Indian Journal of Science and Technology, Vol 8(18), DOI: 10.17485/ijst/2015/v8i18/77149, August 2015
ISSN (Print) : 0974-6846
ISSN (Online) : 0974-5645

A Design of Clinical Information Model to Improve Self-care Activities in Participants with Stroke

Seong-Ran Lee*

Department of Medical Information, Kongju National University, Chungnam - 314-701, South Korea; lsr2626@daum.net

Abstract

Our paper was determined to design clinical information model to improve self-care activities in patients with stroke. Student's T test was analyzed to identify differences for self-care activities on health promotion in patients with stroke before and after the application of medical technology model. Data was analyzed with a total of 130 patients who visited in healthcare which was at Chungnam region between December 2, 2013 and March 28, 2014. Health practice was identified the rate of health condition after intervention: 3, 6, 9 and 12 weeks. Findings of the research are next contents. 1. for dietary factors, experimental group who had intake carrot after the information application identified a good status in patients' physical promotion ($t = -3.17$, $p = 0.00$). 2. for anxiety symptom, score of participants of experiment after intervention identified significantly slight decrease than participants of non-experiment ($t = 4.85$, $p = 0.00$). Therefore, when we adopted the information system model, it will be effective method of stroke participants in leading a good condition of participants' self-care activities for the health promotion.

Keywords: Clinical Information Model, Health Promotion, Patients, Self-care Activities, Stroke

1. Introduction

A stroke is a major cause of death in Korea and more than million people have died from cerebrovascular accident. Cerebrovascular accident plays a role in leading death of cranial structure due to insufficient situation of O_2[1,2]. People with brain disorder such a vein thickness have a significantly higher percentage of cerebrovascular accident when it showed difference with persons who don't have vein occlusion by previous studies[3,4].

In many cases, cerebrovascular accident is needed to observe for the long time in participants of cerebrovascular accident about death or incidence. But there were not studies about clinical information model of physical condition in patients with stroke. Many patients with atrial fibrillation more than three million have a stroke every year. 92% of strokes in atrial fibrillation patients are ischemic stroke[5,6].

In order to properly manage the disease, stroke patients have to perform health practice in daily life. However, many patients do not adequate health behavior and supply the poor quality of life[7,8].

Therefore, a provision of clinical technology model by the adoption of information technology tool is method of important services that can support for stroke patients. An information model in patients with stroke is a representation of concepts and the relationships, constraints, rules, and operations to specify an individual patient data for enhancing health practice.

Thus, the aim of my research was performed through design clinical information to improve the self-care activities in patients with stroke. The proposed information model will look forward to helping as a good method of treatment to persons who suffered from stroke in the world. Moreover, this information model will contribute to improve efficient information-operation strategies to apply the guidelines to stroke subjects.

*Author for correspondence

2. Research Data and Analysis

2.1 Study Setting

Figure 1 presents a model developed by order of next process. 1. Materials which were provided tool helpful to treat of stroke subjects for the improving of personal health environment. 2. The contents which were received on the technology development of personals' habits were focused on standard of stroke, improvement, effectiveness and physical condition. Our research was determined by test of validity through pre-test on the subjects, doctors. 3. Data are identified important characteristics of health condition of stroke patients to reduce cerebrovascular accident. Development of tool will be a new guide which estimates technology in every field. 4. Physical change and habits will be a good method which improve physical condition of personal with cerebrovascular accident Figure 2.

2.2 Research Data

Research data was analyzed by a total of 130 patients who visited neurosurgery in healthcare which was at local region of Chungnam between December 2, 2013 and March 28, 2014. Data was analyzed the practice on health behaviors by intervention. It identified distinction according to tool experience of clinical information model. In this work, the rate of health practice by intervention of tool experience was determined by tool experience: 3, 6, 9, 12 weeks. According to tool experience, it was implemented by professor's assessment.

2.3 Data Analysis

Sociodemographic characteristics about subjects in this research were analyzed with rate. Student's T test analysis was analyzed to identify the distinction of self-care activities to improve health condition in personals who have stroke by tool experience model. Also, mean and S.D. was analyzed.

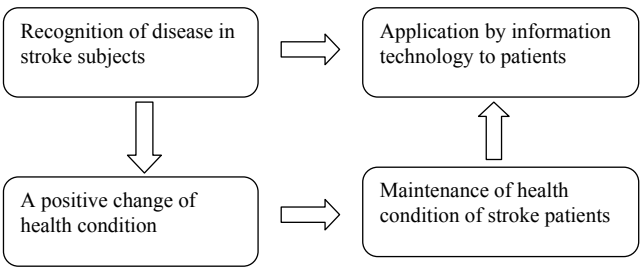

Figure 1. Process of physical condition in participants with stroke.

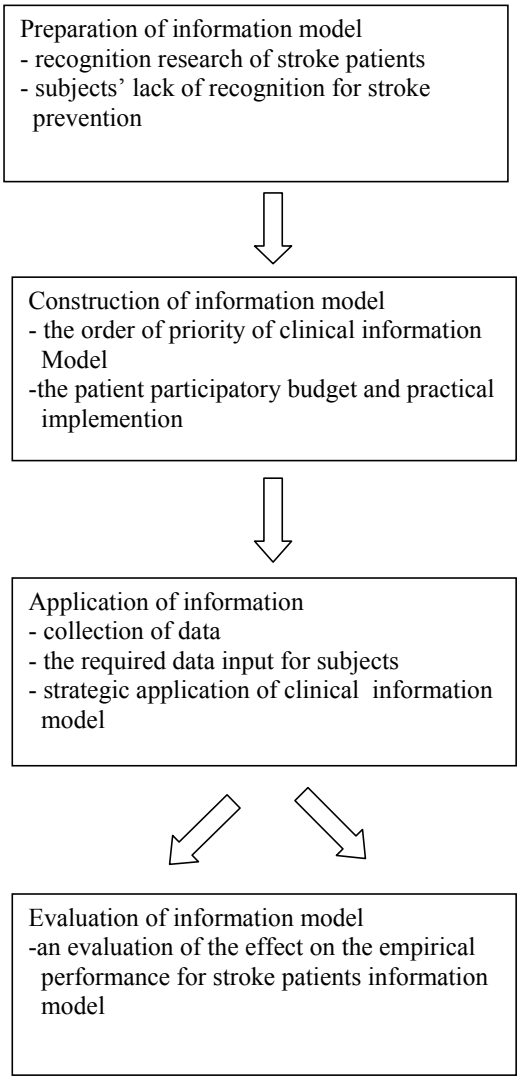

Figure 2. Construction of clinical information model for the stroke patients.

3. Research Findings

3.1 Sociodemographic Data of Research Participants

Data was investigated on sociodemographic personals of research data. Female (58.5%) among subjects of experiment was a more than female (52.3%) in the control group by gender, whereas male (47.7%) in subjects of non-experiment was a higher rate than male (41.5%) in the experimental group. For education level, respondents who were over 2 years university (26.2%) in the experimental group showed lower percent than those who were over 2 years university (33.8%) in the control group in this Table 1.

Table 1. Sociodemographic data of in research participants

Variables	Experimental group	Control group
	Number(%)	Number(%)
Total	65(100.0)	65(100.0)
Sex		
Male	27(41.5)	31(47.7)
Female	38(58.5)	34(52.3)
Age		
≤39	7(10.8)	11(16.9)
40-49	15(23.1)	12(18.5)
50-59	20(30.8)	17(26.1)
60≤	23(35.4)	25(38.5)
Education level		
Under middle school	19(29.2)	17(26.2)
High school	29(44.6)	26(40.0)
Over college	17(26.2)	22(33.8)
F Family history		
Yes	39(60.0)	18(27.7)
No	26(40.0)	47(72.3)
Monthly income/million		
<1	12(18.5)	14(21.5)
1-1.99	10(15.4)	11(16.9)
2-2.99	27(41.5)	21(32.3)
3≤	16(24.6)	19(29.2)
Marital status		
single	19(29.2)	13(20.0)
married	46(70.8)	52(80.0)
Comorbidity		
Yes	49(75.4)	14(21.5)
No	16(24.6)	51(78.5)
Complication		
Yes	17(26.2)	8(12.3)
No	48(73.8)	57(87.7)

Particularly, as for monthly income, the 41.5% of money which participants have for 30 days was the most in the area of participants between 20,000,000 and 2,990,000 won in the experimental group, moreover, money which have for 30 days more than 3,000,000 won was 24.6% of respondents' income. In addition, respondents (18.5%) who have under 1,000,000 won for 30 days identified higher rate than money of participants (15.4%) which have between 1,000,000 won and 1,990,000 won in participants of experiment. Also, for marriage situation, marriage participants (70.8%) in participants of experiment were less than married participants (80.0%) in participants of non-experiment.

3.2 Physical Promoting Behaviors by Tool Experience

Data shows the distinction of physical promoting behaviors by tool experience in this Table 2. Results verified a significance of health status on the stroke after intervention as compared with by tool experience. For dietary factors, results of participants which have eaten carrot by tool experience identified a good condition in physical promotion ($t = -3.17$, $p = 0.000$).

On physical condition scores, score of onion intake significantly increased in respondents after intervention than respondents before intervention ($t = -4.61$, $p = .000$). Also, for health management of HTN, result by tool experience was less than previous tool experience in case of participants of experiment ($t = 2.59$, $p = 0.048$).

Table 2. Physical promoting behaviors by tool experience

Variables	Pre	Post	t	P
	M±S.D.	M±S.D.		
Dietary Factors				
Carrot Intake	49.52 ± 0.64	86.54 ± 1.29	−3.17	0.00
Bean Intake	31.75 ± 0.38	63.28 ± 0.54	−6.48	0.00
Onion Intake	45.71 ± 1.52	67.91 ± 0.73	−4.61	0.00
Muschroom Intake	48.33 ± 1.96	52.15 ± 1.49	−2.72	0.07
Smoking	53.60 ± 0.47	41.63 ± 1.58	5.39	0.56
Alcohol Drinking	61.92 ± 0.58	53.87 ± 0.92	4.17	0.39
Physical Factors				
Daily Activities	46.37 ± 0.92	58.04 ± 1.35	−3.82	0.45
Meditation	29.51 ± 1.64	42.71 ± 0.17	−5.94	0.02
Exercise	37.94 ± 0.57	75.39 ± 0.42	−2.61	0.00
Psychiatry Factors				
Anxiety Symptom	72.39 ± 0.48	45.19 ± 1.27	4.85	0.00
Satisfaction Of Life	30.15 ± 0.61	42.78 ± 0.54	−5.16	0.36
Stress Status	74.29 ± 0.74	65.31 ± 0.39	2.54	0.17
Insomnia	62.56 ± 0.63	59.61 ± 0.79	4.61	0.30
Depression Status	75.37 ± 1.94	52.59 ± 1.46	4.95	0.02
Clinical Factors				
Diabetes Mellitus	69.85 ± 0.15	62.35 ± 0.27	5.17	0.72
Cholesterol	75.19 ± 0.74	66.14 ± 1.85	2.94	0.39
Body Weight Control	56.72 ± 0.18	51.62 ± 0.79	6.05	0.42
Hypertension	78.64 ± 1.57	53.28 ± 1.46	2.59	0.04

3.3 Distinction of Paticipants' Condition of Self-care Activities

Figure 3 shows the distinction of the participants' condition by self-care activities between two groups after intervention. According to the practice of self-care activities on anxiety symptom, score of participant of experiment after intervention identified a significant decrease than participants of non-experiment, whereas the satisfaction of life showed an increase than control group. For the practice of self-care activities on depression status, the rate of depression status was significantly much decreased by participants who used tool experience than participants who didn't use tool experience in participants of non-experiment ($p<0.05$).

Figure 4 shows the scores of health practice according to dietary factors, the mean of onion intake was significantly increased in respondents after intervention than respondents before intervention ($p<0.05$).

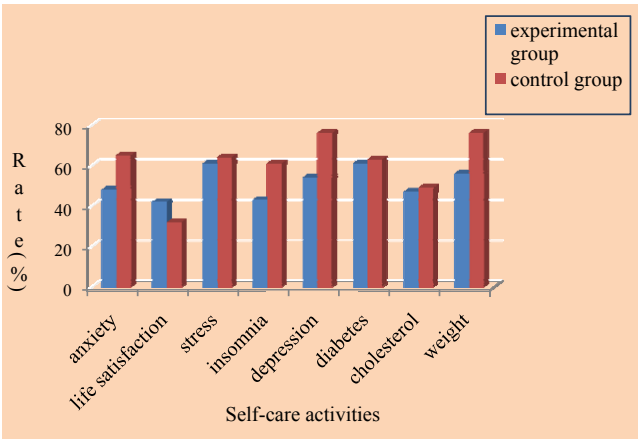

Figure 3. Change of health-promotion factors according to self-care activities.

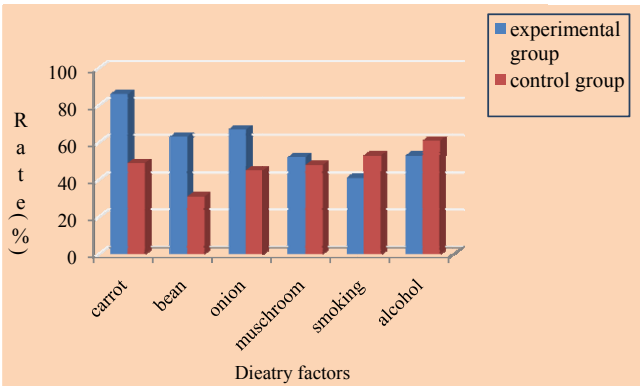

Figure 4. Change of dietary factors according to self-care activities.

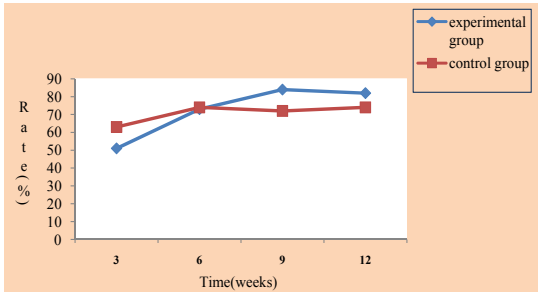

Figure 5. Persistence tendency on physical condition.

3.4 Persistence Tendency of Subjects on Physical Condition

Figure 5 identified persistence tendency of subjects on physical condition. Persistence tendency of subjects identified a higher rate in participants of experiment than participants of non-experiment after 6 weeks by intervention. But participants of experiment identified slight decrease after 9 weeks in participants of experiment by intervention.

4. Discussion

The purpose of our research is to identify to improve self-care by application for empirical analysis in stroke participants to relieve patients' stroke. Recently medical service environment which contribute to clinical safety, promotion of quality of life, patient's convenience and effect of clinical management is essential information model.

This paper determined next analysis to identify distinction of body condition by tool experience to participants with stroke for stroke treatment and care. Body condition was investigated through physical strength and physical condition for distinction of body before and after daily activities of stroke participants.

Life condition in stroke participants which was determined physical condition of self-care through tool experience. Findings of research were determined from every participants who was statistically improved from physical condition. Moreover, food case was statistically determined as better condition in participants of experiment than another participant. Moreover, onion consumption of stroke participants identified significantly distinction. In conclusion, participants of experiment who had eaten onion would be made a good condition of body more than participants of non-experiment. We hope that it plays an important role at healthcare on materials of data by information technology.

As a finding, anxiety symptom determined significant decrease by tool experience of participants before tool experience. In addition, finding determined that information technology was a significantly distinction in diminishing insomnia and in enhancing the well-being of life in participants with experiment. Our research was similar to results on previous researches[9, 10]. This finding suggests that it has to perform an information system in an integrated information program than each program. Moreover, many intervention studies should be established urgently in order to determine findings of this paper.

Our paper determined that condition of self-care activities by information system was increased from 67.9% to 86.5% by the intervention, which is same as data which was presented in the past researches[11, 12]. But, it has to remember that persistence of effect is not for long time. Also, to continue long time, it is important to observe patients' condition

The design about clinical information model means very important to the stroke participants. In order to good work of this study, our research should provide many situations to improve behavior rate of self-care activities in stroke participants using clinical information model. There were many researches which improve quality of life in stroke participants using clinical information model. Our research determined that an information model could help stroke participants in providing good condition of self-care activities.

The clinical information model is experimental and dynamic analysis program in stroke patients within the limit of adequate reliability. The information model can provide efficient database system to stroke patients within the required performance. It identified a good application possibilities in effective design.

The construction of quality control model is important to select characteristics of information system quality and with the selected model quality measures and then with the result it is able to derive the quality improvement of information system and so sustainable quality control is possible by measurement of the improved health. In this study it had brought up measurement method after selecting quality characteristics for information system and developing valuation models. It had presented analytic calculation method on the priority order in relations of quality characteristics, according to feature of health differences in information model. For this, analytic process had applied for valuation and selection of differences of self-care activities on subjects. This paper describes a basic programming and interfacing model which can link information system.

When we adopted clinical information model, it could be improved their health by facilitating and supporting self-care activities in patients with stroke. Our research shows reliability of technology model. Therefore, our research suggests that it is necessary to have clinical information model for the urgency of stroke prevention and for the improvement of the practice rate.

5. Conclusion

The paper was attempted to design clinical information model to improve self-care activities in patients with stroke. This study was positively related to better prognosis. Findings of our research are as below.

- For dietary factors, participants who have eaten carrot determined a good condition in lifestyle habits by tool experience ($t = -3.17$, $p = .000$).
- According to body condition, scores of participants of experiment after intervention showed a significant decrease in anxiety than control group, whereas life satisfaction showed an increase than participants of non-experiment.
- Our study determined that health practice rate of clinical information model was increased from 67.9% to 86.5% by the intervention,

The proposed information model seems to be good condition in the stroke participants. Moreover, this model will contribute to improve efficient information-operation strategies to apply the guidelines in patients with stroke.

6. Acknowledgment

Thank you for participating in the design on clinical information model. Experimental analysis will provide good services in multi-environments to patients and help for improving their health conditions of stroke patients.

7. Reference

1. Kim H, Chang M. Interventions to promote upper limb recovery in stroke patients: a systematic review. Journal of Korean Society of Occupation Therapy. 2012; 20(1):129–31.

2. Miller A, DeSilva TM, Tackman KA, Sobey CG. Effect of gender and sex hormones on vascular oxidative stress. Clinical and Experimental Pharmacology-Physiology. 2007 Oct; 34(10):1037–43,
3. Manolescu BN, BerleanuM, Oprea E, Chiriac N, Dumitru I, Vladoiu S. Dynamic of oxidative and nitrosative stress markers during the convalescent period of stroke patients undergoing rehabilitation. Annuals of Clinical Biochemistry. 2011; 48:338–43.
4. Xiao-Ping MC, Ting L. A research on user behavior sequence analysis based on social networking service use-case model. IJUNESST. 2014; 7(2).
5. Ciancarelli ID, Massimo C, DeAmicis D, Carolei A, Tozzi MG. Ciancarelli C. Evidence of redox unbalance in post-acute ischemic stroke patients. Current Neurovascular Research. 2012 May; 9(2):85–90.
6. Gillot AJ, Holder-Walls A, Kurtz JR, Varley NC. Perceptions and experiences of two survivors of stroke who participated in constraint-induced movement therapy home programs. American Journal of Occupational Therapy. 2003; 57(2):168–76.
7. Luke C, Dodd KJ, Brock K. Outcomes of the bobath concept on upper limb recovery following stroke. Clinical Rehabilitation. 2004 Dec; 18(8):888–98.
8. Lee SR. Development of an efficient information model to prevent depression among hysterectomy patients. IJBSBT. 2014; 6(4):57–68.
9. Stanley M, Huff K. An event model of medical information representation. JAMIA. 1995; 2(2):116–34.
10. Yong L, Zhang HA. Comprehensive analysis of China regional agriculture based on efficiency, advantage and development strategy. IJDRBC. 2010 Feb; 1(1):41–54.
11. Coyle IJ. Standards for detailed clinical models as the basis for medical data exchange and decision support. International Journal of Medical Informatics. 2003; 69(2-3):157–74.
12. Lee SR. The effect of an integrated information system adoption for the health promotion in patients with laparoscopic colon resection. IJBSBT. 2014; 6(5):1–12.