



Persistence of Covid Complications Among the Residents of Aizawl City, Mizoram, North East India

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Abstract: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new virus that has led to a pandemic of coronavirus disease 2019 (COVID-19) globally. It is observed that majority of patients, up to 87.5%, who are recovering from acute infection continue to suffer from various symptoms including myalgia, fatigue, dyspnea, cough, and headache. The main objective of this study is to find out the presence and magnitude of post Covid-19 complications among the residents of Aizawl city, Mizoram, north east India. Among the 6325 participants, 5163 (81.62%) were found fully recovered while 1162 (18.37%) participants were found to report themselves of having one or more persisting complications due to Covid-19 disease. Statistical significance analysis also revealed that post-covid complications were significantly higher among the patients who are either not-vaccinated or incomplete-vaccinated. In this study, malaise and fatigue were commonest among the post Covid-19 complications followed by dyspnea, brain fog, cough, joint pain, muscle pain, headache, palpitation, anosmia, mood change, fever and chest pain respectively. From this study, it may be concluded the persisting post Covid complications were prevalent among the cases of COVID-19 in Aizawl city, capital of Mizoram, North east India. It can also be assumed from the study that persisting post Covid complications shall also be prevalent across the state if the similar studies were conducted

Key Words: Coronavirus disease, kiosk, pandemic, Post Covid complication, vaccination.

1. INTRODUCTION:

Severe acute respiratory syndrome (SARS) is known to be caused by coronavirus infections [1, 2]. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new virus that has led to a pandemic of coronavirus disease 2019 (COVID-19) globally [3]. The symptoms of acute COVID-19 cases differ in terms of duration and severity. Many patients require hospitalization and ventilation while others are found asymptomatic [4].



Available data indicated that around 15% of patients suffering from Coronavirus disease (COVID-19) develop severe respiratory disease [5,6], and about 5% of patients develop serious complications, usually requiring artificial ventilation [6]. Around 80% of patients are found to develop either no symptom or having only mild or moderate symptoms [7]. Around 2% of COVID-19 patients died from the disease or related complications globally [8]. It is observed that majority of patients, up to 87.5%, who are recovering from acute infection continue to suffer from various symptoms including myalgia, fatigue, dyspnea, cough, and headache. [9,10] Greenhalgh et al. [11] defined prevailing symptoms more than 3 weeks from the disease onset as post-acute COVID-19 and beyond 12 weeks as chronic COVID-19. [12] Fatigue, headache, dyspnoea and anosmia are the most common symptoms observed [13, 14]. Respiratory symptoms, such as coughing and dyspnoea and reduced cardiopulmonary performance, are also commonly observed in patients with the so-called Post-COVID Syndrome [15]. Based on the population-based framework, Centre for Disease Control and Prevention (CDC) proposed to divide disease into three phases such as, acute COVID-19 (the first 2 weeks from symptom onset), post-acute hyper-inflammatory illness (between 2 and 4 weeks from symptoms onset), and late sequel period (more than 4 weeks from symptom onset) [11].

In Mizoram, the first case of COVID-19 was detected on 24th March 2020 from a 50 years old male returning from the Netherlands who was survived after going through serious complications for more than one month at Zoram Medical College (ZMC) which is functioning as Dedicated Covid Hospital (DCH) for the state of Mizoram. Since then, there has been 2,38,1224 COVID-19 positive with 726 death cases so far as of 5th December 2022 as per the data of Integrated Disease Surveillance Programme (IDSP) Mizoram.

As sample collection and testing were rapidly increasing in the state especially at Aizawl city where about 40% of the total population of the state are residing, sample collection and testing centres called COVID-19 kiosks were set up at different localities of Aizawl city. A total of 15 kiosks were set up at an appropriate locations where each of the kiosk could cater to a specific area consisting of several localities (Local councils). The first kiosks were set up on 15th December 2020, the numbers of kiosks were increases to 15 which were established at different localities of Aizawl and these kiosks were recently de-functioned due to decline of COVID-19 cases. The workers at these kiosks were utilised for this study.

The main objective of this study is to find out the presence and magnitude of post Covid-19 complications among the residents of Aizawl city, Mizoram, northeast India.

2. MATERIALS & METHOD:

This study was conducted by State Field Laboratory Unit, Integrated Disease Surveillance Programme (SFLU, IDSP) Health and Family Welfare Department, Mizoram, India. In this study, staff deployed at 15 Covid-19 kiosks communicated the people whose date of diagnosis with Covid-19 were atleast three months (90 days) ago in order to find out the magnitude and duration of post Covid complications under their respective area. It was conducted at all 83 administrative localities (local councils) under Aizawl Municipal Corporation (AMC) area. The survey was conducted during June to September 2022.

A total of 6325 patients participated in the study and their details were recorded with a specially designed format prepared for this survey.

Statistical Analysis

Statistical analysis was performed using OriginPro 8 SR0 version 8.0724 (OriginLab Corp., Northampton, MA, USA). The level of significance was set at $p < 0.05$.

3. RESULT:

Among the 6325 participants, 5163 (81.62%) were found fully recovered while 1162 (18.37%) participants were found to report themselves of having one or more persisting complications due to Covid-19 disease (Table 1). Maximum number of post Covid-19 complications cases were observed among younger/youth age groups (21-60 yrs). Cases were mostly found in Patients under 31-40 age group (Table 2).

Table 1 : Distribution of post Covid complications among the participants.

No. of positive patients contacted	No. of patients without post covid complications	No. of patients with post Covid complications
6325	5163 (81.62%)	1162 (18.37%)



Table 2 : Age distribution among the patients having post Covid complications.

	AGE GROUP									TOTAL
	0-10 years	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71-80 years	81-90 years	
No. of cases	67	84	250	274	219	151	78	31	8	1162

Among the patients having post Covid complications, sexual predilection was observed as the number of females dominated males (Table 3). Patients having post Covid complications among hospitalized patients outnumbered those who were not hospitalized as symptomatic patients were naturally hospitalized while asymptomatic patients were put under home isolation. Patients who were administered with full doses of Covid-19 were found to have less number of complications to those who did not take the full dose (Table 3).

Table 3 : Distribution of sexes, treatment and vaccination among post Covid complicated patients

SEX			CONDITION			VACCINATION		
MALE	FEMALE	TOTAL	HOSPITALIZED	NOT HOSPITALIZED	TOTAL	NOT COMPLETED	COMPLETED	TOTAL
472	690	1162	755*	407	1162	915*	247	1162

* Significance level was analyzed using Students' *t*-test and p value was set at < 0.05.

Post-covid symptoms are significantly more common among the patients who were hospitalized as compared to not-hospitalized patients. Statistical significance analysis also revealed that post-covid complications were significantly higher among the patients who are either not-vaccinated or incomplete-vaccinated.

In this study, malaise and fatigue were commonest among the post Covid-19 complications followed by dyspnea, brain fog, cough, joint pain, muscle pain, headache, palpitation, anosmia, mood change, fever and chest pain respectively (Table 4).

Table 4 : Distribution of post Covid complications.

Dyspnea	Cough	Fatigue	Chest Pain	Brain Fog	Headache	Malaise	Palpitation	Fever	Joint Pain	Loss of Smell	Mood Change	Muscle Pain
180	125	446*	25*	139	56	545*	50	29*	100	45	41	95

* Significance level was analyzed using Students' *t*-test and p value was set at < 0.05.

4. DISCUSSION:

In this study 18.37% of participants were found to exhibit one or more persisting post Covid complications while other studies mostly reported higher rates, the range varies from 13.3% to 96.0% [16-21]. Symptoms like Malaise, fatigue, dyspnea, brain fog and cough are pre to dominant and a number of symptoms may related to alterations of the



nervous system. This finding were closely resemble to the previous study findings from Wang et al. [22] and Lenzen-Schulte [23].

Number of persisting post Covid complications were found higher among people who were admitted in the hospital than those who were not admitted. This may be attributable to practice of keeping only symptomatic and co-morbid Covid patients in the hospitals while asymptomatic patients were kept under home isolation and monitoring. The number of persisting complications among non-complete vaccinated participants were higher than those who were fully vaccinated as most of the participant either did not get vaccinated or not complete the vaccination doses at the time of infection with the disease.

The limitation of this study is the participants were randomly selected and contacted from Covid-19 positive linelist and there was no control group with matched samples, there might be selection bias.

5. CONCLUSION :

From this study, it may be concluded the persisting post Covid complications were prevalent among the cases of COVID-19 in Aizawl city, capital of Mizoram, North east India. It can also be assumed from the study that persisting post Covid complications shall also be prevalent across the state if the similar studies were conducted. In this study, as the participants whose date of diagnosis with Covid-19 were atleast three months (90 days) ago were selected which strongly indicated that there there have been a burden of persisting post Covid complications among the Covid patients in Aizawl.

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