

# Analysis of High Incidence of Tuberculosis: Causes and Prevention Strategies

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**ABSTRACT Objective:** In recent years, prevention of tuberculosis has become one of the important works of prevention and treatment of infectious diseases in China. Knowledge of tuberculosis prevention and health education will need to be enhanced among the populations. This paper summarizes the current situation of tuberculosis prevention and treatment in China. In-depth study on the high incidence population of tuberculosis was carried out. This paper also discusses the basis of tuberculosis diagnosis, the characteristics of tuberculosis pathogenesis and characteristics of tuberculosis chemotherapy. The causes of high incidence of tuberculosis were analyzed to establish better strategies for prevention and control measure of tuberculosis.

## KEYWORDS

High incidence  
Of tuberculosis  
Etiology  
Prevention strategies.

## 1. Current Situation of Tuberculosis Prevention and Treatment

### 1.1 History of tuberculosis prevention and treatment

Tuberculosis is one of the human infectious diseases that causes serious harm to the respiratory system. In the early days of liberation in China, mortality is high and 3500 to 5000 people in every 100,000 people were suffering from tuberculosis. With the continuous development of medicine, understanding of tuberculosis has been gradually increased. Furthermore, with the emergence of anti-tuberculosis drugs, the incidence of tuberculosis has declined every year around 10%, and it is gradually under controlled.

### 1.2 Current prevention and treatment of tuberculosis

However, in recent years, prevention and control of tuberculosis have become more undisciplined which lead to rising of the incidence of tuberculosis. Data from the World Health Organization showed that the number of patients with tuberculosis in China ranked second in the world after India, which is one of the countries with high burden of tuberculosis. In China, there are about 400 million people infected with tuberculosis, about five million tuberculosis patients, among them there are two million people had infectious tuberculosis. Tuberculosis causes around 130,000 deaths in every year. In 1993, the World Health Organization announced a global emergency of tuberculosis. Hereafter, China has also issued a corresponding document, where we can see that attention of China to the tuberculosis. Strengthening of the prevention and control of tuberculosis reflects the importance of the work.

## 2. Analysis of High Incidence of Tuberculosis

A total of 100 cases (70 cases of males, 30 cases of females) were

chosen according to the inclusion criteria in this paper. The newly diagnosed patients who are in the range of 14 to 55 years old account for 50% of the total number of patients. Among these patients, 14-25 age group is the largest number of patients, accounts for 20% of the total number of patients. The incidence of male to female ratio is 1:0.35; the proportion is significantly biased in favor of men. Patients are predominantly farmers, accounting for 65.5% of the total study population. The second predominant is workers, which accounted for 10.5% of the total study population. Most of the farmers' income are relatively low, which makes them prone to delay treatment of the situation. The results show that the high incidence of pulmonary tuberculosis is mainly young people, mainly male patients. The occupations of patients tend to be farmers and workers.

### 2.1 Basis for the diagnosis of tuberculosis

At present, tuberculosis awareness of most of the medical staff is not comprehensive and not deep enough. The understanding errors of tuberculosis prone to lead to misdiagnosis of medical personnel, which may lead to delayed diagnosis and cause patients miss the best treatment time. If the diagnosis of patient is inaccurate, it might lead to discharge of a large number of bacteria, which then cause the healthy people vulnerable to tuberculosis infection. Accurate tuberculosis diagnosis is important, so that tuberculosis patients can get timely treatment. Besides, it is important to reduce the risk of getting tuberculosis among the healthy populations. Medical staffs should fully understand the basis for the diagnosis of tuberculosis.

### 2.2 Pathogenesis and characteristics of tuberculosis

Results from this study showed that the patients with tuberculosis are mainly in young and middle-aged. Most of the young and middle-aged people has strong immune system and resistance. After tuberculosis infection, the body immune system will produce immunity against the tuberculosis. Therefore, symptoms of initial infection in patients are not obvious. As patients are busy with their works, they easily overlook their own physical health and thus it is

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not easy to detect and treat tuberculosis timely. Once the patient feels a significant discomfort in his body, the disease might reach a more serious stage. At this stage, tuberculosis patients have hemoptysis, lung cavity, sputum smear positive, and other characteristics.

### 2.3 Medical treatment of tuberculosis

At present, treatment of tuberculosis conducted in most of the hospitals is mainly tuberculosis control using short-course chemotherapy. As the six-month course of treatment period is relatively long, medication compliance in patients with tuberculosis has a certain degree of difficulty. In the course of medication, due to adverse drug reactions, tuberculosis patients may also appear with mistaken belief that the disease has been cured and give up the therapy of tuberculosis. Therefore, it is difficult to achieve the purpose of thorough treatment. Tuberculosis chemotherapy is a long course of treatment and thus it requires full compliance of patients in order to achieve successful treatment.

### 3. Causes of high incidence of tuberculosis

Tuberculosis is a chronic infectious disease with diverse causes. Analysis of the relevant literature showed that the main causes of high incidence of tuberculosis are:

- (1) The input of tuberculosis patients. Economic development, population mobility and the immigration of foreign population have increased the possibility of tuberculosis infection. During home treatment, the tuberculosis patients, especially sputum examination positive patients, should not go to public places, such as supermarkets, parks and public transport. If not, tuberculosis patient might cause threat to susceptible populations. However, these measures are more difficult to intervene in hospitals and Center for Disease Control.
- (2) Continuous population growth and intensive living environment cause deterioration of hygiene level. Health conditions of the living environment will have a great impact on public health.
- (3) Tuberculosis prevention awareness is relatively low, poor daily living habits, and poor self-protection awareness are the reasons that cause susceptible to tuberculosis.
- (4) The management of infectious diseases is not enough. The prevention and treatment is not in place. Lack of timely detection of the tuberculosis and other infectious diseases. Management and control are not strict enough. Tuberculosis transmission chain cannot be well controlled.
- (5) Increasing of living pressure and declining of the body resistance make people more susceptible to tuberculosis infection. At the same time, smoking, drinking and lack of rest time have become the causes of tuberculosis.

### 4. Prevention and control of tuberculosis

From the relevant research, we found that tuberculosis will cause great harm to lives and health of patients. Tuberculosis patients are the source of tuberculosis infection around the crowd, which has great impact on labour force and economy. The urgent task is enhancement of the prevention and control of tuberculosis. The early detection of tuberculosis patients is very important. If abnormalities are discovered in the X-ray examination, medical staffs should check if there is coughing, sputum or haemoptysis, chest pain and other clinical conditions. Besides, medical staffs should focus the patients with abnormalities and strengthen their disease monitoring and management. Implementation of infectious disease prevention and control, as well as accurate diagnosis of patients will help patients with tuberculosis to be treated timely.

#### 4.1 Timely detection of tuberculosis patients

Patient diagnosis is the main strategy for controlling of tuberculosis. Medical staffs should take a good quality inspection of sputum, and continuously improve the detection rate of tuberculosis. The principle of prevention and treatment of tuberculosis is combination of medication treatment after detection of tuberculosis patients. Unified management of tuberculosis patients is the key to ensure that patients with tuberculosis can adhere to the entire process of chemotherapy. Medical staffs should ensure timely detection and treatment of patients, try not to miss a case, and register and treat the patients timely when found any case. In strict accordance with the requirements, the supervision of chemotherapy management should be implemented to ensure the regularity taking of tuberculosis medication.

Tuberculosis prevention and control should be focused on rural area. Professional medical staff should early detect tuberculosis patients. After diagnosis, if there are patients detected with tuberculosis, patients must be registered to control tuberculosis from spreading. The training of medical personnel should be enhanced and quality of the medical team should be quickly improved.

#### 4.2 Establishment of an infectious disease management system

Medical staffs should establish and improve the infectious disease management system in disease control centre, hospitals and rural clinics to form a monitoring network. The hospital should set up a special section of the health care of infectious disease management. The relevant situation should be reported to hospital leaders in a timely manner. Detailed discussion of the corresponding issues should be carried out to implement solutions after obtaining the consent of the hospital leader. Hospitals should collect information on tuberculosis patients, perform isolation and monitoring of tuberculosis patients and investigate staffs who have contact with patients. At the same time, medical staffs should carry out publicity for prevention of infectious diseases.

As a place for diagnosis and treatment of tuberculosis patients, hospital should enhance the X-ray examination and sputum smear check for patients to reduce misdiagnosis rate. Medical staffs should establish and improve the infectious disease management system to produce great significance results on the prevention and treatment of tuberculosis.

#### 4.3 Health education

The publicity of prevention and treatment of tuberculosis should be carried out vigorously. Relevant professional speech and writings should be published in the media. Knowledge of prevention and treatment of tuberculosis should be explained to the students in the health education classroom. The propaganda column in the community and hospital should be added to increase the awareness of the prevention and treatment of infectious diseases and self-protection. On the other hand, special organizations can be set up to cultivate professional talents, so that they will join the prevention and treatment of infectious diseases.

#### 4.4 Implementation of disease tracking system

Tuberculosis is different from the common disease as it is contagious and it might cause serious epidemic if the source of infection is not properly isolated. Hospital should seriously implement the tracking system for tuberculosis and other infectious diseases to understand the current treatment status and recovery after treatment. The details of the patient's condition can be recorded. Implementation of the disease tracking system will help the prevention and treatment of tuberculosis. Rather than a simple treatment, tracking of disease will help to understand the situation of

patients to reduce misdiagnosis and to provide better treatment for patients.

#### 4.5 Maintaining of hygiene in the living environment

As we all know, the hygiene of the living environment will have impact on the health of residents. It is necessary to improve urban and rural environmental health to prevent and control tuberculosis. The city should increase the cleanliness of public communities. The living environment of migrant workers should be concerned to protect the public from tuberculosis. The health awareness of residents should be improved in order to shorten the transmission chain of tuberculosis. Although the air quality in rural areas is generally better than that in urban areas, ecological consciousness in rural areas is weak, which might cause damage to their own living environment and subsequently affect their health. Poor households should be given more concern about their quality of life and living environment, so that the susceptible population can be effectively controlled. Therefore, improvement of awareness of cleanliness and hygiene, and management of good living environment are important steps in the prevention and treatment of tuberculosis.

#### 4.6 Sports activities

Sports can enhance body function, immunity, resistance to tuberculosis bacteria and other infectious bacteria. The government should improve the sports facilities to provide places for residents to actively carry out sports. Schools should actively organize sports activities for students to enhance the physical fitness, increase immune function and improve their resistance to tuberculosis.

### 5. Discussions

Tuberculosis is a chronic transmission disease that will cause serious harm to public. Tuberculosis has become one of the key government-controlled infectious diseases. In recent years, China has implemented the prevention and control of tuberculosis by enhancing the knowledge of tuberculosis prevention and control of health education. The awareness of the prevention and control of tuberculosis should be increased by publicity and education. A planned, targeted, regular and multi-level publicity should be implemented. A comprehensive infectious disease management system, health education, effective disease tracking system, good living environment health governance, and sports activities were important measures to combat tuberculosis. The source of tuberculosis infection should be well controlled by cooperation between the Government and the community. Medical care of patient will be difficult once the patient is discharged. Thus, the government and the community should participate in the control of tuberculosis infection in order to improve the prevention and control of tuberculosis.

### 6. Conclusions

The prevention and treatment of tuberculosis is imminent as the number of patients with tuberculosis in China ranks second in the world. The main causes of high incidence of tuberculosis are diverse, including the input of tuberculosis patients, living environment deteriorating, poor awareness of tuberculosis prevention, poor self-protection awareness, infectious disease management are not perfect, smoking, drinking, resting time is not enough and low body resistance. Establishment of infectious disease management system, a comprehensive health education, effective disease tracking system, good living environment health governance, and actively carry out sports are important measures to combat tuberculosis. This review will serve as a theoretical basis and reference for prevention and control of tuberculosis.

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