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Management of Post Covid Cases with Homoeopathy Using Innovative "Gosaw Score'': A Prospestive Observational Study

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ABSTRACT

Background

India being a developing country, the economic factor plays a major role in the investigations of the patients and its repeated follow up. Increasing number of post COVID patients with residual effect are reaching hospitals and their continuous assessment is important. Innovative GOSAW score (based on bedside Pulmonary Function Test) was developed and utilized to check the changes and improvement in patient's respiratory ailments, thereby reducing ionizing hazards on patient's body as well as cost effectiveness in terms of repeated CT Scans.

Aim and Objectives

The objective of this study is to assess the clinical pattern of post covid respiratory ailments by using Innovative GOSAW score and effectiveness of homoeopathic drugs for the management of post covid respiratory ailments.

Materials and Methods

The study conducted as a prospective observational open label study on 30 post covid patients attending regular OPD in GHMC Bhopal. Each patient was evaluated by using Innovative GOSAW score for assessments of effectiveness of homeopathic drugs for

the management of post covid respiratory ailments. Data will be presented by of graphs, pie charts & other standard statistical methods. Final calculations were done with the help of one way repeated measure ANOVA test.

Result

Analysis of result of treatment was done the change in all parameter (dyspnoea, cough, chest pain, weakness, GOSAW Score) considering normalization baseline score and end line (21 days) score as per table it is evident that 20% (n=6) cases marked improvement, moderate improvement 26.66% (n=8) cases, mild improvement 23.33% (n=7) cases and 30% (n=9) cases showed no improvement after treatment. The Pulmonary function tests score changes from 5.7 (SD 1.46) at baseline to 3.9 (SD 0.95), 2.4 (SD 0.77), 0.56 (SD 0.50) at 7th day, 14th day & 21st day respectively. The change was significant [F = 2.22 > Fcrit =1.59, P-value -0.002352, P < 0.05; One-way repeated measure ANOVA].

Conclusion

The Innovative score helps in determining the assessment of Respiratory elements in a holistic way along with demonstration of evidence based clinical results. Homoeopathic drugs also demonstrated a significant role in the management of post covid-19 respiratory ailments.

KEYWORDS

Bed Side Pulmonary function test; GOSAW Score, Homoeopathy; Post Covid; Respiratory ailments.

INTRODUCTION

The global health emergency COVID-19 is caused by the corona virus SARSCoV2 virus and manifests in multiple stages affecting multiple organ systems, resulting in a wide range of clinical symptoms.[3] The clinical manifestations of COVID-19 are highly variable but commonly include shortness of breath(53–80%), sputum production (34.3%), dry cough (60–86%),and sore throat (13.9%).[4]

Post Covid is a broad term for people who have recovered from COVID-19 but continue to experience symptoms for much longer than expected. Another definition is "not recovering several weeks or months after the onset of symptoms suggestive of COVID-19, regardless of whether individuals were tested or not."[7]

Post COVID-19 has a duration of more than 12 weeks. Other terms used include "long COVID," or post-COVID syndrome. [8] which include fatigue, exertional dyspnea, cough, loss of taste or smell, headache and body-ache, confusion etc.

Post COVID-19 complications may lead to a major long-term impact on communities and health care systems. This is because cases of pulmonary sequelae are expected to rise significantly due to the very large number of former COVID-19 patients.[5,6]

Homoeopathy has been playing a key role in managing respiratory disorders. It has been observed that patients seeking homoeopathic treatment had a better overall outcome than those on conventional treatment. Our aim is the published evidence on post-COVID syndrome, and describe its incidence and clinical spectrum, with a special emphasis on the challenges of its management in Homoeopathy.

Purpose of this study is to assess the effectiveness homoeopathic medicines in the management of postcovid-19 respiratory ailments. where medicine was selected on the basis of totality of symptoms according to homoeopathic principles. Self-designed innovative GOSAW SCORE (BASED ON

PULMONARY FUNCTION TESTS) MEDICAL RESEARCH COUNCIL SCALE (MRCSCALE) for Dyspnea and SIMPLIFIED COUGH SCORE for cough VISUAL ANALOGUE SCALE for chest pain, VISUAL ANALOGUESCALE for weakness and was used to analyze the reduction in the intensity of Post Covid -19 respiratory ailments. At the start of treatment, data were collected at the baseline,7days,14 days, and 21 days, respectively. The one-way repeated measure ANOVA (R-ANOVA) test was used for outcome assessment.

MATERIAL AND METHODS

Study Design

The Government Homoeopathic Medical College's OPD and IPD conducted a prospective open-level study between September 2021 to September 2022. All procedures followed the Good Clinical Practice (India) norms. After fulfilling the study's eligibility criteria including offering written informed consent, patients were recruited in the study.

Participants

The predefined inclusion and exclusion criteria were followed while enrolling patients suffering from post-covid symptoms. Patients over the age of 18, of either gender, with confirmed RTPCR+ cases, as well as those with respiratory illnesses who provided written informed consent and at least one of the following symptoms: cough, chest pain, dyspnea, or weakness persisting more than three to twelve weeks, were included in the study. Patients having a history of cancer, those who needed oxygen therapy, those with a serious underlying medical condition (such as severe renal, hepatic, or cardiovascular illness), significant psychiatric issues, and women who were becoming pregnant or breastfeeding were excluded from the study.

Individualized Homoeopathic Intervention

After enrollment, the patient's symptoms were analysed, repertorised and a group of medicines was prescribed. The final selection of medicine was made in consultation with materia medica. Follow up will be followed on every 7 days up to 21 days or as per need of the patient, and results will be assessed on the basis clinical symptom.

STATISTICAL METHOD

Outcome was assessed using self-designed innovative GOSAW SCORE (BASED ON PULMONARY FUNCTION TESTS) MEDICAL RESEARCH COUNCIL SCALE for Dyspnea, SIMPLIFIED COUGH SCORE for cough, VISUAL ANALOGUE SCALE for chest pain, VISUAL ANALOGUE SCALE for weakness and in all cases after homeopathic intervention. Data will be presented by of graphs, pie charts & other standard statistical methods. Final calculations were done with the help of one way repeated measure anova test.

Outcome Measure Bedside PFT Test [10]:

1. Greene & berowitz cough test
2. Olsen modified match test
3. Sabrasze breath holding test
4. Auscultationover trachea

5-6 Min walk test

As we cannot quantify the respiratory symptoms seen in patients which are completely subjective, hence this study is design to quantify these subjective symptoms by using battery of these bedside self- designed innovative (GOSAW SCORE) BASED ON PULMONARY FUNCTION TEST.

GOSAW score	Score 0	Score 1	Score 2
Greene and Berowitz cough test	Able to cough	Not able to cough	Productive/ paroxysm
Olsen modified match test	9"	6"	3"
Sabrasze breath holding test	More than 20sec	20- 15 sec	Less than 15 sec
Auscultation over trachea	4-5 sec	2-3 sec/ 5-6 sec	Less 2 sec/more than 6 sec
Walk for 6 minute	No change / increase	1-4 fall	More than 4 fall

Score minimum score 0 maximum score 10

Score < 3 – assurance and treatment

Score 3-6 – treatment and follow up

Score >6 – treatment and monitoring, may require hospitalization.

For assessment of dyspnea in patents MEDICAL RESEARCH COUNCIL SCALE, for cough SIMPLIFIED COUGH SCORE, for chest pain & weakness VISUAL ANALOGUE SCALE is applied.

STATISTICAL ANALYSIS

All respondents with confirmed Covid-19 positive status were included in the analysis. Incomplete information were also excluded. Data were analyzed using One way repeated AVONA test and were represented as number (%) or Mean±SD / Median (IQR) as appropriate. F critical Value less than F-value was considered statistically significant.

RESULTS

As shown below, the maximum age incidence of 37%(n=11)were from the age 21-30years.,followed by 30%(n=9) in the age group of 31-40 years, and then extis17% (n=5) in the age group of 41-50 years. and 6% (n= 2) in the age group between 51-60 years and remain 10 %(n=3) in the age group between less than 20 years., 61-70 yrs., and above 70 years, age with each having 3.3%(n=1) of patients.

Table 1: Distribution of Patients as Per Age

Age (Years)	No Of Patient s	%Age	Male	Female	%Age Male	%Age Female
Less Than 20yr	1	3.3%	1	0	100%	0%
21-30yr	11	37%	8	3	72%	28%
31-40yr	9	30%	8	1	88%	12%
41-50yr	5	17%	4	1	80%	20%
51-60yr	2	6%	0	2	0%	100%
61-70yr	1	3.3%	1	0	100%	0%
Above 70yr	1	3.3%	1	0	100%	0%
Total	30	100%	23	7	77%	23%

As shown below the maximum number of patient were males 77% (n =23) and only 23% (n=7) patient were female in study. hence study male predominance.

Table 2: Distribution of Patient as Per Gender

SEX	NO OF PATIENTS
MALE	23
FEMALE	7
TOTAL	30

As shown above the patients were having clinical symptoms Cough (n=26), Chest pain (n=17) Weakness (n=16), Dyspnea (n=11).Two patients were having all four symptoms, ten patients were having 3 symptoms, and fifteen patients were having only 2 symptoms.

Table 3: Clinical Pattern of Post Covid -19 Respiratory Ailments

S. No.	SYMPTOMS			
	DYSPNEA	COUGH	CHEST PAIN	WEAKNESS
1	A	P	P	P
2	A	P	P	A
3	A	P	A	P
4	A	P	P	P
5	A	P	A	P
6	A	P	P	A
7	A	A	A	P
8	A	P	A	P
9	P	P	P	P
10	A	P	P	P
11	A	P	P	A
12	P	A	A	A
13	P	P	A	A
14	A	P	P	A
15	A	P	A	P
16	A	P	P	P
17	P	A	A	A
18	A	P	P	P
19	P	P	P	A
20	A	P	P	A
21	P	P	A	A
22	P	P	P	P
23	A	P	A	P
24	P	P	A	P
25	P	P	A	A
26	P	P	P	A
27	A	P	P	P
28	P	P	P	A
29	A	A	A	P
30	A	P	P	A

- Pre-treatment evaluated GOSAW SCORE (based on pulmonary function test), MEDICAL RESEARCH SCALE for Dyspnea, SIMPLIFIED COUGH SCORE for cough, VISUAL ANALOGUE SCALE for chest pain, VISUAL ANALOGUE SCALE for weakness of 30(=n) patients are compared with post-treatment outcome score of same 30 patients by repeated measure ANOVA test at baseline and over 7^{th}day, 14^{th}day &21^{st}day. Standard deviation and mean of 30 patients at baseline, compared over 7^{th}day, 14^{th}day&21^{st}.

- The MRC Scale changes from 1.4 (SD 1.9) at baseline to 1.1 (SD 1.51), 0.8 (SD1.09), 0.6 (SD 0.85) at 7^{th} day, 14^{th} day & 21^{st} day respectively. The change was significant [F=17.47>Fcrit=1.59, P <0.05; One-way repeated measure ANOVA].

- The SIMPLIFIED COUGH SCORE changes from 4.2(SD 2.0) at baseline to 3.3(SD1.74),2.6(SD1.47),1.36(SD0.96)at7^{th}day,14^{th}day&21^{st}dayrespectively.The change was significant [F=12.45>Fcrit=1.59, P <0.05;One-wayrepeated measure ANOVA.

- The VISUAL ANALOGUE SCALE Score for chest pain changes from3.1(SD 2.8) at baseline to 2.0(SD 1.93), 1.5(SD 1.47), 0.83 (SD 0.91) at 7^{th} day, 14^{th} day & 21^{st} day respectively. The change was significant [F = 37.99>Fcrit=1.59, P < 0.05; One-way repeated measure ANOVA].

- The VISUAL ANALOGUE SCALE Score for weakness changes from 3.3(SD 3.3) at baseline to 2.3(SD 2.4), 1.9(SD 2.05), 1.36 (SD 1.67) at 7^{th} day, 14^{th} day & 21^{st} day respectively. The change was significant [F = 26.73>Fcrit=1.59, P < 0.05; One-way repeated measure ANOVA].

Table 4: Comparision of Medical Research Council Scale and Simplified Cough Score Visual Analogue Scale for Chest Pain and Visual Analogue Scale for Weakness before and After Treatment.

MRC SCALE SCORING		SIMPLIFIED COUGH SCORE SCORING		VAS FOR PAIN		VAS FOR WEAKNESS	
Before	After	Before	After	Before	After	Before	After
0	0	6	2	6	2	8	3
0	0	6	2	5	1	0	0
0	0	4	1	0	0	7	4
0	0	5	3	7	2	6	1
0	0	6	1	0	0	9	2
0	0	5	2	6	1	0	0
0	0	0	0	0	0	5	3
0	0	3	0	0	0	4	1
5	2	6	1	4	2	8	4
0	0	6	2	5	1	7	1
0	0	4	1	6	1	0	0
4	1	0	0	0	0	0	0
3	2	6	1	0	0	0	0
0	0	5	3	6	2	0	0
0	0	3	1	0	0	4	1
0	0	6	2	5	1	5	2
4	2	0	0	0	0	0	0
0	0	6	2	7	2	7	3
3	1	6	3	6	2	0	0
0	0	6	1	5	3	0	0
4	2	3	1	0	0	0	0
4	2	6	2	5	1	8	4
0	0	4	1	0	0	5	3
3	1	5	3	0	0	3	0
3	1	3	0	0	0	0	0
4	2	6	2	6	1	0	0
0	0	6	2	6	2	7	5
5	2	3	1	5	1	0	0
0	0	0	0	0	0	6	4
0	0	3	1	4	0	0	0

The Pulmonary function test score changes from 5.7(SD1.46) at baseline to 3.9 (SD0.95), 2.4 (SD 0.77), 0.56 (SD 0.50) at 7th day, 14th day & 21st day respectively. The change was significant [F=2.22>Fcrit=1.59, P<0.05; One-way repeated measure ANOVA].

No. 5: COMPARISION OF CHANGE IN GOSAW SCORE (BAESD ON PULMONARY FUNCTION TEST) BEFORE AND AFTER TREATMENT

S. NO.	BEFORE	AFTER
1	8	1
2	6	1
3	5	1
4	4	0
5	4	1
6	4	1
7	7	0
8	5	1
9	6	1
10	4	1
11	8	0
12	5	0
13	6	0
14	7	1
15	6	0
16	4	1
17	4	1
18	7	0
19	8	1
20	8	0
21	5	1
22	6	1
23	4	1
24	8	1
25	5	0
26	6	0
27	7	1
28	6	0
29	4	0
30	4	0

Since, different parameters (Dyspnea, Cough, Chest pain, Weakness and GOSAW score) have different units and scale, normalization has been done to compute a comprehensive Post Covid -19 Respiratory assessment Score for both the baseline and the end-line. The normalization has been done using the formula-

$$Index = \frac{Sv - Smin}{Smax - Smin}$$

The final composite Post Covid -19 Respiratory Assessment score for the baseline and the end-line is the average value of the normalize scores of all the five parameters which are discussed above.

Table 6. COMPARISON OF CHANGE IN GOSAW SCORE BASED ON PULMONARY FUNCTION TEST, MEDICAL RESEARCH COUNCIL SCALE FOR DYSPNEA, SIMPLIFIED COUGH SCORE FOR COUGH, VISUAL ANALOGUE SCALE FOR CHEST PAIN & WEAKNESS AT BASELINE OVER 7TH DAY, 14TH DAY, 21ST DAY

Outcome measures	Different time points				One-way repeated measure ANOVA	
Scales	Baseline: (mean ± Sd)	7th day (mean ± Sd)	14th day (mean± Sd)	21st day (mean ± Sd)	F (DFn, DFD)	P-value
GOSAW SCORE	5.7±1.4	3.9±0.95	2.4±0.77	0.56±0.50	F=2.22	0.002352
MRC Scale (Dyspnea)	1.4± 1.9	1.1 ± 1.51	0.8 ± 1.09	0.6± 0.85	F=27.34	$2.13*10^{-32}$
Simplified Cough Score (Cough)	4.2 ±2.0	3.3 ± 1.74	2.6 ± 1.47	1.36± 0.96	F=17.47	$2.86*10^{-25}$
Visual Analogue Scale for Chest Pain	3.1± 2.8	2.0 ± 1.93	1.5± 1.47	0.83± 0.91	F=13.13	$4.86*10^{-21}$
Visual Analogue Scale for Weakness	3.3 ± 3.3	2.3 ± 2.4	1.9 ± 2.05	1.36± 1.67	F=22.94	$1.52*10^{-29}$

DISTRIBUTION OF CASES ACCORDING TO RESULT OF TREATMENT

Analysis of result of treatment was done the change in all parameter (dyspnea, cough, chest pain, weakness, GOSAW Score) considering normalization baseline score and end line (21 days) score as per table it is evident that 20% (n=6) cases marked improvement, moderate improvement 26.66% (n=8) cases, mild improvement 23.33% (n=7) cases and 30% (n=9) cases showed no improvement after treatment.

Value has been scaled for better understanding

Negative to 00 – No Improvement

0.01 to 0.10 – Mild Improvement

0.11 to 0.20 – Moderate Improvement

More than 0.21– Marked Improvement

Table 7: DISTRIBUTION OF CASES ACCORDING TO RESULT OF TREATMENT

S. No.	RESULT OF TREATMENT	NO. OF CASES	%
1.	Marked Improvement	6	20%
2.	Moderate Improvement	8	26.66%
3.	Mild Improvement	7	23.33%
4.	No Improvement	9	30%
	TOTAL	30	100%

DISCUSSION

In this study, the most commonly prescribed drugs were Bryonia alba (24%), Phosphorus (20%),and Natrum muriaticum, Sulphur(10%). Bryonia alba was also found useful in treating COVID-19 cases successfully by *To et al. at Hong Kong* .[(11)]Bryonia alba had acted well. This study also found that plant group drugs and mineral group drugs were mostly indicated and effective.

This study showed younger male predominance .The largest age group comprised individuals 20 to 39 years of age (57.1%),with a mean age of 37.69 similar result was found by *khodeir et-al* in there studies.[(14)]

The patients were having clinical symptoms Cough (n= 26), Chest pain (n=17), Weakness(n=16),Dyspnea(n=11).Two patients were having all four symptoms, ten patients were having 3 symptoms, and fifteen patients were having only 2 symptoms .In our study COUGH was symptom among all respiratory ailments similar result was seen by *khodeir et-al* patients presenting with dyspnea in less our study because amongst hospitalized patients with COVID-19, up to 80% may continue to experience breathlessness at 3 months after discharge, but the prevalence of significant breathlessness (modified Medical Research Council grade 2 or more) is generally less than 10%.Similar result was found by Jennifer Poole Ph.D , Homoeopathy and long covid published in May 2021.In this case series they had taken six case of Long covid from personal accounts. Cases were analyzed using the Nemeton (NHS) protocol. In this, These rubrics based on repertorization. He found homoeopathic remedies like Arsenic album, Silicea, Phosphorus that was selected on the basis of concept of individualization were effective in postcovid-19 cases.[15] .

this study based on repertorization found remedies bryonia ,phosphorus ,natrum muriaticum & sulphur were found.the same cluster of polycrests was useful invarious COVID studies as well. Hence complementing homoeopathic principles.

CONCLUSION

Homeopathic medicines are based on dynamization to possibility of side effects is minimized. There is such presentation the offer a very promising management when used standalone medicine. bigger studies with elaborated study design & sample size can be taken up

to justify this further The study showed statistically significant result at the end. Thus, we can say Homoeopathic drugs play significant role in the management of post covid-19 respiratory ailments.

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