



## IMPACT OF COVID-19 ON PATIENT TURNOVER IN PHYSIOTHERAPY SECTION, PMR DEPARTMENT, GOVERNMENT MEDICAL COLLEGE, KOZHIKODE - A DESCRIPTIVE STUDY

### Physiotherapy

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### KEYWORDS

#### INTRODUCTION

Covid-19, the pandemic disease caused by SARS CoV-2, RNA Virus, became a worldwide stigma in social life. The virus is commonly detected by PCR test usually taken from the nasal pharyngeal swab. The infection may cause the common cold, myalgia, gastrointestinal symptoms, and severe respiratory disease which may lead to death. The disease spread includes close contact with infected persons within six feet distance which can be prevented by a surgical-style mask with large droplets. The question of whether Covid-19 can transmit via air is not clear. The use of an N-95 mask is important in this situation<sup>10</sup>. The incubation period ranges from 2 to 14 days and usually symptoms present between 4 to 6 days. The mortality rate of Covid-19 is 2 to 3 % only. Govt. Medical College, Kozhikode is one of the important and major hospitals in Kerala. The Department of Physical Medicine and Rehabilitation was established in the year 1974 at Government Medical College Kozhikode. The Department is providing effective management of various Musculoskeletal problems, Neurological problems, Congenital defects, Sports injuries, Ultrasound-guided interventions, Lifestyle diseases, Electro diagnosis and is also giving services to the Medical Boards for the assessment of disabilities. The Department is also having a Physiotherapy section, an Occupational therapy section, and a full-fledged Artificial Limb Centre.

The Covid-19 case was first reported in China, Wuhan on 31 December 2019. The first Covid - 19 case reported in Kerala was confirmed on Feb 3, 2020. In India lockdown started on March 25, 2020. The Covid-19 and the imposed lockdown created a change in patient turnover in all the health streams. The WHO declared Covid-19 a pandemic on 11 March 2020. The pandemic situation strictly banned travelling and social distancing was in force. The fear of corona has affected the mental health of the Physiotherapists in this period<sup>5</sup>. All over the world, the number of Physiotherapy patients decreased<sup>1,4,6,7</sup>. Low workload created reduced physical activity and energy expenditure for Physiotherapists and students of physiotherapy<sup>3</sup>. Some Physiotherapists in the private sector lost their job. The working time was also reduced. The physiotherapy section mostly provided emergency care and chest Physiotherapy<sup>2</sup>. In some countries, Tele-physiotherapy services were provided for managing this crisis<sup>8</sup>. This study is intended to capture how COVID 19 pandemic impacted patient turnover in the physiotherapy section of the Kozhikode Medical College, Kerala. A retrospective data analysis by means of examining the documents and patient registry to study the effect of Covid -19 in the physiotherapy section is proposed to be undertaken. Two specific time periods were taken and as such, the patient turnover from January to December of 2019 and January to December of 2020 is proposed to be taken for comparison. The findings will help the physiotherapy section supervisors and the Physical Medicine & Rehabilitation administrators to streamline the patient flow and utilize the resources in an appropriate way.

#### Aims and Objectives

- To find out the patient turnover in the Physiotherapy section of Government Medical College, Kozhikode during 2019 and 2020.
- To compare the patient flow between pre-Covid and during the Covid pandemic so as to study the impact of corona-19
- Analyze the type of patients coming for Physiotherapy regularly and what change happened in this during the corona period.

#### Methodology

**Study design:** Descriptive/Observational study.

**Study settings:** Physiotherapy section of PMR department. Government Medical College, Kozhikode. All those patients attending the Physiotherapy section of PMR Department of Government Medical College, Kozhikode will be the population of the study. The patient register is to be taken as a source for collecting data from January 2019 to December 2020. The data collection includes patient age, sex, speciality, and physiotherapy treatment. Check sheets are used to screen the patients visiting the Physiotherapy section of the PMR department of Government Medical College, Kozhikode.

#### Inclusion criteria:

All patients coming for Physiotherapy from January to December of 2019 and 2020 are included in the study.

#### Exclusion criteria:

The repeated visits of the same patient are excluded in the count of patients as the Study is intended to capture the number of patients who attended the Physiotherapy section and not the workload. The data collected from the patient register is tabulated and analyzed statistically. Both the nature of patients (speciality wise) seeking Physiotherapy and the total number is to be taken into consideration. Comparison of age, sex, speciality, and physiotherapy modalities used are recorded during pre-corona and during the corona period.

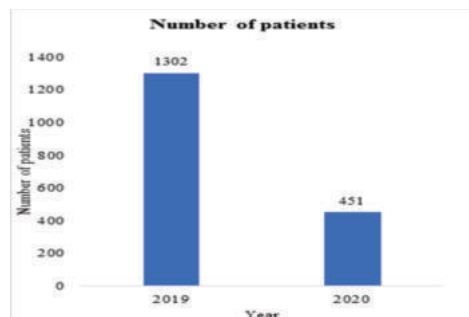
#### Statistical tools

- Descriptive statistics in the form of a simple percentage technique are to be adopted to study the frequency of patient turnover in the Physiotherapy section.
- Stratification technique would be adopted to classify patients according to the nature of clinical conditions where they seek physiotherapy.
- Chi-square test to study any association between the selected demographic variables and patient turnover.

#### Data Analysis and Results

##### 1. Comparison of the total number of patients during 2019 and 2020

Figure 1 portrays the number of patients who visited the physiotherapy section in the years 2019 and 2020. The total number of patients who visited the Physiotherapy section in 2019 is 1302 and in 2020 is 451. The difference is 851. It dictates a decrease of 65.36%.



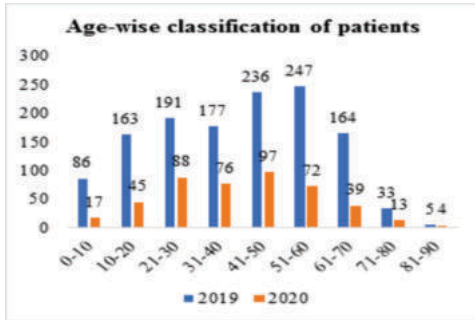
**Figure 1:** Graph showing the number of patients in the years 2019 and 2020.

**2. Age-wise comparison**

The data of the age group between 0 and 90 is divided into 9 groups and is displayed in table 1. The highest members fall in the frequency of 51-60 (247), 41-50 (236) in 2019, and 41-50(97), 21-30(88) in 2020. The lowest members fall in the group of 81-90 (5), 71-80 (33) in 2019, and 81-90 (4), 71-80 (13) in 2020. This is similar in both years. The frequency shows the highest patients in the 41-60 age group in both years and lowest in the 71-90 age group in both years.

**Table 1:** Number of patients in different age groups.

	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
2019	86	163	191	177	236	247	164	33	5
2020	17	45	88	76	97	72	39	13	4

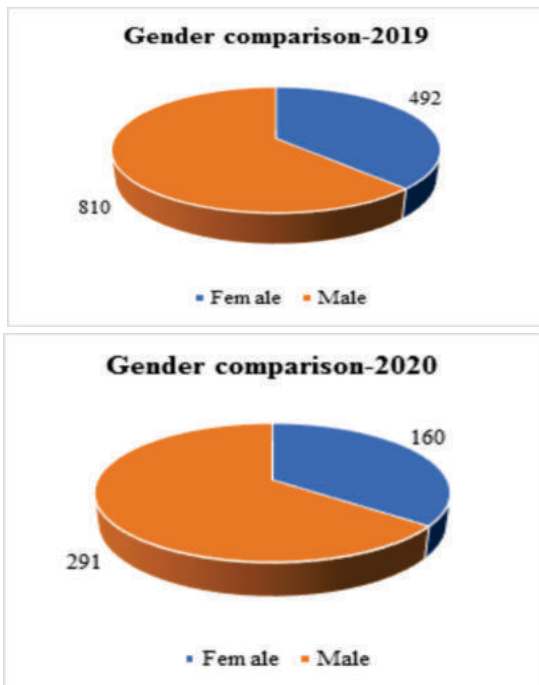


**Figure 2:** Graph showing the number of patients sorted according to their age groups.

**3. Gender Comparison**

Out of 1302 patients in 2019, 810 were male and 492 were female. The difference between males and females is 318 (24.42%). It indicates that male patients received physiotherapy more than female in the pre corona period

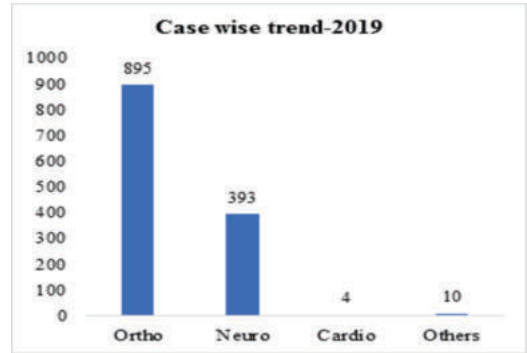
Out of 451 patients in 2020, 291 male patients and 160 female patients underwent physiotherapy. The difference is 131 (29.05%). Here also male patients received physiotherapy more than females in the corona period too.



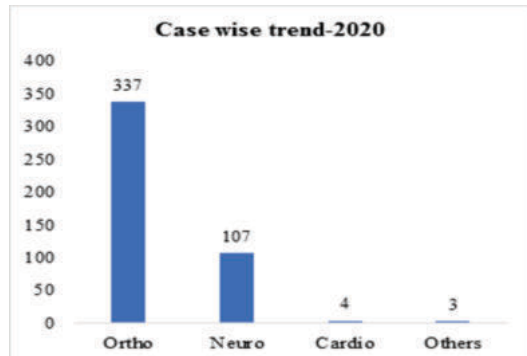
**Figure 3:** Pie chart showing the male-female count in the years 2019 and 2020.

**4. Specialty-wise case comparison**

In 2019, the ortho cases were 895 (68.74%), neuro 393 (30.18%), cardio respiratory 4 (0.31%), and others 10 (0.77%). In 2020, the ortho cases were 337 (74.72%), neuro 107 (23.73%), cardio respiratory 4 (0.89%), and others 3 (0.67%).



**Figure 4:** Case-wise patient count in the year 2019.

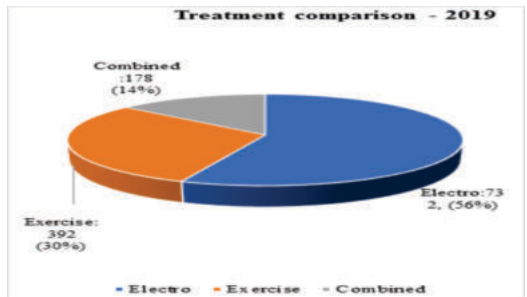


**Figure 5:** Case-wise patient count in the year 2020.

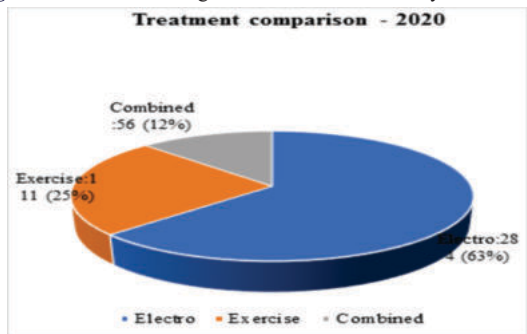
**5. Treatment-wise comparison**

In 2019, electrotherapy was given to 910 patients and exercise therapy was given to 570 patients, 178 patients received both electrotherapy and exercise therapy (electrotherapy alone 732, exercise therapy alone 392 patients).

In 2020, electrotherapy was given to 340 patients, and exercise therapy was given to 167 patients. 56 patients received both treatments (electrotherapy alone for 284 and exercise therapy alone for 111 patients).



**Figure 6:** Pie chart showing different treatments of the year 2019



**Figure 7:** Pie chart showing different treatments of the year 2020.

**Statistical analysis**

**Analysis of speciality by year**

A chi-square test was conducted to find the significance of the speciality and year. Table 2 displays the results of the chi-square

analysis done.

**Table 2:** Chi-square test results to check the significance of speciality and year.

Count Expected Cell Chi <sup>2</sup>	Cardio	Neuro	Ortho	Others	
2019	4 5.94181 0.6346	393 371.363 1.2606	895 915.039 0.4389	10 9.65545 0.0123	1302
2020	4 2.05819 1.8320	107 128.637 3.6393	337 316.961 1.2670	3 3.34455 0.0355	451
	8	500	1232	13	1753

The relation between these variables was significant,  $X^2 = 8.981$ ,  $p = .029$ . So, we will reject the null hypothesis and conclude that there is a significant difference between the observed and the expected values. A chi-square test of independence showed that there was a significant association between year and fields.

**Analysis of gender by year Count**

A chi-square test was conducted to analyze the significance between gender and year. Table 3 shows the result of the analysis. The relation between these variables was not significant,  $X^2 = 7.69$ ,  $p = .3804$ . we will accept the null hypothesis and conclude that there is no significant difference between the observed and the expected. A chi-square test of independence showed that there is no significant association between year and gender.

**Table 3:** Chi-square test results to check the significance of gender and year.

Count Total % Col % Row %	Female	Male	
2019	492 28.07 75.46 37.79	810 46.21 73.57 62.21	1302 74.27
2020	160 9.13 24.54 35.48	291 16.60 26.43 64.52	451 25.73
	652 37.19	1101 62.81	1753

**Analysis of treatment by year**

A chi-square test was conducted to analyze the significance among treatment and year. Table 4 portrays the result of the chi-square analysis done.

**Table 4:** Chi-square test results to check the significance of treatment and year.

Count Total % Col % Row %	Electrotherapy	Exercise	
2019	910 45.80 72.80 61.49	570 28.69 77.34 38.51	1480 74.48
2020	340 17.11 27.20 67.06	167 8.40 22.66 32.94	507 25.52
	1250 62.91	737 37.09	1987

The relation between these variables was significant,  $X^2 = 5.087$ ,  $p = 0.024$ . we will reject the null hypothesis and conclude that there is a significant difference between the observed and the expected.

A chi-square test of independence showed that there is a significant association between year and treatment

**A Glance at previous years**

Even though not directly related to this study, previous years' patient turnover data is tabled here for a quick comparison to understand the patient flow rate. The data from 2014 to 2020 is given in table 5.

**Table 5:** Patients count from 2014-2020.

Year	Number of Patients
2014	746
2015	832
2016	1170
2017	1255
2018	1055
2019	1312
2020	475

**DISCUSSION OF FINDINGS**

The total number of patients visited for physiotherapy in 2019 and 2020 shows a remarkable reduction in patients by around one-third. The decrease in patient turnover is 65.39%. It shows the impact of corona on society is huge and it is reflected in Physiotherapy also. The corona impact was very clear in public places, shops, recreation centers, transport vehicles, and everywhere the crowd was very very less. But hospital departments that deal with corona cases directly were filled with patients including lab and testing centers, corona ward, ICU, etc. The other related fields of the health care system including non-emergency surgery were reduced in number very much. The difference shown in data as a reduction in patients during corona is due to corona lockdown, fear of getting corona as patients are more approaching hospitals and many of them have a chance of having corona infected and lack of transport facility.

While coming to gender comparison males are more in number than females both in 2019 and 2020. It shows that gender difference in a normal year is not affected the corona period as well. The specialty-wise distribution shows ortho cases are higher in number followed by neuro cases, but cardiorespiratory and other cases are very very less. The scenario was the same pre corona and during corona also. It shows musculoskeletal issues are more in society. Neurology cases including stroke, spinal cord injury, and head injury also constitute a moderate number of patients. The treatment-wise comparison shows electrotherapy is more used than exercise therapy both in 2019 and 2020. Some patients received both treatments too.

Chi-square tests were done to determine the relationship between field, gender, treatment, and year. The study revealed that there is a significant relationship between the observed and expected means of speciality and the year ( $p=0.29$ ) and also between the year and the treatment method adopted ( $p=0.024$ ). But at the same time, the chi-square tests revealed that there is no significant relationship between gender and year ( $p=0.38$ ).

The patient flow gradually increased as the years progress starting from 2014 till 2020. The patient flow crossed 1000 in 2016 and that continued till 2020, The slight decrease in 2018 only was due to Nipa virus infection that happened in Kozhikode district which was from May to June 2018. The highest number of cases reported is in 2019 in the given years from 2014 and the lowest in 2020 which is in the corona period.

**CONCLUSION**

The comparative study of patients turns over during corona and pre-corona shows huge reduction in total patients during the corona period and this can be generalized to an extent since the corona impact all over the world created a reduction in all areas, the business, activities, journey, programs, and all aspects of human life is stuck. The impact is reflected in physiotherapy too. The other areas of study gender, speciality, and treatment selection are unique to the physiotherapy section of PMR Department Medical College Calicut. The data can be used for reference of a physiotherapy section in general, patient flow rate, and what kind of patients are coming and treatments are used. This report will give an exact picture of the main cases with which Physiotherapy is dealt with and the comparison with a pandemic situation too.

**Further Scope of Research**

This kind of studies are very rare, especially in the field of Physiotherapy. Studies conducted in different areas will attain a

general picture of physiotherapy patients and their characteristics. This kind of study conducted in the same institution at different time periods also can be compared to see if any differences occurred or what changes occurring in the characteristics of patients. This study can be compared with other departments of health care for understanding the difference

### **Ethical Approval**

The Ethical approval for the study was obtained from the Institutional Research Committee, government medical college, Kozhikode. IRC/2021/Protocol/07 dated 11.02.2022. Approval of Institutional Ethics Committee, Government Medical College, Kozhikode GMCKKD/RP2022/IEC/24.dated 17.02.2022.

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