

ORIGINAL ARTICLE

A study on nursing effect of integrated traditional Chinese and Western medicine management mode on COVID-19

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Abstract

Aim: This study aims to explore the effect of integrated traditional Chinese and Western medicine management mode on nursing care of patients with coronavirus disease 2019 (COVID-19).

Methods: The study included 142 COVID-19 patients hospitalized in Huoshenshan Hospital from February to March 2020. Nursing measures in the treatment ($n = 111$) and control ($n = 31$) groups included integrated management care and usual care. The integrated management model had eight components: WeChat group management, early Traditional Chinese Medicine (TCM) treatment, emotional nursing, music therapy, observation of tongue coating and pulse, vital Qi strengthening, preventing recurrence after recovery, and an individualized follow-up scheme. The endpoints included clinical outcome, recovery time of clinical symptoms and signs, days of hospital stay, and survival without intensive care unit (ICU) admission.

Results: Recovery time from clinical symptoms such as fever, cough, shortness of breath, muscle aches, and fatigue in the treatment group was shorter than that in the control group. Less time was required to show negative chest computed tomography findings in the treatment group than in the control group (13.0 ± 2.8 vs. 16.7 ± 3.9 , $p < .025$). The lengths of hospital stay in the two groups were 16.4 ± 7.3 days (treatment group) and 24.4 ± 4.8 days (control group) ($p < .001$). Kaplan–Meier curves for survival without ICU transfer showed statistical difference between the two groups ($\chi^2 = 5.427$, $p = .020$).

Conclusions: Our study shows that the integrated management mode can relieve the symptoms of patients faster, shorten hospital stay and disease course, and reduce the rate of ICU transfers.

KEYWORDS

coronavirus disease 2019 (COVID-19), integrated management mode, nursing experience, Traditional Chinese Medicine (TCM)

1 | INTRODUCTION

There is no current effective treatment for coronavirus disease 2019 (COVID-19). Therefore, nurses play an important role in COVID-19 management (Wu et al.,

2020). Compared with young and healthy people, the elderly and people with underlying diseases are more susceptible to COVID-19, and may develop into severe COVID-19 cases. According to the provisions of the law of the People's Republic of China on the Prevention and

Control of Infectious Diseases, COVID-19 is an acute respiratory infectious disease and class B infectious disease, which is managed as a class A infectious disease (Ho, Chan, Chung, & Leung, 2020). The main task of hospital nursing management is to strengthen isolation and protection measures and improve the ability of nurses to respond to COVID-19 (Chen et al., 2020). Huoshenshan Hospital not only has advanced facilities, but also has the most experienced medical team. The Guidelines for COVID-19 Diagnosis and Treatment, issued by the National Health Protection Commission and the State Administration of Traditional Chinese Medicine (TCM), states that “all relevant hospital institutions should actively incorporate TCM into medical treatment, strengthen the integration effect of Chinese and Western medicine, establish an integrated consultation system for traditional Chinese and Western medicine, and promote medical treatment to achieve a better therapeutic effect (National Administration of Traditional Chinese Medicine, 2010).” The guidelines fully affirmed the advantages of Chinese medicine in treating COVID-19. The author has the privilege of participating in the nursing care of COVID-19 patients in Huoshenshan Hospital. Combined with the related theories of TCM, the author observed the clinical nursing care provided to 142 patients with severe COVID-19 in Huoshenshan Hospital, and explored the effect of integrated traditional Chinese and Western medicine management mode on patients with COVID-19.

2 | METHODS

2.1 | Patients

The subjects were from the inpatient ward of Huoshenshan Hospital, and the study was approved by the ethics committee of the Huoshenshan Hospital. The inclusion criteria included definitive diagnosis of COVID-19, and age over 18 years and less than 80 years. The exclusion criteria were as follows: patients with respiratory failure requiring ventilator-assisted breathing; patients complicated with renal failure; patients with a life expectancy of less than 2 months; and patients with difficulty communicating with doctors and nurses. The study included 142 COVID-19 patients hospitalized in Huoshenshan Hospital from February to March 2020. All patients were diagnosed with COVID-19 via chest computed tomography (CT) examination and nucleic acid testing. The patients who received integrated management mode were assigned to the treatment group ($n = 111$), while the patients who were unwilling to take Chinese medicine or could not tolerate Chinese medicine were assigned to the control group ($n = 31$). All

clinical data of patients, including sociodemographic (gender, age, body mass index [BMI], percentage of smokers, and number of cigarettes/day) and associated morbidity (chronic obstructive lung disease, congestive heart failure, diabetes mellitus, asthma, and hypertension) are listed in Table 1.

2.2 | Methods

The routine treatment included the following: timely and effective oxygen therapy, non-invasive or invasive mechanical ventilation, antiviral therapy, bacteriological monitoring, and timely use of antibiotics when there was evidence of secondary bacterial infection (Ho et al., 2020). Patients received either usual nursing care or integrated management nursing care, based on whether they were in the control or integrated management model group, respectively. The usual care included health education, oxygen administration if dyspnea was present, close monitoring of drug adverse effects, regular oral care, daily eye care, urinary catheter care, prevention of deep vein thrombosis, respiratory function training, diet guidance, and vital sign monitoring (Sharma, Nuttall, Kalyani, & Hemlata, 2020). The integrated management model developed specifically for this study had eight components: WeChat group management, early TCM treatment, emotional nursing, music therapy, observation of tongue coating and pulse, vital Qi strengthening, preventing recurrence after recovery, and individualized follow-up scheme.

2.3 | Integrated management mode

In an integrated management mode of traditional Chinese and Western medicine, nursing staff regard patients as a functional whole, and should provide comprehensive help and care for patients that addresses physiology, psychology, society, spirit, and culture. Early TCM treatment should also be provided. Therefore, the implementation of integrated management mode of traditional Chinese and Western medicine means upgrading the nursing concept of treatment from simple disease nursing to the stage of “patient-centered” comprehensive and holistic nursing for patients. The integrated management mode was based on the following aspects.

2.3.1 | WeChat group management

This is a new type of contagious disease management platform, which is characterized by less contact, convenience

TABLE 1 Baseline characteristics of patients with COVID-19 who participated in the study

Patient characteristics	Treatment group	Control group	<i>p</i> value
Number of patients	111	31	—
Age, years	62.5 ± 15.2	59.7 ± 16.1	.70
Female, % (95% CI)	46.5 (36.7–56.3)	50.5 (40.7–60.3)	.57
Body mass index, kg/m ²	24.9 ± 3.0	26.0 ± 2.1	.36
Smoker, % (95% CI)	14.4 (8.5–20.3)	16.1 (2.4–29.8)	.81
No. of cigarettes/day	10.2 ± 5.2	11.8 ± 6.0	.53
Alcohol/week, units	0.8 ± 0.5	1.0 ± 0.6	.39
Systolic blood pressure, mmHg	132.0 ± 16.7	135.5 ± 15.5	.63
Diastolic blood pressure, mmHg	77.5 ± 13.8	79.5 ± 15.9	.70
History of % (95% CI)			
Chronic obstructive lung disease	18.0 (10.2–25.8)	12.9 (1.1–24.7)	.50
Asthma	10.8 (4.9–16.7)	16.1 (2.4–29.8)	.42
Congestive heart failure	12.6 (6.7–18.5)	19.4 (5.7–33.1)	.34
Diabetes mellitus	19.8 (12.0–27.6)	22.6 (6.9–38.3)	.74
Chronic kidney disease	15.8 (8.0–23.6)	20.8 (13.0–28.6)	.36
Hypertension	20.7 (12.9–28.5)	25.8 (10.1–41.5)	.54
Stroke	22.8 (15.0–30.6)	18.8 (11.0–26.6)	.49

Note: Values are given as mean (*SD*) unless otherwise specified.
Abbreviations: CI, confidence interval.

for patients, and is suitable for health education. Our department's use of WeChat for COVID-19 patients could effectively reduce nursing workload, save medical resources, increase the curative effect of health education, and strengthen doctor-patient communication. Music therapy, diet education, follow-up and other education contents in our department were all placed in the WeChat group file, and patients could download and learn by themselves.

2.3.2 | Early treatment of TCM

COVID-19 belongs to the category of “plague” in TCM. The principle of treatment is to expel the exopathogens in the early stage when the disease position is superficial, so as to prevent the disease from spreading inside and worsening. TCM has played an important role in the treatment of COVID-19 patients due to its special holistic view. Our department has a variety of agreed-upon prescriptions, such as Qiwei decoction, Yidu Bifei decoction, Feipi Qixu decoction, and Hanshi Yufei decoction. In clinical nursing, we should pay more attention to changes in tongue coating, pulse, and clinical symptoms, and record these findings in a timely manner, adjusting prescriptions accordingly. Due to the cold nature of TCM, it should be taken at mild temperature for 30 min after meals.

2.3.3 | Emotional nursing

TCM attaches great importance to the patient's spiritual and emotional care. The main task of emotional nursing is to eliminate the emotional stimuli affecting patients, such as tension, fear, anxiety and anger, helping patients establish the confidence to overcome the disease and actively cooperate with treatment and nursing. According to the Law of the Five Elements, anger prevails over thought, thought prevails over fear, fear prevails over joy, joy prevails over sorrow, sorrow prevails over anger. It is necessary to grasp the scale in clinical application.

2.3.4 | Music therapy

The frequency, rhythm and regular acoustic vibration of music are a kind of physical energy. For COVID-19 patients, we recommend that patients should appreciate the music with high, strong, crisp, sonorous, and magnificent aspects. This kind of music has the characteristics of “gold” and can affect the lungs. The recommended repertoires include “Snow in the Spring”, “Chanting in Ancient Times”, “Changqing”, and “Heming Jiugao”. These tunes are high, which can promote lung Qi. The best time to enjoy is 15:00–19:00 hours. With the melody of the music, patients can regulate Qi activity, soothing the body and mind, and improving immunity.

2.3.5 | Observation of tongue coating and pulse

COVID-19 is a complex process. Due to the influence of constitution, treatment, nursing, and other factors, asthenia and sthenia may be mixed, transformed, or even a pseudo or true manifestation of asthenia and sthenia. Because the tongue coating is produced by the stomach Qi, and the five Zang-organs and six Fu-organs all obtain Qi from the stomach, therefore, the changes of tongue coating can reflect cold, heat, deficiency, and excess of five Zang-organs and six Fu-organs, as well as the nature of pathogenic factors and the depth of disease location. We observed the tongue coating and pulse of patients daily. Clinicians should pay attention to the following points: the strength and weakness of the pulse, the tenderness and age of tongue, the sonority and lowliness of speech, changes in the patient's constitution, the cause of disease, the duration of disease, and the treatment process.

2.3.6 | Vital Qi strengthening

The maintenance of vital Qi plays an important role in the prevention of epidemic febrile diseases. In the long-term practice of combating diseases, Chinese people have created many healthcare methods, such as Qigong, moxibustion, Five-Animal Exercise, and Taijiquan. In clinical nursing, moxibustion is the most important measure to strengthen the patient's vital Qi. The main acupoints are Feishu, Pishu and Zusanli. Moxa fleece is put into the moxibustion box and ignited. Next, the box is closed and placed on the patient's acupoints. The moxibustion box top is covered with thick cloth to prevent the damp heat effect from weakening. Moxibustion is applied for 30 min each time, once a day.

2.3.7 | Preventing recurrence after recovery

“Preventing recurrence after recovery” is an important component of the TCM theory of preventive treatment of disease. In the initial period of recovery from COVID-19, symptoms are relieved. If patients ignore care recommendations late in the disease, they may become reinfected with external pathogenic factors inducing disease recurrence. Therefore, after discharge from the hospital, we continued via WeChat group management, emphasizing compliance with the four seasons of climate change, reasonable and balanced diet, increasing strength via physical exercise, preventing emotional stimulation, and improving the biased constitution.

2.3.8 | Individualized follow-up scheme

After discharge, due to low immune function during the convalescent period, patients may be reinfected with COVID-19. It was suggested that patients should continue to carry out self-health monitoring for 14 days, wear masks, live in a single room with good ventilation, reduce close contact with family members, do not share food and drink, practice frequent hand-washing, repeat nucleic acid testing, and avoid going out for activities.

2.4 | Therapeutic evaluation

During the treatment, clinical symptoms and signs such as fever, cough, shortness of breath, fatigue, muscle aches, sore throat, diarrhea, and chest CT findings were observed. Discharge criteria were as follows: patient's temperature returned to normal for more than 3 days, respiratory symptoms improved significantly, chest CT showed obvious absorption of inflammation, and two consecutive nucleic acid tests were negative (sampling interval was at least 1 day) (Ho et al., 2020).

2.5 | Outcome

Our study involved a controlled, comparative observational study of severe COVID-19 patients treated with either an integrated management care model or usual care, with four main endpoints: (a) clinical outcome, (b) time until recovery from clinical symptoms and signs, (c) days of hospital stay, and (d) survival without ICU admission.

2.6 | Statistical analysis

Descriptive analysis was performed for each variable, including the frequency with 95% confidence interval (95% CI) of qualitative variables, and the mean and *SD* for quantitative variables. Paired data were tested by Student's *t* test or its nonparametric equivalent, and qualitative variables were tested by Pearson χ^2 test. Crude survival rate was calculated by Kaplan–Meier curves. If the *p* value was less than .05, the difference between the two models was taken to be statistically significant. SPSS 24.0 was used for analysis. According to the principle of intention-to-treat, it is assumed that all patients in the study received all doses of intervention. The missing baseline variables were processed by multiple imputation using chain equations of other available variables.

3 | RESULTS

3.1 | Demographics and patient status at admission

The two groups were observed to be homogeneous in terms of age, BMI, gender, percentage of smokers, number of cigarettes/day, systolic blood pressure and diastolic blood pressure. The baseline clinical characteristics of the two groups and associated morbidity are shown in Table 1. The demographic characteristics of patients were similar, and there were no statistical differences between the two groups.

3.2 | Clinical symptoms and signs

Our study documented seven clinical symptoms. Fever occurred in 80.6% of patients, cough in 61.3%, fatigue in 33.1%, shortness of breath in 30.6%, and muscle aches in 22.5% in the treatment group. The most common clinical manifestations were fever, followed by cough and fatigue. The patients with abnormal chest CT accounted for 84.7% in the treatment group and 90.3% in the control group, 9.9% of the patients in the treatment group had oxygen saturation lower than 90%, while it was 12.9% in the control group, and there were no statistical differences between the two groups. The clinical symptoms and severity of the disease in the two groups were basically similar (Table 2).

3.3 | Recovery time from clinical symptoms

Recovery time from clinical symptoms like fever (5.4 ± 1.1 vs. 7.9 ± 1.4 , $p < .001$), cough (7.2 ± 1.6

vs. 9.5 ± 1.7 , $p = .006$), shortness of breath (8.3 ± 1.2 vs. 10.6 ± 1.5 , $p = .001$), muscle aches (4.6 ± 1.3 vs. 5.9 ± 1.4 , $p = .047$), and fatigue (8.8 ± 1.0 vs. 10.8 ± 1.2 , $p = .001$) in the treatment group was shorter than that in the control group. The recovery time from other symptoms, such as sore throat, fatigue and diarrhea, showed no significant differences between the two groups ($p > .05$) (Table 3).

3.4 | Time required to achieve negative chest CT findings and length of hospital stay

The results showed that the treatment group required less time to show negative chest CT findings than in the control group (13.0 ± 2.8 vs. 16.7 ± 3.9 , $p < .025$, Table. 3). The lengths of hospital stay of the two groups were 16.4 ± 7.3 days (treatment group) and 24.4 ± 4.8 days (control group). The length of hospital stay in the treatment group was shorter than that in the control group; there was significant difference between the two groups ($p < .001$).

3.5 | Kaplan–Meier curves for survival without transfer to ICU

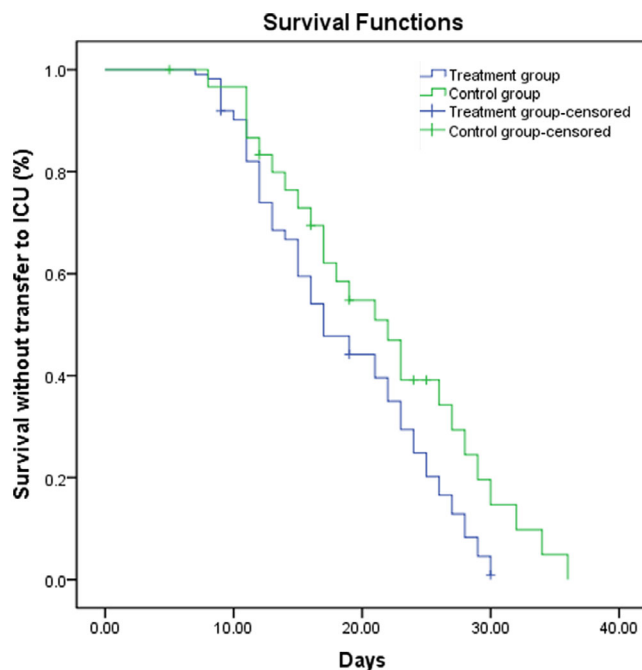
In our study, among the 142 patients in the two groups, three patients were admitted to the ICU in the treatment group, while six were admitted to the ICU in the control group. Among these patients, the rate of survival without transfer to the ICU was 97.3% in the treatment group, compared with 80.6% in the control group. Kaplan–Meier curves for survival without transfer to ICU are shown in Figure 1. There was statistical difference between the two groups ($\chi^2 = 5.427$, $p = .020$).

TABLE 2 Clinical symptoms and signs of patients with COVID-19

Features % (95% CI)	Treatment group (n = 111)	Control group (n = 31)	p values
Abnormal chest computed tomography findings	84.7 (78.8–90.6)	90.3 (83.5–97.1)	.43
Oxygen saturation < 90	9.9 (4.0–15.8)	12.9 (1.1–24.7)	.63
Fever	80.6 (72.8–88.4)	75.7 (60.0–91.4)	.56
Cough	61.3 (51.5–71.1)	64.5 (46.9–82.1)	.74
Shortness of breath	30.6 (22.8–38.4)	25.8 (10.1–41.5)	.60
Fatigue	33.1 (25.3–40.9)	29.0 (13.3–44.7)	.65
Muscle aches	22.5 (14.7–30.3)	25.8 (10.1–41.5)	.70
Sore throat	13.5 (7.6–19.4)	16.1 (2.3–29.7)	.71
Diarrhea	10.8 (4.9–16.7)	12.9 (1.1–24.7)	.75
Hypodynamia	11.7 (5.8–17.6)	16.1 (2.3–29.7)	.51

TABLE 3 Recovery times of clinical symptoms and signs

Indexes	Time for recovery (days)		p values
	Treatment group (n = 111)	Control group (n = 31)	
Fever	5.4 ± 1.1	7.9 ± 1.4	<.001
Cough	7.2 ± 1.6	9.5 ± 1.7	.006
Shortness of breath	8.3 ± 1.2	10.6 ± 1.5	.001
Muscle aches	4.6 ± 1.3	5.9 ± 1.4	.047
Fatigue	8.8 ± 1.0	10.8 ± 1.2	.001
Sore throat	5.2 ± 1.2	5.9 ± 1.3	.229
Diarrhea	4.2 ± 1.5	5.3 ± 1.1	.072
Hypodynamia	6.4 ± 1.6	7.2 ± 1.8	.315
Chest computed tomography findings	13.0 ± 2.8	16.7 ± 3.9	.025
Length of stay (days)	16.4 ± 7.3	24.4 ± 4.8	<.001

**FIGURE 1** Kaplan–Meier curves for survival without transfer to intensive care unit (ICU)

4 | DISCUSSION

At present, there is no effective treatment for COVID-19. The only effective management is isolation and supportive care. The prognosis of COVID-19 largely depends on the quality of supportive care provided by nurses for prevention of complications and recovery. Nurses are front-line healthcare workers, and classify and care for COVID-19 patients based on disease severity and history

(Sharma et al., 2020. Ye, Yang, & Liu, 2020). In the absence of any effective treatment, nurses play an important role in providing high-quality supportive care. The roles of nurses in caring for COVID-19 patients includes triaging, medical history collection, sample collection, drug management, antibiotics for associated bacterial infection, personal hygiene, diet guidance, oxygen administration, and infection prevention (Sharma et al., 2020. Singhal, 2020).

The integrated management mode of Chinese and Western medicine also refers to the combination of a nursing system, nursing management, nursing service quality, and improvement of nursing team quality. Any reform of the whole nursing system must contribute to the improvement of nursing service quality and the nursing team. An “integrated management model” should also include disease and the patient viewed holistically; patients treated as a whole person with consideration given to biological, social, and psychological aspects; patients and society viewed holistically; and patients and the biosphere viewed holistically. Therefore, all of these aspects should be considered in nursing care, and physical and mental nursing must be regarded as two inseparable aspects of patient rehabilitation.

In this study, we primarily found that an integrated management mode can relieve a patient's symptoms more quickly, including fever, cough, shortness of breath, muscle aches, and fatigue, and accelerate a patient's cure time. The main treatment goal is to initiate care for patients with moderate or severe COVID-19 at an early enough stage to avoid its development into an irreversible and serious condition. Using an integrated management mode in the treatment group, we observed that all patient

conditions improved, except in three patients who were transferred to the ICU. Compared with the results of the control group, the integrated management mode leads to better clinical improvement. Therefore, in addition to its direct therapeutic effect, this integrated management mode can also play a role in controlling the epidemic of diseases through TCM use.

There is no doubt that TCM plays an important role in the worldwide struggle against COVID-19. However, every TCM prescription has a complex composition, and there are multiple targets and pharmacological effects involved in the disease treatment process, which makes it difficult to clarify its mechanism. Studies have shown that TCM has the following effects in COVID-19 treatment: immunomodulatory activity, anti-inflammatory activity, anti-oxidative activity, regulation of population balance of gut microbiota, antiviral activity, and antibacterial activity (Cao et al., 2020). We collected 29 patients with COVID-19 who only took Chinese medicine and received usual nursing care (Chinese medicine group), the recovery times of shortness of breath (8.3 ± 1.2 vs. 9.7 ± 1.6) and fatigue (8.8 ± 1.0 vs. 10.0 ± 1.2) in the integrated management group was shorter than that in Chinese medicine group ($P < 0.05$). The lengths of hospital stay of the two groups were 16.4 ± 7.3 days and 22.1 ± 3.3 days ($p = .042$). The results showed that compared with Chinese medicine group, other nursing measures of integrated management mode (Chinese medicine is not included) can shorten recovery times of shortness of breath and fatigue, meanwhile shortening hospital stay.

Our research has several advantages, including the novelty of WeChat group management, early TCM treatment, and an established control group. Our research also has limitations, of which the most important limitation is that this was a non-blind trial, and as such, there may be bias in the research process. The patients did not continue to be observed for outcomes after transfer to the ICU. Furthermore, because our patients were relatively severe COVID-19 patients transferred from other hospitals with severe clinical presentation, the results of this study only represent severe COVID-19 patients.

5 | CONCLUSION

Our evidence shows that the integrated management mode had beneficial effects in the nursing care of COVID-19 patients, and its potential effects were to relieve the symptoms of patients faster, shorten hospital stay and the disease course, and reduce the rate at which patients were transferred to the ICU. In view of the

urgent need to take nursing measures to control COVID-19 with effective and safe drugs, we believe that it is urgent to further evaluate this mode, so as to treat and care patients in the early stage before severe complications develop, and also to reduce the carrying time and avoid the spread of the disease. Therefore, further clinical studies are required.

ACKNOWLEDGMENT

The authors would like to thank the front-line medics from different hospitals in Huoshenshan Hospital.

CONFLICT OF INTERESTS

The authors declare they have no involvement, financial or otherwise, that may potentially bias their work.

AUTHORS' CONTRIBUTIONS

Y.Z. designed the study protocol and drafted the manuscript. L.C. checked the manuscript. Both authors contributed to drafting the manuscript and have read and approved the final manuscript.

COMPETING INTERESTS

None declared.

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How to cite this article: Chu L, Zhang Y. A study on nursing effect of integrated traditional Chinese and Western medicine management mode on COVID-19. *Jpn J Nurs Sci.* 2021;18:e12411. <https://doi.org/10.1111/jjns.12411>