A Strategic Approach to Applying the Advanced Information System Prevent Recurrence After Cholecystectomy

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Abstract: This study was conducted to apply the advanced information system to prevent recurrence after cholecystectomy. The research was conducted on 102 people who visited general surgery clinics in C area from June 3 to August 27, 2019. The data were conducted with questionnaires and interviews. The general characteristics of the subjects were performed with Chi-square test. The comparison of symptoms according to the application of the advanced information system was analyzed for t-test. The results of this study are as follows. First, cholesterol levels decreased significantly after application than before application of advanced information system(t=3.91, p=.000). Second, physical fatigue decreased after 7 days of application than before information system application. Therefore, it has been confirmed that applying the advanced information system is effective in preventing recurrence after cholecystectomy.

Keywords: Advanced information system, Recurrence, Cholecystectomy, Cholesterol

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1.lntroduction

Gallbladder cancer is a mass of cancer cells in the gallbladder. The gallbladder cancer is resected if it is spread throughout or accompanied by gallstones (**Strasberg, S. M. Pucci, M. J. Brunt, L. M., & Deziel, D. J. 2015**). Cholecystectomy is a method of removing various kinds of gallstones in the gallbladder. chronic inflammation of the liver persists (**Thomas, S. 2015**). Biliary tract is a condition in which cholesterol in bile hardens like a rock, causing pain in the liver, gallbladder, and bile ducts (**Zacks, S. L. Sandler, R. S. Rutledge, R., & Brown, R. S. 2002**). The number of gallbladder disease patients increased by 58% in four years from 136,774 in 2015 to 216,325 in 2019. High fat, high cholesterol, low fiber diet increases cholesterol in bile (**Kilic, A. Sheer, A. Shah, A. S. Russell, S. D. Gourin, G., & Anne O, L 2013**). This increases the risk of gallbladder disease by reducing gallbladder discharge (**Wennmacker, S. Z, van Dijk, A. H. Drenth, J. P. Donkervoort, S. C. Boerma, D. Westert, G. P. van Laarhoven, C. J. Boermeester, M. A. Dijkgraaf, M. G., & de Reuver, P. R. 2018**), Recently, the incidence rate has been increasing even among young people in their 20s and 40s. It is so common that one out of every 10 adults suffer from it. Not only is the population aging, but Westernized diets are increasing the number of patients (**Pontarelli, E. M. Grinberg, G. G. Isaacs, R. S. Morris, Ajayi, J. P. & Yenumula, P. R. (2019).** It is important to prevent gallstones to eat regularly, exercise regularly, and maintain proper weight. Therefore, this study identifies the strategic approach of the advanced information system to prevent recurrence after cholecystectomy.

2. Material and Methods

2.1 Strategies for preventing recurrence after cholecystectomy

The new strategic plan for advanced information system is as follows. 1) Research direction setting, 2) Applying data to analyze, 3) Deriving the results of an experiment 4) Stage of improvement in the liver condition in Figure 1.

2.2 Materials and Methods

The research was conducted on 102 people who visited general surgery clinics in C area from June 3 to August 27, 2019. There are 51people in the experiment group who mediated the advanced information system. On the other hand, there are 51 people in the normal group who did not mediate in the advanced information system. The data were conducted with questionnaires and interviews. The general characteristics of the subjects were performed

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with Chi-square test. The comparison of symptoms according to the application of the advanced information system was analyzed for t-test

2.3 Research Tools

This study is a tool used to prevent recurrence after cholecystectomy. We used a five-point scale of the Likert. The higher the score, the better the patient's condition. In previous study, the Cronbach's α was .892, On the other hand, in this study, the Cronbach's α was .857.(**Zacks, S. L. Sandler, R. S. Rutledge, R., & Brown, R. S. 2002 : Kilic, A. Sheer, A. Shah, A. S. Russell, S. D. Gourin, G., & Anne O, L 2013**).
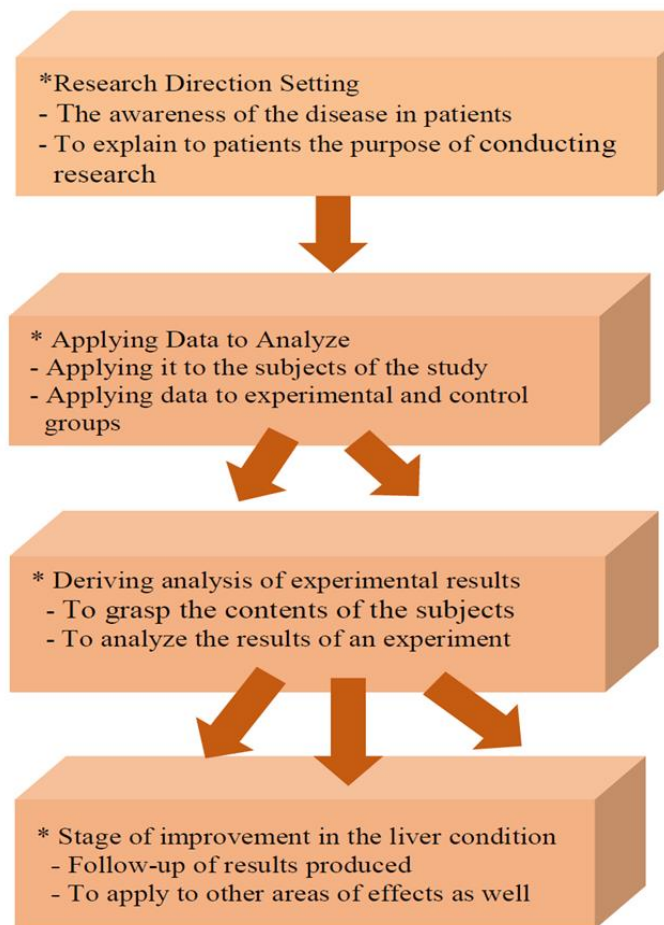

Figure 1. Strategies for preventing recurrence after cholecystectomy

3.Results

3.1 Present circumstances of participants

Table 1 points out the general characteristics of the study subjects. The average monthly income was more than 3 million won, which was 24.5% higher than 10.2% in the control group. The group of experiments that frequently consumed meat was significantly higher than the control group. The number of patients who ate meat very often was significantly higher than the control group(X^2=8.41, p<.05).

Table 1. Present circumstances of participants

Variables	Experi. group, N(%)	Con. group. N(%)	X²
Gender			
Men	27(52.9)	22(43.1)	1.58
Women	24(47.1)	29(56.9)	
Average monthly income/million			
<1	14(27.5)	21(41.2)	4.92
1-2.9	17(33.3)	12(23.5)	
>3	20(39.2)	18(35.3)	
Marital status			
Husband, wife (or couple) & children	19(37.3)	22(43.1)	10.26
Husband and wife or couple	21(41.2)	16(31.4)	
Alone	11(21.6)	13(25.5)	
Carnivorous intake			
Very often	24(47.1)	14(27.5)	8.41*
Sometimes	15(29.4)	17(33.3)	
Hardly ever	12(23.5)	20(39.2)	
Total	51(100.0)	51(100.0)	

*$P<.05$

3.2 Comparison of symptoms according to application of advanced information system

Table 2 shows the comparison of symptoms according to the application of the advanced information system. Cholesterol status decreased significantly after application before application of advanced information system($t=3.91$, $p=.000$)

Table 2. Comparison of symptoms according to application of advanced information system

Items /intervention	Before Mean±S.D	After Mean±S.D	t	p
Cholesterol	43.19±2.06	29.64±2.95	3.91	.000
HTN	45.82±0.73	31.58±0.64	6.27	.049
Diabetes mellitus	39.67±3.91	36.76±3.68	1.64	.585
Prick in the abdomen	36.42±0.85	23.59±0.52	5.43	.024
Upper abdominal pain	28.05±1.72	24.63±1.85	3.95	.396
Anorexia	43.72±3.68	36.24±2.93	6.27	.143
Nausea	35.46±0.75	23.75±0.62	3.64	.031
Weight loss	29.15±5.28	27.18±4.38	1.73	.528
Fatigue	48.27±1.63	44.52±1.57	4.81	.746
Headache	42.83±0.59	39.46±0.24	1.38	.215

3.3 Continued changes in patient status after the application of advanced information system of the experimental group

Figure 2 indicates the continuous change in patient status after the application of the experimental group's information system. Cholesterol levels continued to decline after seven days. But after the 21st, cholesterol levels have been on the rise again. But after the 21st, cholesterol levels have been on the rise again. Physical fatigue decreased after 7 days of application than before information system application
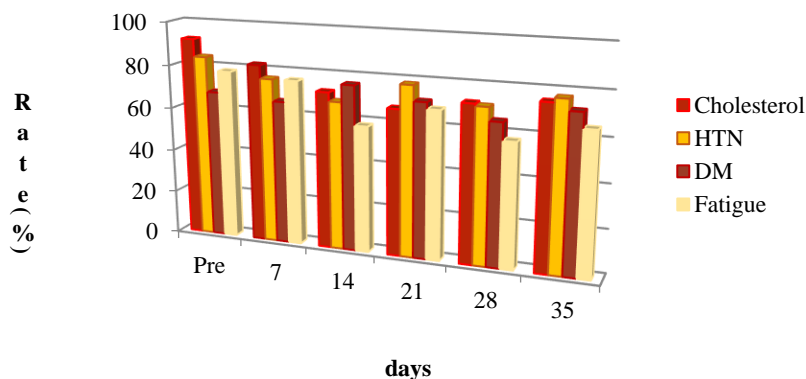

Figure 2. Continued changes in patient status after the application of information system

4. Discussion

This study is to apply the advanced information system to prevent recurrence after cholecystectomy. As a result of this study, cholesterol level has been significantly reduced since the application of comprehensive information system. This is similar to the study of liver cancer in prior researches **(Byeon H. W. Cho S. H. 2015, Kim J. H, Jun H, Park & Yim J. E. 2016).** Excessive drinking, stress and westernized eating habits. are being exposed to cholelithiasis. Especially, to prevent cholelithiasis, people should eat good food for their liver, such as vegetable, fruit and asia berry. This was similar to the previous study in which berries were effective in hepatitis **(Silverstein, A. Costas-Chavarri, A. Gakwaya, M. R. Lule. J. Mukhopadhyay, S. Meara, J. G. & Shrime, M. G., 2017).** It is important to use an appropriate information system to improve this gallbladder function.

Bile is made up of cholesterol, bilirubin and protein **(Campbell, B. M. Lambrianides, A. L. & Dulhunty, J. M, 2018)**. As it builds up in the body, it hardens like a stone, becomes a gallstone, and blocks gallbladder, bile duct, and biliary tract. Therefore, lf people continue to practice Westernized lifestyles such as high calories, high fat, and high cholesterol, they will have higher cholesterol. Although gallbladder disease is often asymptomatic, excessive consumption of greasy food causes sudden post-dinner pain. It is necessary to improve diet for the management of gallstones through the application of the information system. It has been confirmed that applying advanced information system is effective in preventing recurrence after cholecystectomy. Therefore, continuous management is required as the effect decreases over time after the application of advanced information system.

5. Conclusion

This study was conducted to apply the advanced information system to prevent recurrence after cholecystectomy. The results of this study are as follows. First, cholesterol levels decreased significantly after application than before application of advanced information system(t=3.91, p=.000). Second, physical fatigue decreased after 7 days of application than before information system application. Therefore, it has been confirmed that applying advanced information system is effective in preventing metastasis and recurrence after cholecystectomy.

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