(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 5, Issue 2, Page No: 796-800
March-April 2022

IJMSCR

Epidemiological correlation of Acute Respiratory illness in Novel Coronavirus(2019-nCoV) outbreak at tertiary care Centre

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract:

Introduction: Novel Coronavirus(2019-nCoV) emerges as a global healthcare emergency. The 2019-nCoV follows the transmission route and clinical presentation of all community-acquired coronaviruses. Patients with 2019-nCoV infection are presenting with a wide range of symptoms. Clinical care of suspected patients with 2019-nCoV should focus on early recognition, immediate isolation (separation), implementation of appropriate infection prevention and control (IPC) measures and provision of optimized supportive care. During previous outbreaks due to other coronaviruses Middle-East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS), human-to-human transmission occurred through droplets, contact and fomites, suggesting that the transmission mode of the 2019-nCoV can be similar. Extensive measures to reduce person-to-person transmission of COVID-19 are required to control the current outbreak. The aim of our study is to analyse and investigate the rate of hospital admissions for emergency hospital visits by respiratory patients during the month of the 2019-nCoV outbreak.

Material and method: In this study, we performed a retrospective analysis of epidemiological characteristics of respiratory patients who were visited emergency for acute respiratory problems at King George Medical University, UP, Lucknow, India. King George Medical University, UP, Lucknow is the main Centre of treatment for an emergency visit in the north Indian state. The study period was defined as the time between 24th march 2020 to 24th April 2020. We compared emergency visits of acute respiratory patients between the study period and control periods: a corresponding period during the previous year (24th March 2019 to 24th April 2019).

Result: 143 patients who have visited the emergency of a hospital for the acute respiratory emergency patient during the study period, 88 were males; the mean age was 48.73+/-11.08 years and 55 were females mean age 42.61+/-2.50. The average case for Acute respiratory patients during the study period was 4.61+/-1.37 visits per day. The total number of patients was 722; the mean was 24.06+/-9.17 visited emergency of the hospital for the acute respiratory illness-related emergency patient during the same period last year.

Conclusion: This observation and data from our study raise the question of whether some acute respiratory illness patients have not gotten treatment. This may be due to reduction of emergency situation of the

respiratory patient, pollution, exposure to exacerbator factors like pollen or patient are failure to reach the hospital. which is most likely explained by several patient and system-related factors.

Keywords: Novel Coronavirus(2019-nCoV), MERS, IPC, SARS

Introduction:

Novel Coronavirus(2019-nCoV) emerges as a global healthcare emergency. The 2019-nCoV follows the transmission route and clinical presentation of all community-acquired coronaviruses. Patients with 2019-nCoV infection are presenting with a wide range of symptoms.(1) Most seem to have mild disease, and about 20% appear to progress to severe disease including pneumonia, respiratory failure and in some cases death.(2) In viral infection such as influenza increase the acute respiratory illness emergency in the 2003 epidemic of severe acute respiratory syndrome co-v-1 infection. Sex differences in the risk of death similar to those were often noted. Clinical care of suspected patients with 2019-nCoV should focus on early recognition, immediate isolation (separation), implementation of appropriate infection prevention and control (IPC) measures and provision of optimized supportive car.(3) During previous outbreaks due to other coronaviruses (Middle-East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS), human-to-human transmission occurred through droplets, contact and fomites, suggesting that the transmission mode of the 2019-nCoV can be similar(6).

Extensive measures to reduce person-to-person transmission of COVID-19 are required to control the current outbreak. Special attention and efforts to protect or reduce transmission should be applied in susceptible populations including children, health care providers, and elderly people. (4) Majority of countries adopted strict social containment measures to control the coronavirus (Covid-19) pandemics. Many health care facilities converted into corona care Centre worldwide to cope with acutely ill corona virus-infected patients. During this same period, some changes in the pattern of a hospital visit for other conditions have been noted. The aim of our study is to analyze and investigate the rate of hospital admissions for emergency hospital visits by respiratory patients during the month of the 2019-nCoV outbreak.

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Material and method:

In this study, we performed a retrospective analysis of epidemiological characteristics of respiratory patients who were visited emergency for acute respiratory problems at King George Medical University, UP, Lucknow, India. King George Medical University, UP, Lucknow is the main Centre of treatment for an emergency visit in the north Indian state. The study period was defined as the time between 24th march 2020 to 24th April 2020. We compared emergency visits of acute respiratory patients between the study period and control periods: a corresponding period during the previous year (24th March 2019 to 24th April 2019). The primary outcome was the overall rate of hospital visits for Respiratory disease patients. We calculated incidence rates for the primary outcome by dividing the number of cumulative visits by the number of days for each time period

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Table No.1 shows a comparison of the incidence of Acute respiratory illness-related emergency patients during the 2019-nCoV emergency period 24/03/2020-23/04/2020 with last year's same period 24/03/2019-23/04/2019

Average no patient per day with respiratory emergencies	Total no of patient mean+/- SD	MALE mean+/- SD	FEMALE mean+/- SD
Previous year 24/03/2019-23/04/2019	n=722 24.06+/- 9.17	n=463 15.43+/-3.15	n=259 8.63+/-1.62
Lock down period 24/03/2020-23/04/2020	n=143 4.61+/-1.37	n=88 2.84+/-0.92	n=55 1.77+/-0.59
T value	22.52	21.36	22.15
P value	0.0001	0.0001	0.0001

Table no 2. showing comparison of mean age of respiratory emergency patient during 2019-nCoV emergency period 24/03/2020-23/04/2020 with last year same period 24/03/2019-23/04/2019

Average no of patient per day with respiratory emergencies	Average age of patent mean+/-SD	Average age of male patent mean+/-SD	Average age female of patent mean+/-SD
Previous year 24/03/2019-23/04/2019	45.56+/-9.17	46.6+/-8.95	43.6+/-3.42
Lockdown period 24/03/2020-23/04/2020	48.73+/-11.08	52.6+/-11.34	42.61+/-2.50

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Result: 143 patients who were visited emergency of hospital for acute respiratory emergency patient during the study period, 88 were males; the mean age was 48.73+/-11.08 years (table no 2) and 55 were females mean age 42.61+/-2.50. The average case for Acute respiratory patient during the study period was 4.61+/-1.37 visit per day. The total number of the patient were 722; the mean 24.06+/-9.17 visited an emergency of the hospital for acute respiratory illness-related emergency patient during the same period last year. This incidence rate was significantly lower than the rate during the earlier period in the last year. The incidence rate ratios for individual Acute Respiratory illnesses are presented in Table 1. After the national lockdown was implemented on March 24th, 2020, a further reduction in the respiratory emergency visit was reported.

Discussion: We conducted a retrospective study on the impact of the **Novel Coronavirus(2019-nCoV) outbreak** on the **Acute Respiratory illness at tertiary care Centre from 24/03/2020 to 23/04/2020.** Fever is the most common symptom in patients with **2019-nCoV**. The most prevalent comorbidities are hypertension and diabetes which are associated with the severity of **2019-nCoV**. ARDS and ACI may be the main obstacles for patients to treatment recovery. The case severe rate and mortality is lower than that of SARS and MERS. (7,8)143 patients were visited emergency hospital for the acute respiratory emergency patient during the study period, while 722 patients were visited emergency for acute respiratory illness during the same days last year. The average case for Acute respiratory patients during the study period was 4.61+/-1.37 visits per day, while 24.06+/-9.17 patients per day visit last year during the same time last year. A total number of the patient were 722; the mean 24.06+/-9.17 visited an emergency of the hospital for acute respiratory illness-related emergency patient during the same period last year. This incidence rate was significantly lower than the rate during the earlier period in the last year. The incidence rate ratios for individual Acute Respiratory illness are presented in Table 1 Similar study done by Metzler et al. it seems likely that the **2019-nCoV** outbreak is associated with a significantly lower rate of hospital admissions and thus, albeit unintended, treatment of ACS patients, which is most likely explained by several patients- and system-related factors. Every effort should be undertaken by the cardiology community to minimize the possible cardiac collateral damage caused by **2019-nCoV**. We did not collect mortality data. We also didn't have many studies during this lockdown period to compare. The main finding of our retrospective observational study is an unexpected major decline in hospital footfall and thus treatment for all subtypes of respiratory illness with the beginning of the **2019-nCoV** outbreak in India and subsequent large-scale public health measures such as social distancing, self-isolation, and quarantining. Recent data suggest a significant reduction in hospital visits during this period that was not fully explained by **2019-nCoV** alone. This observation and data from our study raise the question of whether some acute respiratory illness patients have not gotten treatment. This may be due to reduction of emergency of the respiratory patient, pollution, exposure to exacerbator factors like pollen or patient are failure to reach the hospital. Several factors might explain this important observation. The rigorous public health measures, which are undoubtedly critical for controlling the **2019-nCoV** pandemic, may unintentionally affect established integrated care systems. This will need a further study that patients will get treatment at home by telemedicine or other alternative means in future if a similar situation will emerge. Moreover, the strict instructions to stay at home, as well as the fear of infection in a medical facility, may have further prevented patients with respiratory illness from going to a hospital. Irrespective of the causes, the lower rate of footfall and therefore treated patients with ARI is worrisome and we are concerned that this might be accompanied by significant mortality in other respiratory illnesses other than **2019-nCoV**.

Conclusion: Recent data suggest a significant reduction in hospital visits during this period that was not fully explained by **2019-nCoV** alone. This observation and data from our study raise the question of whether some acute respiratory illness patients have not gotten treatment. This may be due to reduction of emergency of the respiratory patient, pollution, exposure to exacerbator factors like pollen or patient are failure to reach the hospital. which is most likely explained by several patient and system-related factors. Every effort should be undertaken by the pulmonologist community to minimize the possible ARI collateral damage caused by **2019-**

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nCoV. This will need a further study that patients will get treatment at home by telemedicine or other alternative means in future if a similar situation will emerge.

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