www.ijmedicines.com Volume - 5 | Issue - 3 | May - 2021

IJAM

ORIGINAL RESEARCH PAPER ISSN (O) : 2663 - 046X | ISSN (P) : 2663 - 0451

ROLE OF PHYSIOTHERAPY IN HOSPITALISED PATIENTS OF COVI-19 ILLNESS

Dr Avinash Jain* Assistant Prof In SEPM, NSCB Medical College, Jabalpur, MP.*Corresponding Author jimmyjn6@gmail.com

Dr Sanjay Bharti Associate Prof, In SEPM, NSCB Medical College, Jabalpur, MP

Dr Sumit Khatri Senior Resident, In SEPM, NSCB Medical College, Jabalpur, MP

Dr Brahma Prakash Associate Prof, In SEPM, NSCB Medical College, Jabalpur, MP

Dr Jitendra Bhargava Prof And HOD, In SEPM, NSCB Medical, College, Jabalpur, MP

ABSTRACT This study showed the severity of cough has been decreased earlier in physiotherapy group than in control group. Similar finding was observed by O'reilly N et al. in their study(7), this could be due to interventions used in chest physiotherapy eg. Chest percussion, change in positioning of patients and breathing exercises results in clearing the airway and thus decreases the underlying disease severity.

KEY WORDS : COPD, Asthma, ILD, Bronchiectasis

INTRODUCTION:

Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) is a new coronavirus that emerged in 2019 and causes corona virus disease 2019 (COVID-19)(1,2). Individuals with COVID-19 can present with an influenza-like illness and respiratory tract infection demonstrating fever (89%), cough (68%), fatigue (38%), sputum production (34%) and/or shortness of breath (19%). Although a productive cough is a less common symptom(3).

Physiotherapy may be indicated if patients with COVID-19 present with copious airway secretions that they are unable to clear independently. Apart from that, high risk patients eg. with existing comorbidities that may be associated with hypersecretion or ineffective cough (eg, neuromuscular disease, respiratory disease and cystic fibrosis), ventilated patients who has inadequate airway clearance, prone lying patients and patients who suffer from ICU acquired weakness may also required physiotherapy. Therefore this study is required to provide knowledge about role of physiotherapy in patients with COVID-19 illness.

METHODOLOGY:

This was an Observational (prospective, cross-sectional) study, conducted in 187 patients who have COVID illness and admitted in NSCB Medical College, Jabalpur (MP). Patients were evaluated for the study from May 2020 to Sept. 2020. Patients were divided in to two groups one is Physiotherapy group and second is Control group. In physiotherapy group patient is taken physiotherapy interventions by physiotherapist along with general and specific treatment of COVID-19 weather in control group patient was not received chest physiotherapy as patients in this group had dry cough. Physiotherapy intervention has been given according to patient's clinical condition eg. if patient has productive cough then chest physiotherapy is given to clear out the airway and if patient is on mechanical ventilation, sedated and has long stay in hospital then other physiotherapy interventions were also given along with chest physiotherapy. Patients were assessed on basis of parameters eg. clinical symptoms-cough, fever, SOB and fatigue, Spo2, Duration of hospital stay. Investigations eg. CBC, Inflammatory markers, CXR, HRCT, ECG, RT-PCR for COVID-19 have been done and generalised and proposed specific treatment have been given to the patients.

The severity of cough has been assessed according to Simplified cough score(4):

Score	Daytime	Night time
0	No cough	No cough
1	Transient cough occasionally during the daytime	Transient cough before sleep or occasional cough during the night
2	Frequent cough mildly affecting daily life	Cough mildly affecting night sleep
3	Frequent cough severely affecting daily life	Cough severely affecting night sleep

Breathlessness has been assessed and graded according to MMRC Dyspnoea scale:

Grade	Description
0	No trouble by breathlessness except on strenuous exercises
1	Short of breath when hurrying or walking up a slight hill
2	Walks slower than contemporaries on the level or has to stop for breath when walking at own pace
3	Stops for breath after walking 100 m or after few minutes on the level
4	Too breathless to leave the house or breathless when dressing or undressing

Spo2 has been measure by Pulse oxymeter and readings have been noted on Day 1, 5, 10, 15, 20.

Respiratory rate has been counted on Day 1, 5, 10, 15, 20.

RESULT:

Sr. no.	variables	Total= 187	Physiotherapy group=85	Control group= 102	P value
1	Age (mean)	41.8	42.2	43.5	0.42
2	Gender				0.31
	Male	131	58	73	
	famale	56	27	29	
4	Underlying lung disease	24	11	13	0.61
	hypertension	38	23	15	0.73
	Diabetic mellitus	29	18	11	0.53

Table no 1 is showing, mean age of patients were 41.8 years. Out of 187 patients 131 were male and remaining 56 were female. 58 male patients were in physiotherapy group similarly 73 patients were in

***Corresponding Author Dr Avinash Jain**

Assistant Prof In SEPM, NSCB Medical College, Jabalpur, MP.

control group. Out of total female patients (56), 27 were in physiotherapy group and 29 patients were in control group. Out of 187 patients 24 patients have underlying respiratory disease eg. COPD, Asthma, ILD, Bronchiectasis, among these 24 patients 11 patients were in physiology group and 13 patients were in control group. Including other comorbidities hypertension was present in total 38 patients, among them 23 patients were in physiotherapy group and 25 patients were in control group, similarly diabetes mellitus were present in total 29 patients, among them 18 patients were in physiotherapy group and 11 patients were in control group.

	Physio group	Control group	P value
Duration of hospital stays (mean days)	13.42+/-2.06	19.36+/-3.08	
Time to clinical resolution (mean days) respirartory work/cough	9.56+/-1.86	16.67+/-2.34	

Table no 2 is showing mean duration of hospital stay of patients and mean time to clinical resolution. The mean duration of hospital stay was lesser in physiotherapy group as compare to control group (13.42 days and 19.36 days respectively). Resolution of cough and respiratory work were faster in physiotherapy group than control group (9.56 days and 16.67 days respectively).

Table no 3 is showing,comparision of two groups on parameters eg. Cough severity, breathlessness, peripheral Spo2 and respiratory rate at day 1, 5,10, 15 and 20. All patients had score 2 cough on admission in both groups then mean severity of cough was same till 9th day then it was decreased to score 1 on day 10 in physiotherapy group but mean severity was as same as on admission day in control group. On day 15 there was total resolution of cough in physiotherapy group but there was fall in mean severity of cough but not up to total resolution in control group. On day 20 there was total resolution of cough occurred in both groups.

All patients had breathlessness of mean grade of 3.5 in both groups. With time fall in severity of breathlessness occurred in both groups and on day 20 the mean severity of breathlessness was minimum in physiotherapy group (1.86).

The mean Spo2 was below 90% in both groups at the time of admission, which was gradually increased with stay in hospital. Increment in mean Spo2 was more in physiotherapy group and it was maximum in physiotherapy group on Day 20 (95.37%).

At the time of admission all patients were tachypnic, mean respiratory rate was 28.43 and 28.74 breaths/min in physiotherapy and control group respectively. Then with treatment the work of breathing of patients was decreased so respiratory rate was also decreased in both groups and it was minimum (19.56) in physiotherapy group on Day 20.

Parameter	1st day		5th day		10th day		15th day		20th day	
Group	physio group	control	phsio group	control	phsio group	control	Physio group	Control group	Physio group	Control group
Cough severity (Mean)	2	2	2	2	1	2	0	1	0	0
Breathlessness (Mean grade)	3.56	3.60	3.08	3.18	2.67	2.86	2.14	2.27	1.86	2.10
Peripheral oxygen saturation (mean %)	89.10	89.23	90.56	90.12	93.34	91.93	94.91	93.46	95.37	94.78
Respiratory rate (mean) (breaths/min.)	28.43	28.74	23.54	23.83	21.23	21.37	21.04	21.43	19.56	20.26

DISCUSSION:

The purpose of this study was to observe the role of physiotherapy in COVID-19 illness on the basis of mean time of resolution of clinical symptoms and mean duration of hospital stay.

Most of patients were adult in both groups, the mean age was 41.8 years. Pickels B et al. observed that, providing physiotherapy to older people is a challenge(5). It may due to elder patients have senile physiological changes in musculoskeletal and systems of body and also have comorbidities. Males are predominant in both groups. Almost half of patients were had underlying respiratory diseases and other comorbidities. According to Rogelio A et al, presence of comorbidities can impact on physiotherapy intervention by decreasing its success rate and increasing in dropouts(6), so in this study for such type of patients, physiotherapist encouraged and gave more attention to them.

This study showed the severity of cough has been decreased earlier in physiotherapy group than in control group. Similar finding was observed by O'reilly N et al. in their study(7), this could be due to interventions used in chest physiotherapy eg. Chest percussion, change in positioning of patients and breathing exercises results in clearing the airway and thus decreases the underlying disease severity.

This study showed that, severity of breathlessness was decreased in all patients from both groups and difference in duration of resolving of breathlessness in both groups was non significant, this could be due to some patients had other underlying lung diseases, cardiac comorbidities and due to post COVID-19 disease sequelae eg. occurrence of parenchymal fibrosis and thromboembolic complications(8).

We observed that, respiratory rate was more in initial days of stay and then gradually it was decreased as disease severity was decreased or due to oxygen therapy. The duration of settlement of respiratory rate was almost similar in both groups. Respiratory rate indirectly reflect the work of breathing and oxygen supplementation also decreases work of breathing and settle respiratory rate. (9). In our study mean Spo2 of patients were below 90% initially which means most of patients were hypoxic on admission, which become normal with treatment. Increase in Spo2 was earlier in physiotherapy group than control group. This could be due to early decrease in severity of disease and early recovery of patients. Huang C et al and Cabillic M et al. observed that, chest physiotherapy does not change the course of COVID-19 illness in acute phase of the disease in patients with hypoxic respiratory failure and dry cough but it may benefit in patients with productive cough and having mild COVID-19 illness(10,11).

CONCLUSION:

This study concluded that physiotherapy has beneficial role in early recovery of COVID-19 patients and in duration of stay in hospital. Physiotherapy interventions can resolve clinical symptoms and hypoxemia earlier.

REFERENCES:

1. del Rio C, Malani PN. 2019 Novel Coronavirus—Important Information for Clinicians. JAMA. 2020;323:1039–1040.
2. World Health Organization, Coronavirus disease 2019 (COVID-19) Situation Report 46, 2020.
3. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med. 2020. Early online: 29 February, 2020.
4. Lai K. Chinese National Guidelines on Diagnosis and Management of Cough: consensus and controversy. Thoracic disease 2014;6:S683-8.
5. Pickles B, Compton A, Cott C, Simpson J, Vandervoort A, editors. Physiotherapy with Older People. London: WB Saunders London, 1995.
6. Rogelio A Coronado et ai. Total number and Severity of Comorbidities do not Differ Based on Anatomical Region of

Musculoskeletal pain. J Orthop Sports PhysTher. 2011;41(7):477-85.
7. O'Reilly N et al. *physiopedia* [Online]; Respiratory Management of COVID-19. 2020. 26.11.2020: http//www.physopaedia.com.
8. Greenhalgh T et al. Management of Post COVID-19 in Primary Care. J BMJ. 2020;370:m3026.
9. British Thoracic Society 2016.
10. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical Features of Patients Infected With 2019 Novel Coronavirus in Wuhan, China. Lancet. 2020;395(10223):497–506.
11. Cabillic M, Gouilly P, Reychler G. [Manual Airway Clearance Techniques in Adults and Adolescents: What Level of Evidence?] Rev Mal Respir. 2018;35(5):495–520.