

The Clinical Value of Health Education in the Prevention and Control of Tuberculosis, AIDS, and Hepatitis B

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Abstract: To observe and analyze the clinical value of health education in the prevention and control of tuberculosis, AIDS, and hepatitis B. A total of 3614 patients diagnosed with tuberculosis, AIDS, and hepatitis B at our hospital (from January 2022 to December 2024) were selected for this study. Patients were randomly divided into two groups of 1807 each. The control group received routine management guidance, while the research group received targeted comprehensive health education on top of routine guidance. The study compared the knowledge scores before and after the guidance in both groups, as well as their satisfaction levels. After the guidance, both groups showed improved knowledge scores compared to before the guidance, with the research group achieving higher scores than the control group. The total satisfaction rate for guidance in the research group was higher than that in the control group, and the differences were statistically significant ($P < 0.05$). Implementing targeted comprehensive health education for patients with tuberculosis, AIDS, and hepatitis B can improve their knowledge of disease-related information and enhance their satisfaction with treatment.

1. Introduction

In recent years, the epidemiology of infectious diseases in China has become increasingly complex. While the incidence of traditional infectious diseases such as tuberculosis has decreased, newly emerging infectious diseases, such as AIDS and hepatitis B, continue to threaten public health[1]. In particular, hepatitis B presents a challenge due to the large number of infected individuals and its hidden modes of transmission. The emergence and spread of drug-resistant tuberculosis also require vigilance. The situation regarding the prevention and control of AIDS is severe. Infectious disease epidemics have significant impacts on society and the nation, harming public health and potentially causing social panic and economic losses. Therefore, effective nursing measures, treatment strategies, and health education are critical for the prevention and control of infectious diseases[2]. Infectious diseases are caused by pathogenic microorganisms or parasites and can spread between people or between people and animals. The epidemics and dangers posed by common infectious diseases such as tuberculosis, AIDS, and hepatitis B differ. In addition to providing effective treatment, strengthening health education is necessary to improve patients' understanding of their diseases and enhance the effectiveness of prevention and treatment[3]. Health education helps patients understand the transmission routes, prevention methods, and treatment options for infectious diseases, enhancing self-protection awareness and reducing disease occurrence and transmission. Furthermore, health education promotes communication between healthcare providers and patients, improving patients' satisfaction with medical services and trust in healthcare professionals[4].

Based on the above research results, this study selects patients recently treated for tuberculosis, AIDS, and hepatitis B at our hospital and implements different guidance methods. The results are reported as follows:

2. Materials and Methods

2.1 General Information Inclusion Criteria

- (1) Diagnosis meeting the criteria for infectious diseases;
- (2) Patients receiving management and treatment for infectious diseases at our hospital;
- (3) Complete cognitive and communication abilities, able to understand the study content and effectively communicate [5].

Exclusion Criteria:

- (1) Poor cooperation and inability to follow research requirements;
- (2) Inability to complete the research questionnaire;
- (3) Communication or cognitive impairments, preventing understanding of the study content or effective communication.

A total of 3614 patients diagnosed with tuberculosis, AIDS, and hepatitis B were treated at our hospital (from January 2022 to December 2024). These patients were randomly divided into two groups of 1807 each. The control group received routine management guidance, with 1229 male and 578 female patients, aged 34.0-78.0 years (mean age: 46.38 ± 4.26 years), with a disease duration of 0.5-12 years (mean: 3.28 ± 0.14 years). Disease types included 241 cases of tuberculosis, 76 cases of AIDS, and 1490 cases of hepatitis B. The research group, based on the control group, received additional targeted comprehensive health education guidance, with 1225 male and 582 female patients, aged 31.0-73.0 years (mean age: 45.83 ± 4.52 years), with a disease duration of 0.5-11 years (mean: 3.61 ± 0.53 years). Disease types included 246 cases of tuberculosis, 73 cases of AIDS, and 1488 cases of hepatitis B. There were no significant differences in general data between the two groups ($P > 0.05$), indicating clinical comparability.

2.2 Methods

Control Group Routine Management Guidance: Health knowledge booklets were distributed, covering information on diseases such as AIDS, tuberculosis, and hepatitis B. The booklets detailed transmission routes, prevention, treatment, and daily precautions. Patients were encouraged to self-study while professional nursing staff provided oral explanations and personalized advice. The goal was to enhance patients' understanding of infectious diseases and promote health management and prevention.

Research Group Additional Targeted Comprehensive Health Education Guidance:

(1) **Tuberculosis:** The health education content focused on the physiological mechanisms and prevention and control knowledge of tuberculosis, clearly communicating tuberculosis prevention and treatment strategies to patients. Tuberculosis patients were advised to strictly follow medical instructions for regular check-ups and treatment. Psychological intervention was provided for patients with poor emotional states, and the prognosis after treatment was explained to reduce negative emotions and promote a positive attitude toward managing the disease and treatment. As tuberculosis is primarily transmitted through airborne droplets, patients were advised to avoid crowded places, minimize close contact with others, and avoid talking and coughing in public. They were also advised not to spit in public and to engage in appropriate physical exercise to enhance their physical condition.

(2) **AIDS:** Patients were provided with detailed information about relevant policies, guiding them to confront the disease and encouraging early diagnosis and communication with healthcare providers. Psychological counseling was offered to patients reluctant to seek medical care to prevent retaliatory behavior. AIDS patients were instructed to return for regular follow-up visits, and treatment plans were adjusted based on test results. Patients were educated on precautions, correct sexual behavior, and the proper handling of daily secretions and excreta.

(3) **Hepatitis B:** Patients were educated on the importance of hepatitis B vaccination, emphasizing its necessity to alleviate concerns among high-risk populations. As there is currently no cure for hepatitis B, patients were instructed to prepare psychologically, pay attention to nutrition, rest adequately, and engage in physical exercise to delay disease progression. In daily life, patients were advised to handle secretions and saliva properly and reduce dining out to minimize the risk of transmission. For family members, it was recommended to implement a separate meal system and

maintain daily disinfection practices.

2.3 Evaluation Criteria

The mastery of relevant knowledge in both groups before and after the guidance was compared, and satisfaction was evaluated [5]. Knowledge mastery scores included physiological knowledge, transmission routes, daily health care, exercise and diet, medication treatment, basic knowledge, and prevention measures, all assessed using a self-designed knowledge questionnaire. Each item contained 20 questions, scored on a Likert 6-point scale, converted to a percentage score. A higher score indicated better mastery of the knowledge [6]. Mental health was assessed to reflect psychological well-being, with higher scores indicating better psychological health and the ability to face life challenges positively. Satisfaction was measured using a self-designed satisfaction survey (total score: 100 points), with categories ranging from very dissatisfied (0-40), dissatisfied (41-59), generally satisfied (60-69), satisfied (70-89), and very satisfied (90-100). The last three categories were included in the total satisfaction score.

2.4 Statistical Methods

Data were analyzed using SPSS version 25.0. Continuous variables with normal distribution were expressed as $\bar{x} \pm s$ and compared using t-tests. Categorical data were expressed as counts (n) and percentages (%), and group comparisons were made using the chi-square test. A P-value of less than 0.05 was considered statistically significant.

3. Results

3.1 Comparison of Knowledge Mastery Scores before and After Guidance in Both Groups

After the guidance, both groups showed improved knowledge scores compared to before the guidance, and the research group had higher scores in all categories compared to the control group. The differences were statistically significant ($P < 0.05$). See Table 1 for details.

Table 1 Comparison of Knowledge Mastery Scores Before and After Guidance ($\bar{x} \pm s$, points)

Group (n)	Time	Physiological Knowledge	Transmission Routes	Daily Health Care	Exercise & Diet	Medication Treatment	Basic Knowledge	Prevention Measures
Research Group (n=1807)	Before	57.41 $\pm$ 8.52	56.44 $\pm$ 8.36	49.22 $\pm$ 8.63	48.80 $\pm$ 6.06	58.01 $\pm$ 9.35	65.75 $\pm$ 7.57	59.14 $\pm$ 8.21
	After	94.18 $\pm$ 3.29	94.44 $\pm$ 3.60	95.82 $\pm$ 3.11	95.77 $\pm$ 4.53	97.15 $\pm$ 0.99	97.28 $\pm$ 1.17	95.94 $\pm$ 3.33
Control Group (n=1807)	Before	57.06 $\pm$ 9.09	56.69 $\pm$ 8.50	47.40 $\pm$ 7.52	48.29 $\pm$ 6.36	57.89 $\pm$ 9.47	65.54 $\pm$ 7.67	59.19 $\pm$ 7.20
	After	85.44 $\pm$ 5.13	85.17 $\pm$ 4.36	82.50 $\pm$ 2.06	82.29 $\pm$ 6.29	92.02 $\pm$ 4.74	89.68 $\pm$ 4.77	85.56 $\pm$ 6.35
t/P (Before)	-	0.586/ >0.05	0.676/ >0.05	0.442/ >0.05	0.330/ >0.05	0.671/ >0.05	0.569/ >0.05	0.189/ >0.05
t/P (Research)	-	19.792/ <0.05	18.893/ <0.05	25.612/ <0.05	26.556/ <0.05	24.156/ <0.05	16.175/ <0.05	22.743/ <0.05
t/P (After)	-	5.147/ <0.05	7.100/ <0.05	8.419/ <0.05	6.746/ <0.05	7.971/ <0.05	6.164/ <0.05	9.327/ <0.05
t/P (Control)	-	14.325/ <0.05	15.734/ <0.05	18.176/ <0.05	19.059/ <0.05	19.994/ <0.05	12.096/ <0.05	17.065/ <0.05

3.2 Comparison of Satisfaction Rates Regarding Guidance in Both Groups

The total satisfaction rate for guidance in the research group was higher than in the control group, with a statistically significant difference ($P < 0.05$). See Table 2 for details.

Table 2 Comparison of Satisfaction Rates Regarding Guidance (n, %)

Group (n)	Very Satisfied	Satisfied	Generally Satisfied	Unsatisfied	Very Unsatisfied	Total Satisfaction	Group (n)
Research Group (n=1807)	1807	930(51.47)	833(46.10)	42(2.32)	2(0.11)	0(0.00)	1805(99.89)
Control Group (n=1807)	1807	300(16.60)	533(29.50)	930(51.47)	42(2.32)	2(0.11)	1763(97.57)
X ²	-	-	-	-	-	-	17.495
P	-	-	-	-	-	-	0.035

4. Discussion

Tuberculosis, human immunodeficiency virus (HIV) infection, and hepatitis B are common types of infectious diseases that pose significant threats to patients' health. Tuberculosis is a chronic infectious disease caused by *Mycobacterium tuberculosis*. After this pathogen enters the body, it can damage multiple organs, subsequently affecting liver function [7]. Tuberculosis is more common in younger individuals, primarily affecting the lungs, with less frequent involvement of other areas such as the peritoneum, intestines, and skin. The disease course is typically chronic, with symptoms including low fever, fatigue, hemoptysis, and abnormal respiration. Tuberculosis is closely linked to immunity, and when immunity declines, *Mycobacterium tuberculosis* can invade the bloodstream, triggering immune responses. HIV, caused by the HIV virus, is a devastating infectious disease that attacks the immune system and leads to immunodeficiency[8]. HIV has a long latency period, with subtle early symptoms, but its negative impact increases as the disease progresses. Hepatitis B is caused by HBV infection, with symptoms including fatigue, abdominal distension, and liver area pain. Transmission routes include mother-to-child, bloodborne, and sexual contact. Hepatitis B patients require isolation and emphasis on personal hygiene. Infectious diseases not only affect patient health but may also threaten others. Routine clinical guidance in the prevention and control of infectious diseases has its limitations. It focuses heavily on drug treatment and monitoring, while offering less psychological support and behavioral interventions. Patients may experience anxiety and depression due to treatment, discrimination, and financial pressures, which in turn affects treatment outcomes and quality of life. Therefore, in addition to drug therapy, it is crucial to strengthen psychological care and behavioral guidance for patients to help them develop a positive mindset and a healthy lifestyle.

On the other hand, routine clinical guidance may not be sufficient in terms of publicity and education on the prevention and control of infectious diseases. The routes of transmission and prevention measures need to be widely promoted and popularized [9]. However, in practice, due to limited medical resources and differences in patient cognition, routine clinical guidance often fails to reach all patients, resulting in insufficient disease awareness and weak prevention and control consciousness [10]. Therefore, it is essential to strengthen health education for infectious disease patients, increase knowledge acquisition, and improve their self-protection awareness and capabilities to effectively control the spread of diseases. Health education is one of the crucial methods for preventing infectious diseases. By spreading knowledge about disease causes, transmission routes, and preventive measures, health education enhances public awareness and attention to infectious diseases.

In this study, after the guidance, both groups showed higher knowledge mastery scores compared to before the guidance, with the research group achieving higher scores in all categories than the control group ($P < 0.05$). This suggests that health education guidance has a comprehensive effect in improving patient cognition, changing behavioral patterns, and enhancing psychological resilience [11]. Through systematic health education, patients can gain a more comprehensive understanding of infectious disease prevention and control measures, master self-care skills, and adopt a positive and healthy lifestyle, which can more effectively prevent and control the spread of infectious diseases [12]. By optimizing the content and methods of health education, patients' cognitive levels and self-management abilities can be further improved, thus enhancing their health status and quality of life [13-14]. This provides valuable insights into the prevention and control of tuberculosis, AIDS, and hepatitis B.

However, this study has certain limitations. First, the sample size is limited, which may affect the generalizability and reliability of the results. Second, the study duration was relatively short, making it difficult to assess the long-term effects of health education comprehensively. Furthermore, this study did not explore the differences in the impact of health education on patients of different ages and cultural backgrounds, which is an area for future research. Future plans include expanding the sample size and extending the research duration to more comprehensively evaluate the effects of health education [15]. Additionally, we will explore personalized health education programs tailored to different patient groups to better meet patients' needs. Moreover, we will focus on the

sustainability and long-term effects of health education and its synergy with other preventive measures, in order to provide more comprehensive and effective strategies for the prevention and control of tuberculosis, AIDS, and hepatitis B.

In summary, implementing targeted comprehensive health education for patients with tuberculosis, AIDS, and hepatitis B can significantly improve their knowledge of disease-related information and enhance their satisfaction with the guidance provided.

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