mr R B Deshmukh, statistician, of the Community Medicine department for his help.

Ethical Statement: This study was approved by Institutional Ethics Committee of BHARATI VIDYAPEETH Medical College (Deemed to be University), Pune, India. (Date: 06/07/2020; Ref: BVDUMC/IEC/3)

Conflict of interest: All authors declare that they do not have any conflict of interest.

Authors' Contributions:

Dr Sujata Murarkar prepared methodology, had continuous interaction with home isolation team of Bharati Hospital Pune, collected the data and written the original draft. Dr Sudhanshu Mahajan was involved in study design, collection of data and analysis of the data. Dr Jayashree Gothankar collected the data and critically reviewed the manuscript.

Dr. Sujata Murarkar: Conceptualization, Methodology, Formal analysis, Writing - Original draft preparation (50%)

Dr. Sudhanshu Mahajan: Conceptualization, Methodology, Resources, Draft preparation (30%)

Dr. Jayashree Gothankar: Conceptualization, Draft preparation (20%)

All authors read and approved the final version of manuscript.

References

[1] Hui, D.S., Azhar, E.I., Madani, T.A., et al., "The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health — The latest 2019 novel coronavirus outbreak in Wuhan, China," *International Journal of Infectious Diseases*, 91, 264–266, 2020.

[2] World Health Organization. (2020). *Naming the coronavirus disease (COVID-19) and the virus that causes it*, WHO. [Online]. Available: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it.

[3] World Health Organization. (11 March 2020). *WHO Director-General's opening remarks at the media briefing on COVID-19* -, WHO. [Online]. Available: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020.

[4] "*WHO-nCov-IPC-HomeCare-2020.3-eng.pdf,*".(2020). Scribd. [Online]. Available: https://www.scribd.com/document/452982345/WHO-nCov-IPC-HomeCare-2020-3-eng-pdf.

[5] "*Clinical management of severe acute respiratory infection …".*(2020). Accessed on: 04-Dec-2020. [Online]. Available: https://www.who.int/docs/default-source/coronaviruse/clinical-management-of-novel-cov.pdf.

[6] Revised Guidelines for home isolation on Covid 19 cases, Government of India, Ministry of Health and Family Welfare , 2020 https://www.mohfw.gov.in/pdf/RevisedHomeIsolationGuidelines.pdf

[7] Detail Question and answers on Covid 19 for public, Government of Karnataka, 2020, https://www.mohfw.gov.in/pdf/FAQ.pdf

[8] European Centre for Disease Prevention and Control, *Clinical characteristics of COVID-19.* (08-Sep-2020). European Centre for Disease Prevention and Control. [Online]. Available: https://www.ecdc.europa.eu/en/covid-19/latest-evidence/clinical.

[9] Huang, Y., Wang, Y., Li, X., et al., "Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China," *The Lancet*, 395(10223), 497–506, 2020.

[10] Grant, M.C., Geoghegan, L., Arbyn, M. et al., "The Prevalence of Symptoms in 24,410 Adults Infected by the Novel Coronavirus (SARS-CoV-2; COVID-19): A Systematic Review and Meta-Analysis of 148 Studies from 9 Countries," *SSRN Electronic Journal*, 15(6), p. e0234765, 2020.

[11] Lu, J. Lin, Z. Zhang, L. Xiao, Z. Jiang, J. Chen, C. Hu, and S. Luo, "Alert for non- respiratory symptoms of coronavirus disease 2019 patients in epidemic period: A case report of familial cluster with three asymptomatic COVID- 19 patients," *Journal of Medical Virology*, 93(1), 518-521, 2020.

[12] Onder, G., Rezza,G., Brusaferro, S. "Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy," *Jama*, 323(18), 1775-1776, 2020.

[13] "The COVID-19 Sex-Disaggregated Data Tracker," Global Health 5050.(2020). [Online]. Available: https://globalhealth5050.org/the-sex-gender-and-covid-19-project/.

[14] Li, J., Huang, D.Q., Zou, B. et al., Epidemiology of COVID- 19: A systematic review and meta-analysis of clinical characteristics, risk factors, and outcomes," *Journal of Medical Virology*, 93(3), 1449-1458, 2020.

[15] Sanyaolu, A., Okorie, C., Marinkovich, A., et al., "Comorbidity and its Impact on Patients with COVID-19," *SN Comprehensive Clinical Medicine*, 2(8), 1069–1076, 2020.

[16] Yang, J., Zheng, Y., Gou, X, et al., "Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis," *International Journal of Infectious Diseases*, 94, 91–95, 2020.

[17] Oran D.P., Topol, E.J., "Prevalence of Asymptomatic SARS-CoV-2 Infection," *Annals of Internal Medicine*, 173(5), 362–367, 2020.

[18] Feng, Z.H., Cheng, Y.R., Ye, L.,Zhou, M.Y., Wang M.W., Chen, J., "Is home isolation appropriate for preventing the spread of COVID-19?", *Public Health*, 183, 4-5, 2020.