

A New Experimental Model to Improve Health Function after Hand and Wrist Surgery

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Abstract

Objectives: The research aims on the development of an experimental technology to improve health function after hand and wrist surgery. **Methods/Statistical Analysis:** This survey was conducted with 166 patients who have visited orthopedic surgery of a university hospital located in Chungnam area from December 21, 2014 through June 8, 2015. The paper shows the differences of health function after carpal tunnel surgery pre and post modeling technology by the power of a 2-group t test using SPSS 17.0. **Findings:** As a result, for wrist tunnel syndrome, the carpal tunnel status in subjects who has suffered from paresthesia significantly decreased after the modeling technology ($t = 1.92, p = .00$). Therefore, a positive effect of this study will become a benchmark in the establishment of future medical information system and a literature that provides invaluable insights might in the effect of a medical information system. **Improvements:** This health model can be improved by considering other significant functions.

Keywords: Component, Experimental Model, Health Function, Hand and Wrist Surgery, Modeling Technology, Syndrome

1. Introduction

Wrist tunnel syndrome represents the most common type of sonjeorim symptoms. This is to treat by removing the transverse wrist ligament and swelling of the flexor¹⁻⁴. Syndromes in the hand shows such as neuritis, arm's pain, paresthesia, fossa of hand and abrasion of cartilage in the palm of hand.

Overactivity of the adenohipophysis, movement, arthritis, and mechanical disorder in the joint of upper limb occurs various syndromes from upper limbs to lower limbs⁵⁻⁸. Wrist tunnel syndrome can affect anyone in Korea.

Therefore, hand and wrist surgery is needed when there is numbness of hand, stenosis of muscle, or pain of wrist. Particularly, severe condition performs surgery about various symptoms of hand. The hand and wrist surgery perform with regional anesthesia. In some cases, the pain of wrist, numbness of hand, loss of strength, and complication of physical status present in the patient with carpal tunnel syndrome after wrist treatment. Wrist surgery is needed when there is nerve weakness and night-pain or when other mediating factors no longer

treat severe status. In some patients, the problem of hand's nerve shows the most disorder when feeling upper and lower limb' pain, back pain.

Therefore, the supply of mediating technology of information system is one of the most rapid solution of hand's disorder that can improve physical activities to patients after wrist tunnel surgery. Thus, the research aims the development of experimental technology to improve health function after hand and wrist surgery. A positive effect would be that this study becomes a benchmark in the establishment of future medical information system and a literature that provides invaluable insights in the effect of a medical information system.

2. Materials and Methods

2.1 Predictive Modeling Technology

This study is to develop predictive technology by making application of mediating system. The first step of the system is to analyze the necessity of a new modeling technology in patients with wrist tunnel syndrome. The secondary step obtained the structure factors of a modeling

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technology. In the third step, modeling technology that is provided by mediating technology presents the assessment as the effect of results. The four method in the phase of modeling analysis and follow-up. The five step is to evaluate the effect of modeling technology and build up the constructure in Figure 1.

2.2 Study Materials

This survey was conducted with 166 patients who have visited orthopedic surgery of a university hospital located in Chungnam area from December 21, 2014 through June 8, 2015. The benefit from the adoption of the system approach was investigated for the decrease of wrist tunnel syndrome after mediating system and compared with pre and post a new experimental adoption. In this analysis, the decreased factors of wrist tunnel syndrome after the mediating system were plotted as an activity of time elapsed after mediating system: 30, 40, 50, and 60 days. After mediating system, it was performed by the researcher on data analysis system about the adoption of a model to each participant.

2.3 Study Methods

Sociodemography variables of basic information were analyzed through number value. They were investigated by Chi-square test. The power of t test performed to find the pre and post mediating technology adoption for health function rate of the modeling technology. Achieved

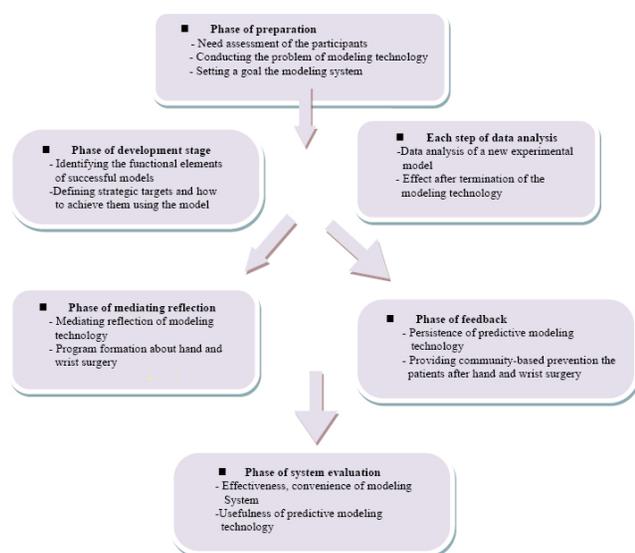


Figure 1. Development of predictive modeling technology.

contents analyzed the health function in patients with hand and wrist syndrome by using SPSS 17.0.

3. Results

3.1 Sociodemographic Variables of Basic Information

The sociodemographic variables of basic information are next contents. The proportion of single (28.9%) of the experimental group were a lower rate than the proportion (39.8%) of control group. The subject's gender was analyzed. Female with 51.8% in the experimental group showed a higher rate than female with 45.8% in the normal people. Male of 48.2% in the test people showed less than female with 54.2% in the control group. On the other hand, age was classified as 4 parts. Respondents between 41 and 50 for age was not higher in test people (15.7%) than in normal people (31.3%). In an education, the experimental group of respondents (33.7%) which have graduated over a three-year accredited college was higher than the control group of respondents (30.1%) in Table 1.

3.2 Health Function for the Difference of Pre and Post Modeling Technology

Table 2 shows the difference of health function pre and post modeling technology. The result verified the significance of health function on the carpal tunnel syndrome after mediating system as compared before mediating system. For carpal tunnel syndrome, the carpal status in subjects who have suffered from paresthesia decreased after the system application ($t = 1.92, p = .000$).

3.3 Wrist Tunnel Status after Modeling Technology Application

Figure 2 shows the change of wrist tunnel status after mediating technology. For physical function after hand and wrist surgery, it was significantly much lower after mediating adoption in the test people when it showed the difference of the normal people after time elapsed of 30 days ($p < .05$).

4. Discussion

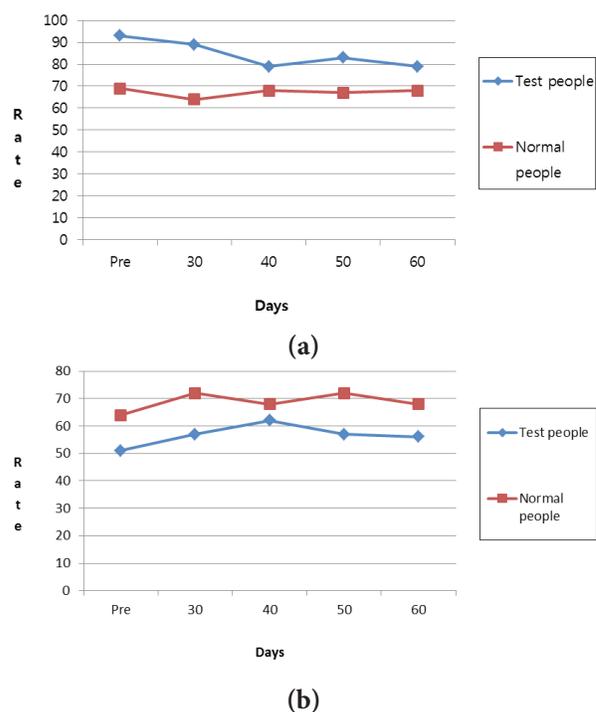
This research aims the development of a new experimental technology to increase health function after hand and wrist surgery. Wrist tunnel state after surgery was more

Table 1. Sociodemographic variables of basic information

Items	Exp	Cont	Items	Exp	Cont
	Number(percent)	Number(percent)		Number(percent)	Number(percent)
Marital status			≥61	36(43.4)	24(28.9)
Single	23(28.9)	33(39.8)	Monthly income		
Married	59(71.1)	50(60.2)	≤99	20(24.1)	13(15.7)
Gender			100-200	13(15.7)	17(20.5)
Male	40(48.2)	45(54.2)	201-299	22(26.5)	30(36.1)
Female	43(51.8)	38(45.8)	≥300	28(33.7)	23(27.7)
Age			Education		
<40	6(7.2)	14(16.9)	Under middle	23(27.7)	20(24.1)
41-50	13(15.7)	26(31.3)	High school	32(38.6)	38(45.8)
51-60	28(33.7)	19(22.9)	Over college	28(33.7)	25(30.1)
Total	83(100.0)	83(100.0)	Total	83(100.0)	83(100.0)

Table 2. Difference of health function of modeling technology

Items	Pre	Post	t	P-value
	Mean±Standard deviation	Mean±Standard deviation		
Garglic intake	35.58±0.51	42.17±1.35	-1.92	.036
Quince intake	18.23±4.39	34.82±0.72	-4.27	.000
Onion intake	27.41±0.62	49.16±2.64	-0.84	.000
Egg intake	29.05±1.27	37.52±0.42	-3.62	.000
Stretching	24.21±3.27	42.17±1.75	-5.19	.000
Warm abdomen.	32.57±2.74	40.28±4.36	-1.74	.472
Hand pressure	16.39±0.51	33.41±1.52	4.39	.000
Paresthesia	41.60±1.38	27.36±2.65	1.92	.000
Blood disorder	43.26±0.52	39.82±0.27	5.29	.035
Insomnia	37.52±3.49	31.42±3.18	3.14	.127
Depression	31.62±1.95	28.17±4.57	0.76	.584
Shoulder pressure	15.41±0.37	43.92±0.34	-5.28	.000
Itching numbness	34.28±0.59	27.57±1.92	1.81	.038
Tingling of hand	42.54±1.46	33.71±0.86	3.27	.021
Burning of hand‡	45.27±3.52	38.46±3.24	2.52	.047

**Figure 2.** Hand and wrist status after modeling technology application. (a) Psychiatric func. (b) Mental function.

statistically improved in the test people than normal people. Moreover, quince intake among patients after surgery was significantly higher than before surgery between two groups. Consequently, experimental groups who intaked the quince would be lead to positive increase of physical activity more than control groups. As a result, tingling of hand was significantly decreased after intervention in respondents compared with before the mediating

effect. In addition, the results showed that information system was significantly effect in reducing wrist paresthesia and in increasing life satisfaction of the experimental group. Achieved data were similar to the contents of previous researches⁹⁻¹². This paper indicates that it should develop mediating system of better modeling technology than previous technology. Moreover, modeling studies should be established fastly in order to provide various findings of this research. The mediating effect is very important to have mediating period.

In order to persist effective health function, comprehensive modeling systems for patients with wrist tunnel syndrome on health function are better than independent system. The contents of achieved data from treatment through mediating system could use in the other field. There was higher increase of the health function after mediating system than pre-mediating system in the mean score of having hand's pain. The finding was similar with the result of earlier researches¹³⁻¹⁵. Therefore, it indicates that comprehensive efforts in the hand and wrist is needed for the quality of life.

Through achieved data, test people whom the mediating technology were provided showed the improvement of health function in patients with wrist tunnel syndrome. Thus, a new adoption of the model to decrease the disorder of wrist will help the physical function after wrist tunnel surgery.

The system of modeling technology that participated in an experimental study in patients with wrist tunnel syndrome was carried out through the experimental model which was developed. This study will contribute to reducing carpal tunnel syndrome. The model of information technology is composed of usefulness, fast system, convenience and variety. The model is also used in more carpal disease and used to perform a computerized database. Therefore, a positive effect of this study will become a benchmark in the establishment of future medical information system and a literature that provides invaluable insights might in the effect of a medical information system.

5. Conclusion

The research aims at the development of modeling technology to improve health function after hand and wrist surgery. For wrist tunnel syndrome, the carpal status in subjects who has suffered from paresthesia decreased after mediating system application ($t = 1.92$, $p = .000$).

Through achieved data, test people whom the mediating technology were provided, showed the improvement of health function in patients with wrist tunnel syndrome. Thus, a new adoption of the model to decrease the disorder of wrist will help the physical function after wrist tunnel surgery.

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