

A Successful Approach to the Novel Comprehensive Information System to Treating Pneumonia

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Abstract: This study aims to take a successful approach to the novel comprehensive information system for pneumonia treatment. Data collection was conducted from May 10 to July 16, 2021 with interviews and structured surveys. The subjects of the study were 112 patients who visited the respiratory internal medicine department in south Chungcheong province. Basic information was analyzed by the X²-square test. T-test was performed for changes in health status after the application of a comprehensive information system. The derived results are as follows. Firstly, the quality of sleep was 28.6% of the experimental group, which was significantly worse than 42.9% of the control group ($X^2=6.32$, $p<.05$). Secondly, daily consumption of radish increased significantly after application than before the comprehensive information system was applied ($t=-164$, $p<.01$). Thirdly, abdominal respiration was significantly higher after application than before applying the comprehensive information system ($t=-5.94$, $p<.05$). Fourthly, inflammation of the lungs showed a decreasing trend from 6 days after application than before the application of the comprehensive information system. Therefore, this comprehensive information system has been confirmed to be effective in reducing pneumonia. It is expected to contribute to reducing the incidence and mortality of pneumonia through the use of a comprehensive information system.

Keywords: Pneumonia, Inflammation, Abdominal respiration, Treatment, Information system

1. Introduction

Pneumonia causes inflammation in the lungs, so it is accompanied by nausea and phlegm due to water filling in the lungs. It is caused by microorganisms such as bacteria, viruses, and fungi. If it gets worse, it can lead to sepsis and death. When pathogens travel through blood vessels and reach the brain, meningitis can occur. It's more dangerous if people have high blood pressure or diabetes[1],[2].

As the population of the elderly increases, it occupies an important proportion in the incidence and severity of pneumonia. Figure 1 shows the trend of pneumonia occurrence every year. Figure 2 shows the order of causes of death in Koreans in 2020. The number of deaths from pneumonia has steadily increased over the past five years. It shows the order of domestic disease mortality in 2020, pneumonia ranks third in the death ranking with a mortality rate of 125.3 per 100,000 people[3],[4]. Pneumonia can cause coughing, phlegm and shortness of breath. It can progress and cause sepsis or shock. Acute pneumonia often dies quickly when pneumonia develops in the elderly or mothers with weak immune systems. The most common complication of pneumonia is seen in patients with community-acquired pneumonia over 50% with pleural effusion. Those in their 50s are the watershed for health. Those in their 50s become vulnerable to chronic diseases as their immunity drops sharp[5],[6].

Pneumonia is a disease that people should be careful about as people get older. If people not treat properly, the bacteria that cause pneumonia penetrate into the brain, lungs, and blood. To treat pneumonia, it is a way to strengthen immunity[7]. An interventional method is needed to strengthen immunity. This paper takes a comprehensive approach to a new information system to strengthen immunity for pneumonia treatment. This study is to carry out a novel comprehensive method to new information systems to enhance lung function for pneumonia treatment. This is to provide basic data for treating inflammation of the lungs.

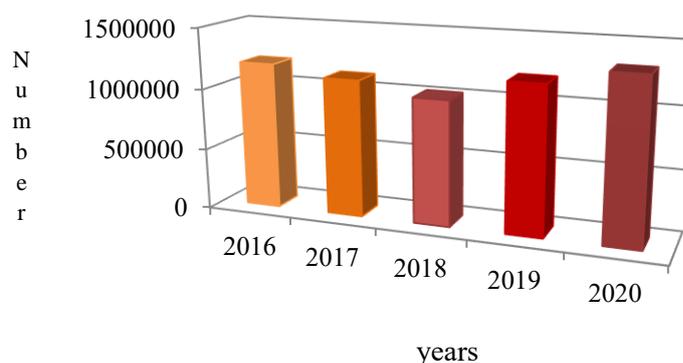


Figure 1. Trends in the incidence of pneumonia by year

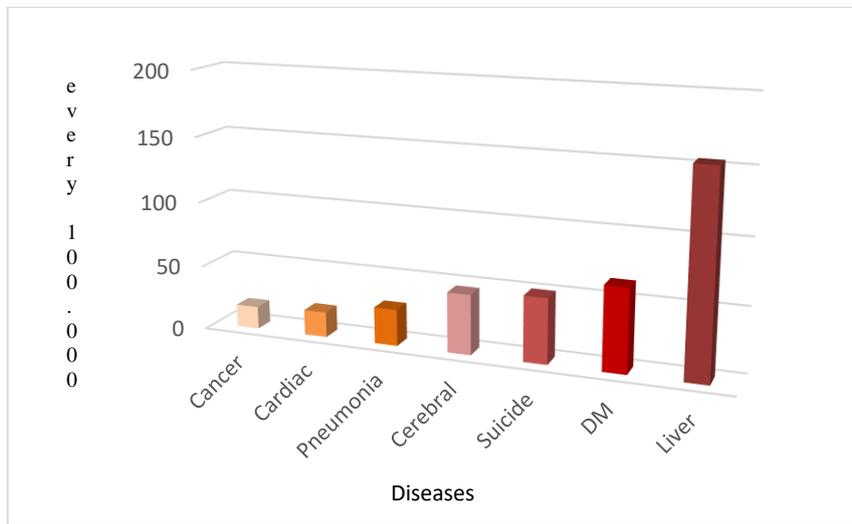


Figure 2. The order of causes of death for Koreans in 2020.

2. Material and Methods

2.1. The framework of a comprehensive information system for the treatment of pneumonia

Figure 3 shows the framework of a comprehensive information system for pneumonia treatment. 1) Analysis of patient status for pneumonia treatment and understanding the comprehensive information 2) Collection of disease characteristics, conditions of patients and effectiveness of tools 3) Measurement of the effectiveness of the information system 4) Analysis of the experimental effects of the subjects 5) Confirmation of the effectiveness of pneumonia treatment

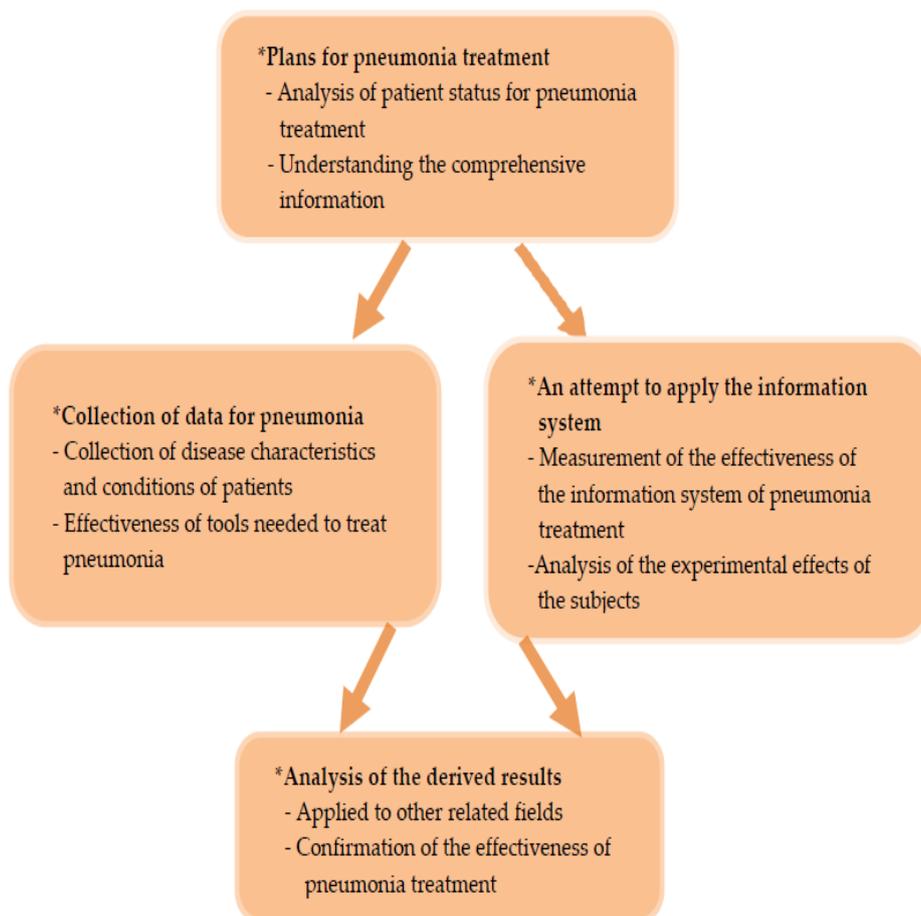


Figure 3. The framework of a comprehensive system for the treatment of pneumonia

2.2. Data and Ethical Considerations.

Data collection was conducted from May 10 to July 16, 2021 with interviews and structured surveys. The subjects of the study were 112 patients who visited the respiratory internal medicine department in Chungnam Province. This survey was conducted when the subjects agreed according to the ethics of the study subjects. The purpose of the study and the survey were explained to the study subjects. The investigator explained to the study subjects that surveys were not used other than for research purposes.

2.3 Tools for Research

This study is a tool for measuring immunity enhancement for the treatment of pneumonia in study subjects. The analysis of this study used a Likert 5-point scale. It is judged that the higher the score, the more positive. That is, it has in treating pneumonia. In previous studies, Chronbach'a was .85.7 points and in this study, it was higher with .87.4 points.

2.4. Methods

Basic information was analyzed by the X²-square test. T-test was performed for changes in health status after the application of a comprehensive information system. Health practice for pneumonia treatment was analyzed by a t-test before the application of comprehensive information system and after 6, 12, 24, and 32 days.

3. Results

3.1. Basic information about the subjects

Table 1 presents basic information on the subjects. In the case of other diseases, 73.2% of the patient group was significantly higher than 39.3% of the control group (X²=2.51, p<.05). The quality of sleep was 28.6% of the experimental group, which was significantly worse than 42.9% of the control group (X²=6.32, p<.05).

Table 1. Basic Information About the Subjects

Variables	Experimental	Control.	X ²
	Group	group	
	N(%)	N(%)	
Gender			
Men	34(60.7)	25(44.6)	1.49
Women	22(39.3)	31(55.4)	
Age			
≤50	4(7.1)	8(14.3)	7.68
51-59	10(17.9)	13(23.2)	
60-69	17(30.4)	21(37.5)	
≥70	25(44.6)	14(25.0)	
Other diseases			
Yes	41(73.2)	22(39.3)	2.51*
No	15(26.8)	34(60.7)	
Quality sleep			
Sufficient	16(28.6)	24(42.9)	6.32
Insufficient	40(71.4)	32(57.1)	
Total	56(100.0)	56(100.0)	

*p<.05

3.2. Changes in health status after the application of a comprehensive information system

Table 2 shows the change in health status after the application of a comprehensive information system. Daily consumption of radish increased significantly after application than before the comprehensive information system was applied ($t=-164$, $p<.01$). Drinking dandelion tea was significantly higher after application than before applying the comprehensive information system ($t=-3.82$, $p<.01$). Abdominal respiration was significantly higher after application than before applying the comprehensive information system ($t=-5.94$, $p<.05$).

Table 2. Changes in health status after the application of a comprehensive information system

Items	Before	After	t
	Mean±S.D.	Mean±S.D.	
Drinking dandelion tea	12.81±1.47	43.19±1.69	- 3.82**
Eating radish.	16.27±3.53	47.2±3.83	-1.64**
Diabetes mellitus	29.44±0.68	23.75±0.77	5.09
Phlegm	35.16±5.27	31.39±4.28	2.16
Cough	38.59±2.14	27.72±1.63	-2.6 4.83*
Eating garlic	31.72±0.91	48.15±0.91	-3.11*
Abdominal respiration	26.51±4.74	49.65±3.27	-5.94*
Quality of sleep	28.23±1.69	41.21±0.52	-2.76*
Regular aerobic exercise	15.07±3.84	42.65±2.96	-4.38**
Mental and physical stability.	28.69±0.61	35.72±0.47	-1.62

* $p<.05$, ** $p<.01$

3.3 Stage of health practice to treat pneumonia

Figure 4 shows the treatment of pneumonia for health practice. Aerobic exercise increased significantly after application of the information system 6 days later than before application of the comprehensive information system. Particularly, daily drinking of dandelion tea increased significantly 12 days after application compared to before application of the comprehensive information system. However, it tended to decrease 12 days after the application of the comprehensive information system.

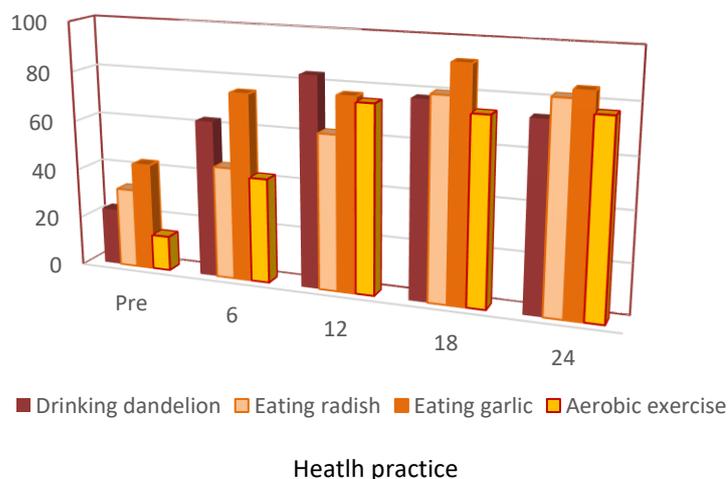


Figure 4. The stage of health practice to treat pneumonia

3.4 The stage of change in pneumonia symptom status

Figure 5 shows the changes in pneumonia symptoms according to the period before and after the comprehensive information system. Breathing continued to improve from 6 days after application than before the application of the comprehensive information system. Inflammation of the lungs showed a decreasing trend from 6 days after application than before the application of the comprehensive information system. However, inflammation of the lungs increased from 12 days after application before the application of the comprehensive information system.

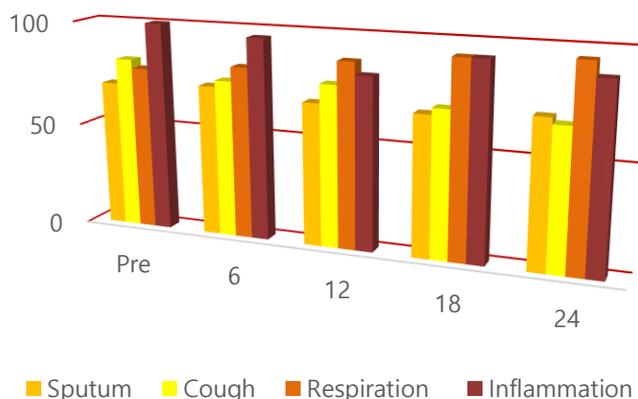


Figure 4. The stage of change in pneumonia symptom status

Figure 5. The stage of change in pneumonia symptom status

4. Discussion and Conclusion

This study is to carry out a novel comprehensive method to strengthen immunity for pneumonia treatment. As a result of this study, in the case of daily consumption of radish, the state of pneumonia after application significantly decreased compared to before the comprehensive information system was applied. This lifestyle also tended to decrease over time. This was consistent with the fact that radish strengthens lung function in previous studies[8],[9]. Radish is rich in sinigrin and vitamin seeds. Sinigrin protects the mucous membrane in the bronchus, and gluconic acid in honey helps stop inflammation of the throat and coughing.

Abdominal inspiration increased significantly after application compared to before application. of a comprehensive information system. Abdominal breathing is all affected by brain activity, blood pressure, heart rate, breathing, and body temperature dominated by the autonomic nervous system. It activates metabolism in cells and reduces body fat. Abdominal breathing can effectively consume oxygen and release carbon dioxide. Abdominal breathing is also particularly effective in removing belly fat and improves cardiopulmonary function because it uses abdominal muscles[10],[11]. This study is consistent with the fact that breathing strengthens pulmonary function in previous studies.

Therefore, this comprehensive information system has been confirmed to be effective in reducing pneumonia. It is expected to contribute to reducing the incidence and mortality of pneumonia through the use of an integrated information system.

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