



Review Article

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# Essential Factors of Sui Zheng Shi Liang Strategy of Pediatric Pneumonia Treatment Assessed by Questionnaire



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## Abstract

**Objective:** Sui Zheng Shi Liang strategy (regulating prescription dosage with different syndromes) is an important part of syndrome differentiation and treatment in Traditional Chinese Medicine (TCM). Questionnaires were given to doctors and patient's parents to determine the recognition status of therapeutic effect by TCM and to ascertain the essential factors (indicators and timing) of Sui Zheng Shi Liang strategy in the treatment process of pediatric pneumonia.

**Methods:** Two questionnaires were designed for pediatric pneumonia patients and doctors. The questionnaires included the most important indicators for evaluating the patient's condition, the ability of TCM in treating pediatric pneumonia, the length of time it takes for TCM to be effective and when to adjust the prescription. The frequency of answers was calculated, summarized, and analyzed after the survey.

**Results:** 26 questionnaires from doctors and 110 questionnaires from patient's parents were included in the analysis. Doctors and parents recognized that TCM could defervesce; improve clinical syndromes of cough and phlegm. But doctors were mainly concerned about shorten the course of treatment and the side effects of antibiotics. In addition, the expectation times for improving the syndrome of fever or a cough by patient's parents concentrated in 2-3 days, while doctors were concerned about these factors in 1-2 days.

**Conclusion:** The essential factor in the treatment process of pediatric pneumonia in Sui Zheng Shi Liang strategy is that if fever or a cough did not improve after 2 days of treatment, the prescription of TCM should be adjusted.

**Keywords:** Pediatric pneumonia; Questionnaires; Sui Zheng Shi Liang strategy; Fever

## Introduction

Sui Zheng Shi Liang strategy is a series of treatment activities which contains the doctor, patients, drugs, patient response to the drug, and the prescription changes by doctor in accordance with that response. "Indicator" and "occasion" is two essential factors of Sui Zheng Shi Liang strategy. To ascertain the essential factors (indicators and timing) of Sui Zheng Shi Liang strategy in the treatment process of pediatric pneumonia, it is necessary to investigate the cognitive status of diseases, and the confidence and expectations of TCM treatment by patients and their doctors. Pediatric pneumonia is an acute disease, acute onset, rapid development and short course, often needed to make quick judgments in treatment. Fever, cough or asthma which is use indicator for clinical manifestation and evaluating

the efficacy of pediatric pneumonia, appears to relatively clear and simple. However, for this kind of acute disease, it is unknown which indicator needs to be considered to evaluate efficiency and which indicator needs to be considered to adjust the prescription of TCM. During a long medication treatment, whether the prescription need to adjust. And the issues of when and what situations do the patients and doctors expect to adjust the prescription also need to be investigated. What is most important that the essential factors (indicator and timing) of Sui Zheng Shi Liang strategy in the treatment of pediatric pneumonia. In this study, two questionnaires were designed to investigate patients and doctors separately. According to the literature and clinical practice [1-4], the contents of the questionnaires included 4 parts.

a) Cognitive status of pediatric pneumonia: Diagnostic indicators, prognostic indicators, efficacy evaluation indicators, and efficacy evaluation time were included in this part. Fever, cough, asthma, expectoration, chest pain, palpitation, and medication treatment time were listed as choices.

b) Cognitive status of the treatment in pediatric pneumonia with TCM: Confidence of patients and doctors in TCM treating pediatric pneumonia.

c) The indicators can be improved by TCM and the indicators expected to be improved by both patients and doctors.

d) The length of expected and accepted times of TCM, situations and timing for adjusting prescriptions were listed.

## Methods

### Objective of the study

Patients of pediatric pneumonia and doctors were studied. Respondent sources came from hospitals of TCM of Tianjin.

### Inclusion criteria

**Doctors:** subjects were Chinese physicians who had engaged in clinical medicine for longer than 2 years. They believed the efficacy of TCM in pediatric pneumonia, often treated children with pediatric pneumonia in TCM, and were interested in this study.

**Patients:** Parents were involved in the study their children had diagnosed with pediatric pneumonia clearly. They had believed that TCM is effective in treating pediatric pneumonia. Their children were using or being used TCM to treat pediatric pneumonia. Those patients who suffered from serious cardiovascular complications, cancer, kidney disease, eye disease or digestive system or blood system diseases, and patient's parents lost interest in this study were not included us.

### Questionnaire items

**Doctors:** the questionnaire contents to doctors included the following.

1) Length of career time: "How many years have you engaged in TCM clinical practice?"

2) Important indicators: "As a Chinese medicine doctor, what indicators are you mostly concerned about treatment in Pediatric pneumonia?"

3) Recognition of TCM treatment for pediatric pneumonia: "Do you think that TCM can treat pediatric pneumonia alone?"

4) The role that TCM plays in pediatric pneumonia treatment: "Do you think that TCM have effect on fever?", "Do you think that TCM can suppress a cough or asthma?", "Can TCM shorten the course of treatment?", and "What actions do you

think of TCM have in the treatment of pediatric pneumonia? Supporting action or no action?"

5) Indicators improved by TCM: "What indicators can be improved by TCM in your opinion?"

6) Length of time for adjusting the prescription: "How long do you think that TCM prescription need to be adjusted?"

7) "Which conditions need to be considered when you adjust the prescription?", "When the prescription is effective?", "When the prescription has no effect?", "When the prescription shows side effects?" or "Other conditions (please fill in the blank)?"

8) Recognition of the length of onset time: "How long do you think it takes for TCM to show an effect?"

**Patients:** The questionnaire content to patient's parents included the following.

1) Course of the disease: "How long has your child diagnosed with pneumonia?"

2) Clinical manifestation: "What clinical manifestations does your child who was diagnosed with pneumonia have?"

3) Important indicators: "As parent of patient, what indicators are you mostly concerned about in pediatric pneumonia?"

4) Recognition of TCM treatment of pediatric pneumonia: "Do you think that TCM can treat pediatric pneumonia alone?"

5) Indicators expected to improve by TCM: "What indicators do you expect to be improved by TCM in your opinion?"

6) Length of time for adjusting the prescription: "How long do you expect the TCM prescription needs to be adjusted?"

7) What kind of situation to adjust the prescription of TCM: "What do you think of the need to adjust the prescription, there is no effect? There are side effects? No side effects or other circumstances (please specify)?"

8) Length of time for effectiveness of TCM: "How long do you expect the TCM treatment to show an effect?"

### Sample size

26 clinical physicians and 110 parents of pediatric pneumonia patients were surveyed in the study.

### Statistical analyses

All of the outcome data were transferred via double independent entry into EpiData 3.1 (EpiData Association, Denmark). After cleaning and validation, two databases were established, including a doctors' database and patients' database. SPSS 12.0 software (SPSS Inc.) was used to analyze the data. The frequency of answers from physicians and patients for

each question was calculated and analyzed. That frequency of the answer to the question is more than 50% is the effective answer.

**Results**

**Questionnaires for doctors**

**Baseline data:** A total of 28 questionnaires were sent out and returned. Two questionnaires were not into the analysis for missing too much information. Therefore, 26 questionnaires were included in the study. The doctors investigated included seven male doctors and 19 female doctors. The ages of doctors ranged from 22 years to 60 years and the mean age was 37 years old. The doctors' career times ranged from 2 to 35 years, with an average time of 13 years. All of the doctors had used TCM in clinical practice.

**Cognitive status of current treatment of pediatric pneumonia by TCM:** According to the answers to the questionnaire, doctors who with the different levels were mostly

concerned about fever that is main diagnostic indicators and prognostic indicators of pediatric pneumonia. Doctors accepted that TCM can bring down a fever, suppress a cough or asthma, and shorten the course of treatment. These effects have mainly performed on antipyretic and relieving a cough.

**Important indicators:** For the diagnostic indicator of pediatric pneumonia, disease indicators, and the main common clinical symptom, chose fever as most attention indicators by 84.6% doctors of the 26 questionnaire. Different levels between the choices of doctors did not appear bigger difference.

**Cognitive status of TCM in treating pediatric pneumonia:** a total of 88.46% of doctors considered that TCM can treat pediatric pneumonia. The majority of doctors believed that TCM in the treatment of pediatric pneumonia can defervesce, suppress a cough or asthma, and shorten the course of treatment, especially effervesces the first choice, no difference among the different levels of doctors (Table 1).

**Table 1:** Cognitive status of current treatment of pediatric pneumonia by TCM.

Question	Option	Selected Number	First Selected Number
The role of TCM plays in treating pediatric pneumonia	Defervescence	24(92.31%)	22(84.62%)
	Suppressing a cough	24(92.31%)	2(7.69%)
	Suppressing asthma	23(88.46%)	-
	Shortening the course	21(80.77%)	-
	Supporting action	5(19.23%)	1(3.85%)
	Other effects on treatment	1(3.85%)	1(3.85%)
The indicators can be improved by TCM	Fever	21(80.77%)	-
	Cough	6(23.08%)	-
	Other*	1(3.85%)	-

**Notes:** \*Specific answer is "other" options "therapeutic of TCM".

**Cognitive status about improvement indicators of TCM in treating pediatric pneumonia:** Most of doctors thought that TCM treating with pediatric pneumonia can improve the "fever", "cough", and no more difference between the different levels of doctor's choice. In addition, there were opinions that TCM can treat antibiotic and side effects of pneumonia (Table 1).

a. Essential factors (indicators and adjustment time of prescriptions) of Sui Zheng Shi Liang strategy: most doctors

thought that if didn't see the effect of TCM within two days; see the side effectors the effectiveness, the TCM prescription needed to be adjusted.

b. Cognitive status of the length of time to adjust prescriptions: doctors thought that prescriptions needed to be adjusted one day shortest, four days longest. The average adjustment time was (2.05 ± 0.97) days. Most doctors thought should adjust prescriptions in 1-3 days (Table 2).

**Table 2:** Mean time for adjusting the prescription of different levels doctors (x̄ ± S).

Doctor Level	N	Prescription Adjusting Time (Days)	Other Options
Primary	8	2.1±1.0	Determined according to disease condition (2 cases)
Middle	5	1.6±0.9	Depending on the stage of disease(1 case)
Advanced vice	4	2.5±1.3	time the sooner the better for acute disease(1 case)
Advanced	4	2.0±0.8	Determined according to the specific situation (1 case)
Total	21	2.1±1.0	5

c. When to adjust the prescription of TCM: most doctors (84.6%) thought that TCM prescriptions should be adjusted when there was no efficacy. And the effectiveness (15.38%)

and side effects (42.3%) were also considered to be appropriate circumstances to adjust the prescription (Table 3).

**Table 3:** Occasions to adjust the prescription according to different levels doctors.

Doctor Level	N	Effect	No Effect	Side Effect	No Side Effect	Others
Primary	10	3	7	1	0	2( any condition 1 case and according to condition 1 case)
Middle	6	0	5	5	0	1(according to different syndrome )
Advanced vice	5	1	5	1	1	1(depending on the stage of disease)
Advanced	5	0	5	4	0	1
Total	26	4	22	11	1	5

d. Approved onset time of TCM prescriptions: Doctors recognized the average onset time of TCM prescriptions was about two days for treating pediatric pneumonia. Most doctors (65.38%) thought TCM would work within 1-2days, and some doctors thought that 3days would be seen effect (Tables 4).

**Table 4:** Approved onset time of TCM prescriptions by different levels doctors ( $\bar{x} \pm S$ ).

Doctor Level	N	1 Day	2 Days	3 Days	≥4 Days	Average Onset Time(Day)	Others
Primary	12	6	1	2	1	2.1±1.9	2(according to the effective of disease 1 case and differentiate from varies syndrome 1 case)
Middle	5	1	4	0	0	1.8±0.5	0
Advanced vice	5	2	0	1	1	2.3±1.5	1(according to disease condition and individual specific)
Advanced	4	0	3	1	0	2.3±0.5	0
Total	26	9	8	4	2	2.1±1.4	3

e. Comprehensive analysis of the essential factors of Sui Zheng Shi Liang strategy: after analyzing the important indicators of pediatric pneumonia, the working point of TCM in treatment of pediatric pneumonia, the onset time of TCM prescriptions, and when prescriptions should be adjusted, the results indicated that, the treatment of pediatric pneumonia, TCM played important role in the antipyretic, suppress a cough or asthma and shorten the course of treatment. Among those important indicators, the change of patient's temperature was paid most attention by doctors. If the temperature of patients did not get an effective levels or there was a side effect, doctors should adjust the composition or dosage of prescription (Table 5).

**Table 5:** Comprehensive analysis of the essential factors of Sui Zhan Shi Liang strategy.

Item	The Most Answers in the Survey
Most concerned indicators	Fever 22 (84.6%)
The role of TCM plays	Defervesce 24(92.31%); Suppress a cough 24(92.31%); Suppressant asthma23(88.46%); Shorten the course of treatment 21(80.77%)
Onset time	1-2 days
Time to adjust prescription	2 days
Occasion to adjust the prescription	Effect, no effect, side effect

**Research on patients**

**Baseline data:** a total of 113 questionnaires were sent out and returned. 110 questionnaires were included in the study because of three questionnaires missed too much information and were excluded. Patients of pediatric pneumonia being

investigated included 49 boys and 61 girls. The ages of children ranged from 3 months to 15 years and the mean age was (4.76±3.06) years. Courses of disease ranged from 3 hours to 3 months, and the mean time was (240.62±357.54) hours. Most of the children had clinical manifestations with cough, fever, expectoration and asthma (Tables 6).

**Table 6:** Clinical manifestations in pediatric pneumonia.

N	Fever	Cough	Asthma	Chest Pain	Expectoration	Shortness of Breath	Palpitation	Other
110	95	103	29	2	60	0	0	3

**Cognitive status of pediatric pneumonia and current treatment by TCM:** according to the answers from 110 questionnaires, parents of patients being investigated were mostly focused on fever about pediatric pneumonia. Most parents believed that TCM can treat pediatric pneumonia. They expected TCM can improve symptoms of cough, fever and expectoration.

**Most concerned indicators of pediatric pneumonia by patient's parents:** after evaluating diagnostic indicators, disease indicators and the main clinical symptoms, selected fever as the most concerned about the indicators by patient's questionnaires, followed by cough (Table 7).

**Table 7:** Cognitive status of pediatric pneumonia and current treatment by TCM.

Question	Option	Select Number
What do you concern about pediatric pneumonia	Fever	82(74.5%)
	Cough	20(18.2%)
	Asthma	6
	Chest pain	1
	Expectoration	1
What indicators do you expect to be improved by TCM	Fever	46(41.8%)
	Cough	50(45.5%)
	Expectoration	7
	Asthma	4
	Other	3

**Cognitive status of the role that TCM plays in treating pediatric pneumonia:** a number of 94.5% parents being investigated considered that TCM can treat pediatric pneumonia alone. Most parents expected to use TCM for treating pediatric pneumonia, and improve symptoms such as cough, fever, and expectoration (Table 7).

**Essential factors (indicators and adjustment time of prescriptions) of Sui Zheng Shi Liang strategy:** most parents thought that if there was no effect within 2-3 days, if there was

a significant effect or a side effect, TCM prescriptions should be adjusted.

**Expected adjustment time for prescriptions:** parents thought that prescriptions needed to be adjusted in 1-14 days, with a mean time of (3.49±2.18) days. Most parents thought that the most appropriate time to adjust the prescription was 3 days, followed by 2 days. The number of answer of 2-3 days accounted for more than half (Tables 8-9).

**Table 8:** Expected adjustment time for prescriptions (x̄±S).

n	Prescription adjusting time (day)	Other answer
93	3.5±2.2	the soon the better (4cases);according to condition (5 cases);the shorter the better (2cases);not sure (1case);according to the disease condition of child and doctor's order (1case);no effect (1case);follow the doctor's order (1 case);vary with each individual (1 case);do not know (1 case)

**Table 9:** Distribution of the expected adjustment time for prescriptions.

n	1 day	2 days	3 days	4 days	5 days	7 days	10 days	14 days	Others
110	4	30	37	2	4	14	1	1	17

**When to adjust the prescription of TCM:** More than half of parents (55.45%) expected that TCM prescriptions should be adjusted when there was no efficacy. Appeared significant

efficacy and side effects, the prescription also expected to be adjusted the prescription (Table 10).

**Table 10:** Occasions for adjusting the prescription.

n	effect	No effect	Side effect	No side effect	others
110	32	61	29	15	11

**Expectation of the onset time of TCM:** Parents expectations to treat pediatric pneumonia with TCM where the fastest working time for a half a day, and the median number of working time was 3 days. Most parents (60.9%) expected that TCM could

work within 3 days, chose 4 days in 2 cases, 5 days in 5 cases, and 7days in 15 cases. Some parents accepted more than 10 days to see the effectiveness of TCM for treating pediatric pneumonia (Tables 11).

**Table 11:** expected onset time of TCM prescriptions by patient's parents (x̄±S).

n	≤1 day	2 days	3 days	4 days	5 days	7 days	≥10 days	Average onset time(day)	Others
110	10	27	30	2	5	15	8	4.2±3.9	13(the sooner the better 7cases;short time

**Comprehensive analysis of the essential factors of Sui Zheng Shi Liang strategy:** important indicators of pediatric pneumonia by patients' parents, the working point of TCM for pediatric pneumonia the onset time of TCM prescriptions and when prescriptions should be adjusted the results indicated that the change of patient's temperature was paid most attention

by parents in TCM for treating of pediatric pneumonia. Parents expected to perceive the indicator's change of fever and cough within 3 days. If these indicators changes did not attain an effective levels or there was a side effect, parents thought that the prescription should be adjusted by doctors (Table12).

**Table 12:** Comprehensive analysis of the essential factors of Sui Zhan Shi Liang strategy.

Item	The most answers in the survey
Most concerned indicators	Fever82 (74.5%); Cough20 (18.2%)
Excepted to improved indicators	Cough50 (45.5%); Fever46 (41.8%)
Excepted the onset time of prescription	≤3 days
Excepted time to adjust prescription	≤3 days
Occasions to adjust the prescription	Effect, no effect, side effect

### Discussion

“Indicator” and “occasion” is two essential factors of Sui Zheng Shi Liang strategy. The reason why using epidemiological methods investigated the understanding of doctors and patients about the key elements of the evaluation of Sui Zheng Shi Liang strategy can meet with the intention of Sui Zheng Shi Liang strategy is the elements are changed according to different patients’ conditions. These elements can be shown very clearly in the treatment of pediatric pneumonia which is an acute disease, the prescription of TCM adjusted at specific time and circumstance according to the different situations of patients after the initial TCM treatment [1-2]. Pediatric pneumonia is a threat to children’s health even the life of the disease, which has the character of acute onset, severe illness, and rapid development. There are indicators such as fever, cough and shortness of breath, dispend, or severe asthma with no fever [3]. Treatment of pneumonia in children should be treated early; children were used of antipyretic, expectorant, or a cough medicine according to the treatment options [4]. There were studies showed that TCM has better efficacy in the treatment of pediatric pneumonia, reduce the damage by the pathogen and improve the clinical symptoms thoroughly, as a result of its two characters with whole advantage and syndrome differentiation and treatment [5,6]. On the basis of the doctors and patients questionnaire resulted the attention of pediatric pneumonia in line with the actual situation and the development of modern medical conditions. Both sides of the doctors and patient’s parents were mainly concerned about the change of the temperature of children. In the treatment of pediatric pneumonia, doctors thought that TCM can defervesce, suppress a cough and asthma and shorten the course of treatment. In clinical practice, it is necessary for TCM to reduce the body temperature, antitussive and expectorants and side effects of antibiotics. Patients expectation to TCM could primary improve clinical symptoms of fever and cough, phlegm, asthma and antiemetic secondary. Both side wishes closed. The survey showed that doctors and patients hoped to adjust

the prescription in a certain period of time aim to obtain clinical effect or reduce side effects; they also thought the adjustment is necessary where no side effect was or efficacy appeared. Even the condition changes the drug were accepted adjustment according to the specific situation. Some differences about the onset time of TCM appeared among doctors and patients. The expectation times for effectiveness of TCM by patient’s parents concentrated in 2-3 days. And doctors showed more anxious than them, they recognized the onset time should be 1-2 days. If more than 2 days had not yet been effective, the prescription was invalid for the patient and needed to be adjusted. The disagreement suggests doctors should be more responsible and more carefully explain the advice to parents of patient in clinical practice, so as not to delay the disease. The survey had a limitation where was small sample of the study. However, the essential factors (indicator and timing) of Sui Zheng Shi Liang strategy in the treatment of pediatric pneumonia achieved meaningful results in our study. If the symptom of a cough or fever did not reach a certain degree of improvement within 2 days during treatment, the TCM prescription should be adjusted.

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