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A CROSS-SECTIONAL ASSESSMENT ON SARS COVID 2: COVID-19 AND POST COVID

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Abstract:

Aim: *The main aim of the study was to access rise and impact of covid-19 and to determine the prevalence and risk factors associated with development of the post-COVID-19 syndrome.*

Method: *Study comprised of a questionnaire survey and interview through phone calls of the people who have been affected with covid 19 and we mainly focused on post covid syndromes who has taken treatment and quantifying the rate of hospital readmission. The questionnaire mainly pointed on details about vaccination, covid-19 attack and post covid syndrome.*

Result: *The major results obtained from the study was the frequency, prevalence, manifestation, and risk factors associated with development of the post-COVID-19 syndrome. Most of patient undergone treatment for the post covid infection. Most of the patients were vaccinated before the covid attack and this helped them to survive the severity of covid 19 infection and post-covid syndrome. Frequently reported post covid diseases are respiratory disorders followed by insomnia, anxiety and depression and digestive disorders.*

Conclusion: *The study aimed to get information about the existing post covid diseases which gives idea about the severity of disease, their mental wellbeing and health conditions after being affected with covid 19. Proper patient counselling can make significant difference and should be educated with rational use of medications to prevent from getting diseases.*

Keywords: *COVID-19, Post covid Syndrome, Prevalence, Treatment, Rational use Medications.*

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INTRODUCTION:

Coronaviruses are class of RNA viruses that cause

respiratory tract infections in humans and mammals. Covid 19 is potential zoonotic disease which is being characterized by 2.5% mortality rates [1]. In December 2019 a cluster of pneumonia have been reported. This virus has been named as severe acute respiratory syndrome Corona virus and disease associated is called covid-19 by WHO [3]. The causative agents for this pneumonia were identified as coronavirus. Covid 19 expanded globally which included Thailand, Republic of Korea, US, Japan, Philippines, and our country [1]. These viruses belong to Kingdom - Orthornavirae, Family – Coronaviridae. The earliest reports of a coronavirus infection were 1st reported in animals occurred in the late 1920s and in 1960s Human coronaviruses was first discovered. The very first case reported in India was January 21, 2019, and on February 6th, 2020. A total number of 28,276 confirmed cases with 565 deaths were documented globally by WHO.

In 2003 a new corona virus has been originated that causes mysterious pneumonia which was originated from southeast China especially Guangdong province and was named as SARS corona virus. The mortality rate caused by SARS was around 10-15%. There was another outbreak in 2012 of novel corona virus in middle east that had similar features with outbreak in 2003. Both are being caused by corona virus [2]. Four types of corona virus namely HKU1, NL63, 229t, OC43 have been circulating in humans and caused mild respiratory diseases [3].

Covid-19 has been a great threat to the world which caused New Public Health crisis. The virus was originated in bats and transmitted to humans through intermediate animals. Transmission of diseases is mainly by inhalation or contact with infected droplets, its incubation period is about 2 to 14 days. The major symptoms include fever, cough, sore throat, breathlessness, fatigue, and malaria [4]. Coronaviruses are large, roughly spherical particles which has unique surface projections. Their size ranges highly variable with average diameters of 80 to 120 nm. They can cause 1. Pneumonia (either direct viral pneumonia or secondary bacterial pneumonia) 2. Bronchitis (either direct viral bronchitis or secondary bacterial bronchitis). The studies demonstrated that higher level of viral loads in the nasal cavity as compared to the throat but no difference in viral burden between the symptomatic and asymptomatic individual [5]. Currently there isn't proper and definite treatment for covid 19.

Treatment and Prevention

The first step in the treatment is to ensure the adequate isolation to prevent transmission. Mild to moderate illness should be managed at home with proper counselling about the severities. There should be proper maintenance of hydration and nutrition and control fever and cough. Use of antibiotics and antivirals such as oseltamivir should be avoided in conformity cases. In case of hypoxic patients' provision of oxygen via nasal passage, face mask, high flow nasal canula must be provided. Antiviral drugs such as ribavirin, lopinavir have been used because on the experience with SARS and MARS [6].

Long COVID/ Post Covid Syndrome

Corona virus disease (COVID-19) causes symptoms that last for weeks or months after the infection has gone. This condition is called post-COVID-19 or "long COVID". WHO's definition for post covid diseases is as follows: "Post COVID-19'' condition occurs in individuals with a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms and that last for at least 2 months and cannot be explained by a different diagnosis. Covid-19 is mainly responsible for upper respiratory tract infection in children. Acute respiratory tract syndrome caused severe mortality rates. The human coronavirus discovered first in 2003, SARS-CoV-2, which causes severe acute respiratory syndrome (SARS), has a unique pathogenesis. This can lead to both upper and lower respiratory tract infections. The most common symptom that has been reported are fatigue and dyspnoea that last for a month [6]. Generally, people recover from COVID-19 and return to normal life after 2 to 6 weeks but, some people have symptoms that last for weeks or even months after recovery from acute illness.

The continuing state of illness after the recovery covid 19 disease is known as 'Post COVID condition'. In February 2021, WHO organized a series of international consultations with experts to reach agreement on a description of this condition, its subtypes and case definitions. Symptoms have an impact on everyday functioning like headache, trouble sleeping (insomnia), trouble concentrating, muscle and joint pain, cough. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time [4] [6]. The burden of post COVID-19 is not very well documented. A person of any age who has had COVID-19 can later develop a post-COVID condition. Personalised rehabilitation training was suggested by the preliminary evidence [7].

Vaccination: its types and classification

COVID-19 vaccine is intended to provide acquired immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (COVID-19) [9]. The development of various vaccine platforms started during early 2020. The initial focus of SARS-CoV-2 vaccines was on preventing symptomatic, often severe illness. At least nine different technology platforms are under research and development to create an effective vaccine against COVID-19.

Classification

1. m-RNA vaccines
2. Adenovirus vector vaccines
3. Inactivated virus vaccines
4. Subunit vaccines
5. Intranasal
6. Other types

Vaccines available

1. Covaxin Vaccine
2. Covishield Vaccine
3. Johnson & Johnson Vaccine
4. Moderna Vaccine
5. Novavax Vaccine
6. Sputnik V Vaccine
7. Zydus Cadila Vaccine

Adverse drug reaction of vaccine was being collected from the vaccine ADR reporting contents because people are concerned about the efficiency and safety. Vaccine has broad spectrum of action [8]. Serious adverse events associated with receipt of new vaccines targeting COVID-19 are of high interest to the public. All vaccines are administered via intramuscular injection, have side effects related to the mild irritations associated with the procedure and introduction of a foreign substance into the body. The precise vaccine is powerful tool which can be used to control over the covid 19 pandemic with high efficacy and tolerable ADR [9]. One less-frequent side effect is hypersensitivity (allergy) to one or more of the vaccine's ingredients, which in some rare cases may cause anaphylaxis.

AIM

To determine the frequency, prevalence, manifestation, and risk factors associated with development of the post-COVID-19 syndrome.

OBJECTIVES

1. The main objective of this study was to identify the proportion of hospital readmission or treatment taken after covid infection.
2. To identify the major post covid syndrome.
3. To find the population who have taken vaccination either before or after covid infection and its impact on post-covid syndrome.
4. To assess the prevalence and manifestations of post-COVID-19 on their life.
5. To identify the factors (Age, Gender) faced by the patients with lifestyle diseases and post covid syndrome.

METHODOLOGY:

Study area

The study was conducted in Ernakulam District, Primary Health Centre, Kadamakkudy Panchayath, located in the central part of Kerala. Ernakulam district covers an area of 3,068 km2 located on the Western Coastal Plains of India. Ernakulam district is the largest metropolitan region of the state.

Study design and Data collection

This study was started in the month of December 2021. Proportion of the study was mixed method research design which comprised of a questionnaire survey and key informant interview through Phone calls.

In this study we included post covid patients who came for treatment in the primary health centre. We collected information from an age group around 18 to 60 years. We selected this age group because, this study was designed after the second wave of covid 19 and most effected were the young population. Our study mainly focused on post covid syndromes and quantifying the rate of hospital readmission or treatment in individuals after being affected with covid-19.

We took around 100 patients and collected the records from health centre. We have collected the numbers of patients through Asha workers and Health inspector and interviewing hundred patients through phone took around two to three months. A questionnaire survey was prepared in Google forms which regulated the systematic patient's data collection. The questionnaire consisted of four sections: demographic data, post-COVID-19 manifestations, questions related to the difficulties facing in routine daily life after covid and post covid diseases. The Questionnaire mainly pointed on the details like whether they were asymptomatic/symptomatic on corona attack, details regarding vaccination, cases worsened to pneumonia, disease that occur after covid-19 that the patient got admitted to hospital or gone for treatment. The data

collected was analysed and simplified based on the prescribed objectives. Data were presented in the form of frequencies and percentages

RESULTS AND DISCUSSION:

We interviewed the patients who was attacked with covid-19 and suffer from long term effects after covid, as they are the key source of information to know about the disease condition and severity. The questionnaire was prepared to facilitate on post covid disease among 18 to 70 age group. The information collected by the survey is used to evaluate the status of post covid disease among the population.

We contact 110 patients from Ernakulam District, who was attacked by second wave of covid-19 in which 90% of the population were interested to interact and communicate with us, but some of them where confused, whether to participate in the survey. We took steps to gain the trust of those who were interviewed. Trials were conducted to understand possibility of diseases. We assured that the information gathered was only intended to create the awareness on post covid syndrome, its severity and health condition after being affected with covid-19. Most of the people interviewed experienced difficulties in their health status and daily routines. This reflected on quality of life of most patients. They described about their mental, physical well-being and severity of their disease and medications that were given was recorded. The baseline details such as demographic details like place, name of the patient, age phone number were collected as a first step towards the study. This helped us to create an idea about the people individually and information on who had follow up references if 9 months after illness. Most of the respondents in our study were males (52%) and 57% of the age group participated were 30-50 years.

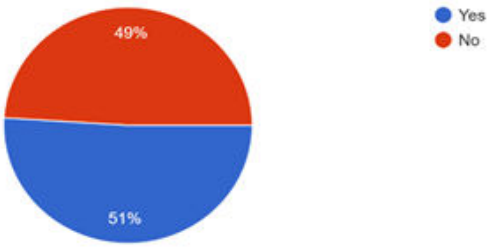

Figure 1: Patients who received vaccine

During the first stage of study, we enlisted details of vaccination, whether they had been taken the vaccination before or after getting the covid 19 or if taken, whether they have taken the full dose of vaccination and their choice of brand in vaccine selection. As we have started the study after the second wave of covid 19 in India, the government had already started to give second dose of vaccination to the age group up to 18years. From the survey we found out that 51% have taken vaccination before getting covid 19 and 49% taken after the disease, one month after they became covid negative (Fig:1).

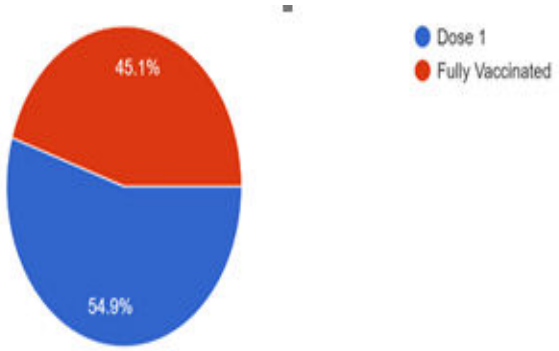

Figure 2: Vaccine dose taken

In India the first dose vaccine was given to the 45- 60 age group during first stage and then to the 18 – 45 years age group, meanwhile the second dose of vaccine also given to the first stage age groups before the second wave of covid (Fig:2). From the study our participants 54.9 % of patients have had taken only first dose vaccination and 45% were fully vaccinated. Most of them preferred (90.2%) took COVISHIELD and rest of them taken COVAXIN.

Approximately 80% reported with persistent symptoms after covid was diagnosis. The symptoms such as loss of smell and taste was common with 90% of the patients (Fig:3). Around 56% of patients had high fever and headache, 50% had runny nose, dry cough. Most of the patients experienced breathlessness during household chores, daily routines, and feel difficulty in moving upstairs. Patients weren't aware about post covid diseases covid attack.

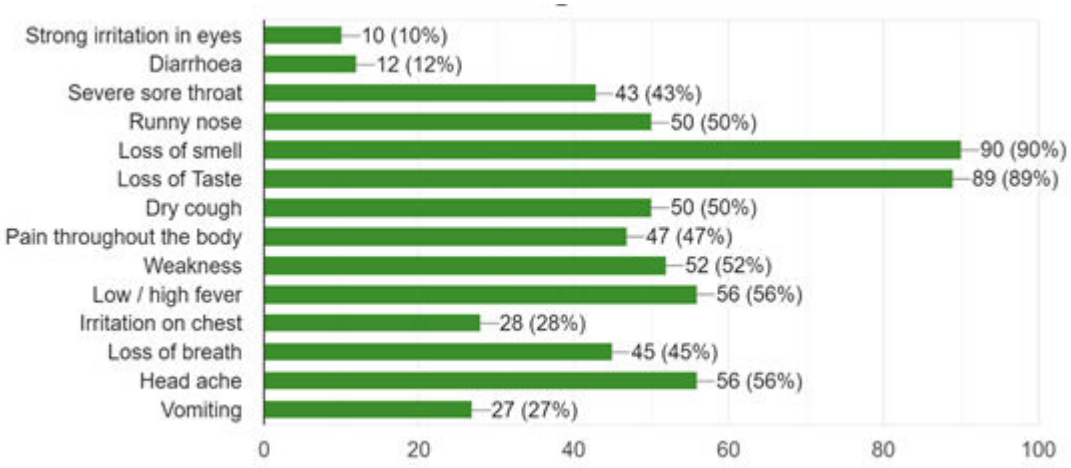

Figure 3: Symptoms after the diagnosis of covid

Most of the patients managed their covid positive state and stayed at home by the support of primary health centre treatment provided. Patients were handled based on the severity and health conditions. Approximately 71% of patients were given periodic assistance at home, 23.2% were given proper guidance and treatments. Some patients were hospitalised due to worst and unmanageable conditions.

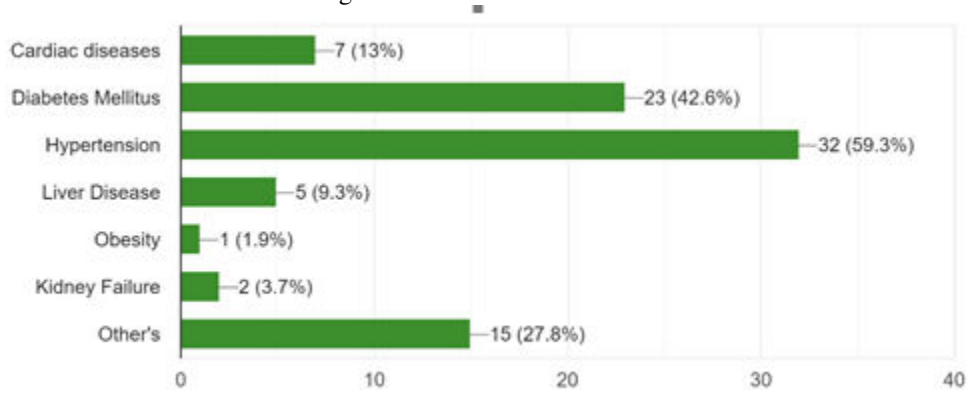

Figure 4: Pre-existing disease before exposed to covid 19

Most of the patients had pre-existing comorbidities; hypertension (59.3%) was the leading comorbidity, followed by Diabetes Mellitus (42.6%), liver disease (9.3%), cardiovascular diseases (7%) and other age-related problems like joint pains, arthritis (27.8%) (Fig: 4).

This study indicates that a significant number of patients present with a clinical spectrum after SARS-CoV-2 infection recovery. Most of them were not aware about severity of post covid disease, related disorders, and its effective treatments. Post Covid Disease and its long-term effects were identified. Periodic assistance and awareness class done by the health centre become helpful to overcome this situation (Fig: 5).

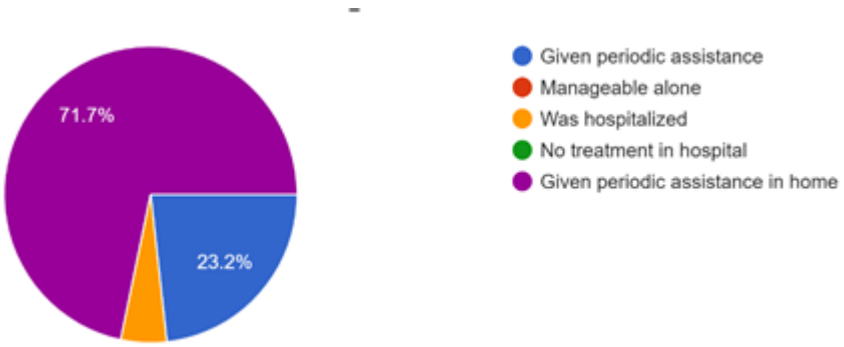

Figure 5: Patients received medical support and treatment

The clinical course of COVID-19 was classified based on the severity of the symptoms into three groups of mild, moderate, and severe; respondents who managed with home were regarded as having mild symptoms, those who received oxygen therapy had moderate clinical course, while those admitted hospital had severe COVID-19 infection.

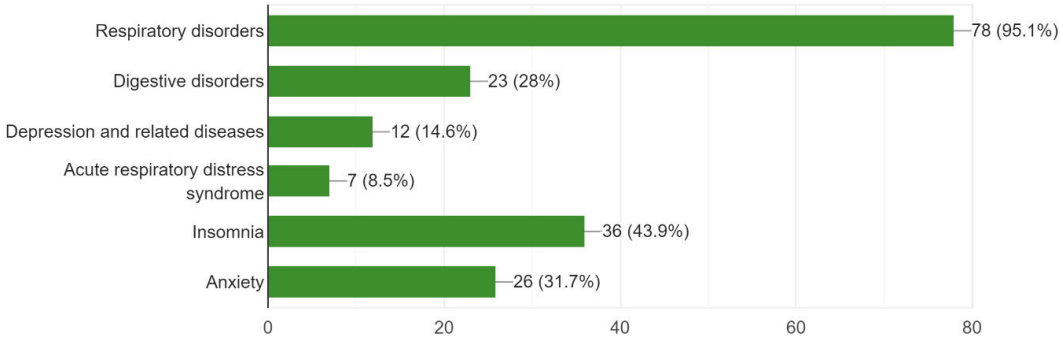

Figure 6: Post covid Diseases after covid attack

Frequently reported post covid diseases are respiratory disorders 95.1%, followed by insomnia 43.9%, anxiety and depression 31.7% and digestive disorders 28% (Fig: 6). When communicated with patients, we came to know that people experienced serious chest infections, dry cough, chest tightness breathing difficulties (84.6%) at night. Insomnia affected mainly the working men and women for daily wages. All these post covid diseases increased the weakness in patient that reflected in their economic levels that created more difficulties in their quality of life.

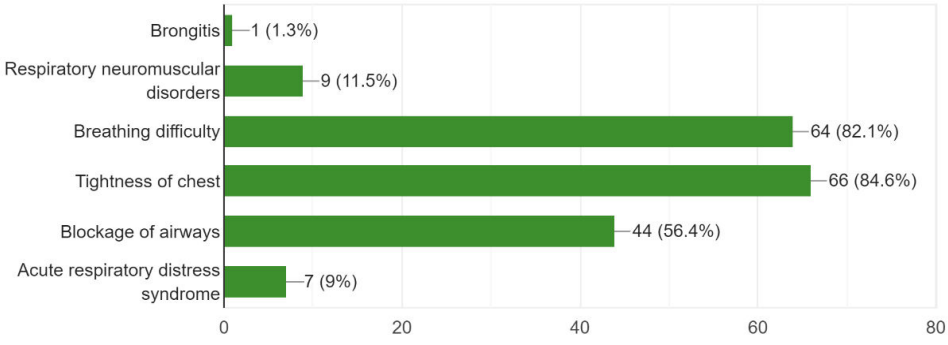

Figure 7: Patients with serious respiratory disorders

Respiratory Syndromes reported mainly were breathing difficulty 84.6%, chest tightness 82%, airways obstruction, bronchitis, respiratory neuromuscular disorders, acute respiratory distress syndrome (Fig: 7). Patients with respiratory diseases before covid was affected badly in the covid attack and worsen their conditions. This affected the quality of life of patients after covid 19. The treatment measures given by the health centre were effective for most of the patients. Patients who couldn't managed (16%) by the health centre had taken to hospital for readmissions in hospital and after discharge again periodic assistance and treatment were given in this health centre.

About 88.2% patients received medications for the post covid diseases. Medications were given through Asha workers, the health workers who visit the patient's residence and distribute medicine and periodic assistance were also provided. Effective medications and treatment measures prevented reoccurrence of the symptoms and reduce intensity to a certain level.

Even after recovery from the post covid diseases, serious effects that made patient condition worsen were the hair loss, joint pain, respiratory disorders, headache. After the treatment for post covid diseases most patients experienced breathing difficulty in when doing common household works, morning walks, climbing upstairs.

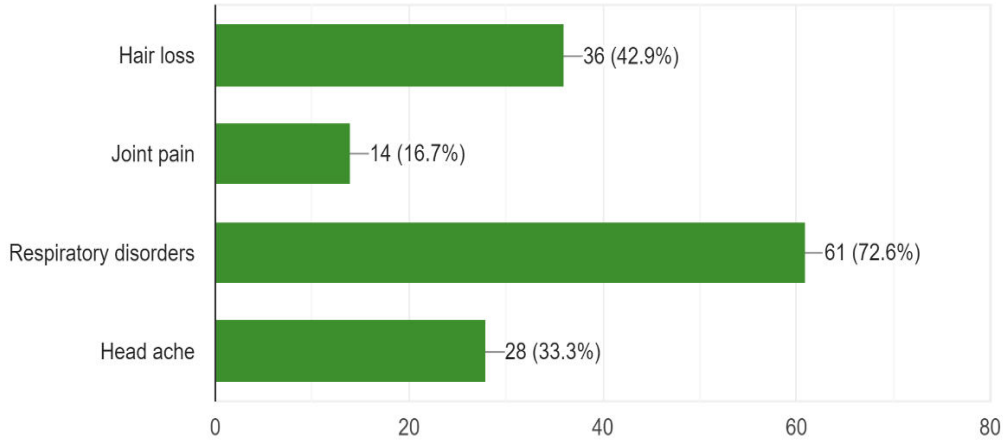

Figure 8: Disease condition retained after post covid syndrome

During the interview we noted that among all other diseases, hair loss was the most complicated and serious condition that retained after the treatment. Joint pain was also common among middle aged women (30-40 years) who had no existing lifestyle diseases before covid attack. During the patient interview it was noticed that around 70 % of patients were not aware about the post covid disease and their effective treatments (Fig: 8). They struggled with the post covid diseases for their living, but the timely intervention and follow-up of the health workers made the patients to undergo treatment.

As the second wave of covid 19 hit India in severe manner. Large number population was affected by the second wave. The mortality rate and morbidity rate were high during this stage. Almost all the hospitals and healthcenters were overwhelmed by the patients. Most of the health workers are also affected by the disease but our healthcare system overcome all the situations in excellent way.

CONCLUSION:

The covid 19 diseases continue to spread across the world. All the people are in enduring through difficulties and setbacks created by the covid 19 impact. Many of the people aren't aware of the post-covid of syndromes. Hence proper management of the post-covid diseases become the need of the hour. Currently awareness classes and mass campaigns are the only ways to reach the goal. The study aimed to get information about the existing post covid diseases. This can make an idea about the severity of the disease, their mental wellbeing, and the health conditions after being affected by the covid 19. Initial step is to collect the information about the people who have gone through covid-19.

Communicating with them face to face and through phone calls was taken to get an outlook of the post covid diseases. They should be educated about the current available treatments on both diseases and informed about the rational use of medications to prevent them from getting diseases.

The most severe post syndrome was respiratory disorders that cause severe damage to the health of people. Insomnia was the worst among post covid patients. Patients with irreversible health damage took continuous hospital Re-admission after discharge. Hair loss, joint pain and headache was common even after 9 months after covid attack. Proper patient counselling can make a significant difference in the area. Prior to this, the pharmacist should be fully aware of the type of post covid diseases, their severity, treatment, and medications available and about the approaches to be incorporated for the safe disease management. We must be able to understand the mental and the health state of the patient to get the insight of the patient. For this patient should be willing to corporate with it which is an important part of interaction and conversation. This can reflect to greater impact on the successful interaction can lead to the positive results.

Pharmacy services are an important aspect and mainstay in the public health care services and have the massive potential to align with the covid 19 disease and post covid syndrome. Pharmacist in the local bodies and health committee are linked to the patients directly or indirectly. Pharmacies in various healthcare services ensure that the patient receive effective medication, monitor the drug shortage issues and resolve. They have a great role is establishing and promoting the remote pharmacy services and provide counselling to the public about the preventive, curative treatment, and medication.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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