

# Reuse Intention Associated with the Selection Factors and Satisfaction: Focused on Spine Specialty Hospitals in Korea

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## Abstract

In this study, we investigated the reuse intention of inpatients with spine diseases in a spine specialty hospital with regard to the factors they considered important when selecting a hospital and the satisfaction with using the hospital after hospitalization. Of the subjects, 242 respondents (80.7%) stated they had intention to reuse the spine specialty hospital, while 58 respondents (19.3%) said they had no intention. The results of the multiple logistic regression analysis showed that the significant factors in the importance of hospital selection with regard to reuse intention were hospital facility (OR=0.622) and geographic accessibility (OR=0.622), and the significant factors in the satisfaction with using hospital were hospital facility (OR=0.658) and hospital environment (OR=1.381). It was found that hospital facility and geographic accessibility were major factors associated with hospital selection for inpatients in the spine specialty hospital without reuse intention, and that inpatients in the spine specialty hospital with reuse intention were satisfied with hospital environment, although they were not satisfied with hospital facility.

**Keywords:** Importance of Selection , Reuse Intention , Satisfaction, Spine Specialty Hospital

## 1. Introduction

Specialty hospitals have a few advantages. They are easily accessible for patients, can be efficiently managed with a small size of human resources and facility, and can properly cope with the rapidly changing environment and diversified consumer needs as they can make a quick decision. It is also expected that specialty hospitals can achieve efficiency in their revenue by minimizing unnecessary introduction of departments and consumption of medical resources, and shortening the hospital stay of patients through the standardized and concentrated medical services. The increased use of specialty hospitals transformed from small and medium hospitals has prevented the phenomenon of patient's preference to specialized general hospitals and reduced the unnecessary use of high-priced medical service. It is thus expected to produce a positive result in reducing the medical expenditures of the nation and maintain the balance in the health care delivery system<sup>1</sup>.

In order for hospitals to survive the rapidly changing medical environment, it is necessary for them to increase the satisfaction of patients and ultimately induce patients to revisit or encourage others to visit the hospitals by identifying the factors for hospital selection that reflect the expectation and need of patients and reflecting the expectation and need suitable for the characteristics of medical consumers to the management of the hospitals based on a patient-oriented thinking. Thus, it is needed to investigate the hospital selection factors of patients, medical consumers, and the importance of and satisfaction with the selection factors by the characteristics of patients<sup>2</sup>. However, data for developing the strategies to increase the use of specialty hospitals are not enough because little empirical studies on specialty hospitals have been conducted<sup>1</sup>.

Thus, this study aims to investigate the characteristics of patients using spine specialty hospitals, the factors considered important in selecting hospitals and the satisfaction factors after using the hospitals, and examine

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the reuse intention associated with the selection factors and satisfaction of medical consumers who use spine specialty hospitals in selecting hospitals.

## 2. Methodology

### 2.1 Study Subjects

A survey was conducted for inpatients of a randomly selected spine specialty hospital located in the city of Korea from July 1 to August 29, 2014. The subject hospital for the survey has less than 100 beds.

### 2.2 Research Variables

Data were collected with a survey organized by referring to the previous studies<sup>3-5</sup> that measured selection factors and satisfaction with specialty hospitals. The survey was primarily based on a self-administered questionnaire, but interviews were conducted for critically ill patients who found the self-administered questionnaire difficult to complete. The questionnaire consists of 4 items on demographic characteristics, 14 items on the general characteristics regarding hospital use, 28 items on selection factors and 28 items on satisfaction factors. As for the descriptive factor analysis on the validity and reliability (Cronbach's  $\alpha$ ) of the instrument, the construct validity of the factors on the importance of hospital selection and satisfaction with hospital use was tested. The Cronbach's  $\alpha$  for reliability were .700 ~ .930 in all the factors.

### 2.3 Method of Data Analysis

A 5-point scale was used for the items on the importance of hospital selection and satisfaction with hospital use, except the items on the general demographic characteristics in the questionnaire. Collected data were analyzed using the IBM SPSS statistics version 20 program. Reuse intention by the general characteristics was compared with  $X^2$ -test. The mean and standard deviation of the factors for the importance of hospital selection and satisfaction with hospital use in the group with reuse intention were obtained to examine the order of the factors, and the difference in the importance and satisfaction in each group was compared with the independent sample t-test. In addition, the importance and satisfaction in the group with reuse intention was compared with the paired sample t-test. Finally, a multiple logistic regression analysis was conducted with reuse intention as a dependent variable to investigate the importance of hospital selection and satisfaction with hospital use with regard to reuse intention.

## 3. Findings

### 3.1 The General Characteristics of the Subjects

Reuse intention by the general characteristics of the subjects is reported in Table 1. With regard to reuse intention, 242 respondents (80.7%) said 'yes' and 58 (19.3%) said 'no.' There were no general characteristics

**Table 1.** Intention to reuse hospital by general characteristics.

Characteristics	Category	Reuse Intention	No Reuse Intention	Total	X <sup>2</sup> (p)	
Gender	Male	108 (44.6)	26 (44.8)	134	(44.7)	0.001 (.978)
	Female	134 (55.4)	32 (55.2)	166	(55.3)	
Age	10 - 20	57 (23.6)	13 (22.4)	70	(23.3)	0.528 (.913)
	30 - 40	76 (31.4)	21 (36.2)	97	(32.3)	
	50 - 60	101 (41.7)	22 (37.9)	123	(41.0)	
	70 and older	8 (3.3)	2 (3.4)	10	(3.3)	
Education level	Below elementary school	6 (2.5)	-	6	(2.0)	7.490 (.112)
	Middle school graduate	16 (6.6)	3 (5.2)	19	(6.3)	
	High school graduate	106 (43.8)	19 (32.8)	125	(41.7)	
	University graduate Grad- uate school and above	85 (35.1)	31 (53.4)	116	(38.7)	
Monthly family income	Less than 2 mil. won	29 (12.0)	5 (8.6)	34	(11.3)	0.807 (.938)
	2-3 mil. won	75 (31.0)	18 (31.0)	93	(31.0)	
	3-4 mil. won	71 (29.3)	19 (32.8)	90	(30.0)	
	4-5 mil. won	38 (15.7)	10 (17.2)	48	(16.0)	
	More than 5 mil. won	39 (16.1)	7 (12.1)	46	(15.3)	
	More than 5 mil. won	19 (7.9)	4 (6.9)	23	(7.7)	
	<b>Total</b>	<b>242(100.0)</b>	<b>58(100.0)</b>	<b>300</b>	<b>(100.0)</b>	

that were significantly associated with reuse intention. Of the respondents with reuse intention, 108 (44.6%) were men and 134 (55.4%) were women. No relationship was found between gender and reuse intention. As for the age, 123 respondents (41.0%) were aged 50 - 60 years and 97 respondents (32.3%) were aged 30 - 40 years. There was no significant relationship between age and reuse intention. With regard to education level, 125 (41.7%) were high school graduates and 116 (38.7%) were university graduates. Participants with high school graduation or lower had a little higher reuse intention than those with university graduation or higher, although there was no significant difference. In monthly family income, 93 (31.0%) earned less than 2 mil. won, 90 (30.0%) earned 2 - 3 mil. won and 48 (16.0%) earned 3-4 mil. won, without any significant association with reuse intention.

## 3.2 Importance of Hospital Selection, Satisfaction and Reuse Intention

### 3.2.1 Comparison of the Importance of Hospital Selection according to Whether Reuse Intention

The comparison of the importance of hospital selection

between the two groups is presented in Table 2.

In the importance of hospital selection measured with the 5-point scale for the respondents with reuse intention, the factor with the highest mean score was reputation and awareness at  $4.19 \pm 0.76$ , followed by geographical accessibility at 4.02, services of medical and general staff at 3.82, hospital facility at 3.75, and hospital environment at 3.69. Among the respondents without reuse intention, the factor with the highest score was geographical accessibility at  $4.37 \pm 0.66$ , followed by reputation and awareness at 4.19, hospital facility at 4.17, treatment system at 3.98 and services of medical and general staff at 3.80. In the comparison between the two groups, the factors with a significant difference included hospital facility, treatment system and geographical accessibility; and all the mean scores of the group without reuse intention were higher.

### 3.2.2 Comparison of the Satisfaction according to Whether Reuse Intention

The comparison of the satisfaction with hospital use between the two groups is shown in Table 3. In the satisfaction with hospital use measured by the 5-point scale for the respondents with reuse intention, the factor with the highest mean score was treatment system at

**Table 2.** Comparison of the importance of hospital selection according to whether reuse intention

Importance Factors	Reuse Intention		No Reuse Intention		Difference		t (p)
	M±SD	Rank	M±SD	Rank	M±SD	Rank	
Hospital facility	3.75±0.94	4	4.17±0.89	3	-0.42	1	-3.076 (.002)
Hospital environment	3.69±0.95	5	3.54±1.00	7	+0.15	8	1.054 (.293)
Treatment system	3.64±1.01	6	3.98±0.77	4	-0.34	2	-2.862 (.005)
Reputation and awareness	4.19±0.76	1	4.19±0.69	2	+0.00	6	0.023 (.982)
Service of medical and general staff	3.82±0.97	3	3.80±0.97	5	+0.02	7	0.146 (.884)
Geographical accessibility	4.02±0.91	2	4.37±0.66	1	-0.34	3	-3.278 (.001)
Acquaintance working in hospital	2.82±1.41	8	3.12±1.30	8	-0.30	4	-1.491 (.137)
Low medical cost	3.48±1.16	7	3.62±0.93	6	-0.14	5	-0.984 (.327)

**Table 3.** Comparison of the satisfaction according to whether reuse intention

Satisfaction Factors	Reuse Intention		No Reuse Intention		Difference		t (p)
	M±SD	Rank	M±SD	Rank	M±SD	Rank	
Hospital facility	3.35±0.97	7	3.64±0.86	6	-0.30	2	-2.302 (.024)
Hospital environment	3.84±1.03	5	3.58±0.88	7	+0.27	8	1.809 (.071)
Treatment system	4.15±0.86	1	4.07±0.88	3	+0.08	6	0.644 (.520)
Reputation and awareness	4.14±0.74	2	4.00±0.79	4	+0.14	7	1.244 (.214)
Service of medical and general staff	4.07±0.86	3	4.13±0.88	2	-0.06	5	-0.487 (.627)
Geographical accessibility	4.02±0.97	4	4.14±0.64	1	-0.13	4	-1.196 (.234)
Acquaintance working in hospital	2.85±1.45	8	3.24±1.39	8	-0.39	1	-1.873 (.062)
Low medical cost	3.45±1.17	6	3.69±0.99	5	-0.24	3	-1.437 (.152)

4.15±0.86, followed by reputation and awareness at 4.14, services of medical and general staff at 4.07, geographical accessibility at 4.02 and hospital environment at 3.84. Among the respondents without reuse intention, the factor with the highest score was geographical accessibility at 4.14±0.64, followed by services of medical and general staff at 4.13, treatment system at 4.07, reputation and awareness at 4.00 and low medical cost at 3.69. In the comparison between the two groups, the factor with a significant difference included hospital facility; and the mean score of the group without reuse intention was higher.

### 3.2.3 Comparison of the Importance of Hospital Selection and Satisfaction in the Group with Reuse Intention

The comparison of the importance of hospital selection and satisfaction with hospital use in the group with reuse intention is presented in Table 4. The factors with a significant difference between the importance of hospital selection and satisfaction with hospital use included hospital facility, treatment system, reputation

and awareness, and services of medical and general staff. The mean scores of importance and satisfaction of hospital facility were 3.75 and 3.35 respectively, while those of reputation and awareness were 4.19 and 4.14 respectively, with the scores of satisfaction significantly lower than those of importance in both factors. In addition, satisfaction with treatment system and services of medical and general staff was significantly higher than importance.

### 3.2.4 Comparison of the Importance of Hospital Selection and Satisfaction in the Group without Reuse Intention

The comparison between the importance of hospital selection and satisfaction with hospital use in the group without reuse intention is shown in Table 5. The factors with a significant difference between the importance of hospital selection and satisfaction with hospital use included hospital facility, reputation and awareness, services of medical and general staff, geographical accessibility and acquaintance working in hospital. The mean scores of the importance and satisfaction of hospital facility were 4.17

**Table 4.** Comparison of the importance of hospital selection and satisfaction in the group with reuse intention

Factors	Importance		Satisfaction		Difference		t (p)
	M±SD	Rank	M±SD	Rank	M±SD	Rank	
Hospital facility	3.75±0.94	4	3.35±0.97	7	0.40	1	4.771 (.000)
Hospital environment	3.69±0.95	5	3.84±1.03	5	-0.15	6	-1.709 (.089)
Treatment system	3.64±1.01	6	4.15±0.86	1	-0.51	8	-6.297 (.000)
Reputation and awareness	4.19±0.76	1	4.14±0.74	2	0.06	2	3.317 (.001)
Service of medical and general staff	3.82±0.97	3	4.07±0.86	3	-0.25	7	-2.971 (.003)
Geographical accessibility	4.02±0.91	2	4.02±0.97	4	0.01	4	0.077 (.939)
Acquaintance working in hospital	2.82±1.41	8	2.85±1.45	8	-0.03	5	-0.741 (.459)
Low medical cost	3.48±1.16	7	3.45±1.17	6	0.03	3	1.349 (.178)

**Table 5.** Comparison of the importance of hospital selection and satisfaction in the group without reuse intention

Factors	Importance		Satisfaction		Difference		t (p)
	M±SD	Rank	M±SD	Rank	M±SD	Rank	
Hospital facility	4.17±0.89	3	3.64±0.86	6	0.53	1	3.932 (.000)
Hospital environment	3.54±1.00	7	3.58±0.88	7	-0.03	4	-0.185 (.854)
Treatment system	3.98±0.77	4	4.07±0.88	3	-0.09	6	-0.549 (.585)
Reputation and awareness	4.19±0.69	2	4.00±0.79	4	0.19	3	2.734 (.008)
Service of medical and general staff	3.80±0.97	5	4.13±0.88	2	-0.34	8	-2.031 (.047)
Geographical accessibility	4.37±0.66	1	4.14±0.64	1	0.22	2	2.026 (.047)
Acquaintance working in hospital	3.12±1.30	8	3.24±1.39	8	-0.12	7	-2.178 (.034)
Low medical cost	3.62±0.93	6	3.69±0.99	5	-0.07	5	-1.657 (.103)

and 3.64, those of reputation and awareness were 4.19 and 4.00, and those of geographical accessibility were 4.37 and 4.14 respectively. The satisfaction was significantly lower than the importance in all three factors. The satisfaction was significantly higher than the importance in services of medical and general staff and acquaintance working in hospital.

### 3.3 Logistic Regression Analysis on Reuse Intention

In order to investigate the importance of hospital selection associated with reuse intention of the subjects, a multiple logistic regression analysis was conducted with reuse intention as a dependent variable and the factors of the importance of hospital selection as independent variables. The results of the analysis are provided in Table 6.

Significant variables were hospital facility ( $p=.013$ ) and geographical accessibility ( $p=.039$ ). The more important hospital facility the subjects considered, the probability of reuse was 37.8% lower ( $OR=0.622$ , 95%  $CI=0.427-0.905$ ). In addition, the more important geographical accessibility the subjects considered, the probability of reuse was 37.8%

lower ( $OR=0.622$ , 95%  $CI=0.396-0.976$ ). Also, the more important treatment system the subjects considered, the probability of reuse was 27.0% lower, without a significant difference ( $OR=0.730$ , 95%  $CI=0.509-1.047$ ).

The statistic of the Hosmer and Lemeshow goodness-of-fit test, which measures the consistence between the actual values and expected values of the dependent variable, was 7.029 ( $p=.533$ ), indicating that the regression model was fit. The explanatory power of the regression model (Nagelkerke  $R^2$ ) on the dependent variable was 11.7%.

In order to investigate the satisfaction with hospital use associated with reuse intention of the subjects, a multiple logistic regression analysis was conducted with reuse intention as a dependent variable and the factors of the satisfaction with hospital use as independent variables. The results of the analysis are described in Table 7.

Significant variables were hospital facility ( $p=.022$ ) and hospital environment ( $p=.044$ ). The more satisfied with hospital facility, the probability of reuse intention was 34.2% lower ( $OR=0.658$ , 95%  $CI=0.459-0.941$ ). On the contrary, the more satisfied with hospital environment, the probability of reuse intention was 38.1%

**Table 6.** Logistic regression analysis on reuse intention with importance factors

Importance Factors	B	S.E	Wals	p	OR	95% CI
Hospital facility	-0.475	0.192	6.157	.013	0.622	0.427-0.905
Hospital environment	0.229	0.159	2.078	.149	1.258	0.921-1.718
Treatment system	-0.315	0.184	2.930	.087	0.730	0.509-1.047
Reputation and awareness	-0.017	0.197	0.008	.931	0.983	0.669-1.445
Service of medical and general staff	-0.066	0.161	0.169	.681	0.936	0.682-1.284
Geographical accessibility	-0.475	0.230	4.258	.039	0.622	0.396-0.976
Acquaintance working in hospital	-0.041	0.120	0.117	.733	0.960	0.759-1.214
Low medical cost	-0.121	0.149	0.658	.417	0.886	0.6611.187
Constant	6.571	1.828	12.929	.000	714.296	

Model fit (H-L statistics  $\chi^2=7.029$ ,  $df=8$ ,  $p=.533$ ), Model  $\chi^2$ : 22.868 ( $df=8$ ,  $p=.004$ ), Nagelkerke  $R^2 = .117$

**Table 7.** Logistic regression analysis on the reuse intention with satisfaction factors

Satisfaction Factors	B	S.E	Wals	p	OR	95% CI
Hospital facility	-0.419	0.183	5.251	.022	0.658	0.459-0.941
Hospital environment	0.323	0.160	4.051	.044	1.381	1.009-1.891
Treatment system	0.119	0.168	0.496	.481	1.126	0.809-1.567
Reputation and awareness	0.142	0.189	0.562	.454	1.152	0.796-1.669
Service of medical and general staff	-0.032	0.174	0.033	.856	0.969	0.688-1.364
Geographical accessibility	-0.178	0.183	0.950	.330	0.837	0.585-1.197
Acquaintance working in hospital	-0.114	0.110	1.078	.299	0.892	0.720-1.106
Low medical cost	-0.187	0.143	1.728	.189	0.829	0.627-1.096
Constant	2.503	1.627	2.366	.124	12.218	

Model fit (H-L statistics  $\chi^2=7.029$ ,  $df=8$ ,  $p=.533$ ), Model  $\chi^2$ : 22.868 ( $df=8$ ,  $p=.004$ ), Nagelkerke  $R^2 = .117$

higher (OR=1.381, 95% CI=1.009-1.891). In addition, the more satisfied with treatment system and reputation and awareness, the probability of reuse intention was higher, without a significant difference.

The statistic of the Hosmer and Lemeshow goodness-of-fit test, which measures the consistence between the actual values and expected values of the dependent variable, was 11.340 ( $p=.183$ ), suggesting that the regression model was fit. The explanatory power of the regression model (Nagelkerke  $R^2$ ) on the dependent variable was 8.3%.

## 4. Discussion and Conclusion

In a study on the selection factors of patients with spinal diseases between specialty hospitals and general hospitals<sup>1</sup>, the biggest reason for selection was credibility, followed by facility and environment, interpersonal services and accessibility, without a significant difference between the two groups. The detailed items with a significant difference were 'Because there is someone I know in the hospital,' 'Because the hospital is known for the surgery for spinal diseases' and 'Because the hospital offers services other hospitals don't, in all of which specialty hospitals had higher scores. In a study on the importance and satisfaction of hospital selection attributes of users visiting orthopedic specialty hospitals<sup>2</sup>, the most important factor was expertise of medical team, followed by accessibility, quickness, kindness of medical team, reputation, facility, medical cost, while the most satisfied factor was accessibility, followed expertise of medical team, reputation, kindness of medical team, quickness, medical cost and facility. It was also found that satisfaction was lower than importance in the 7 factors.

Ji<sup>6</sup> performed a logistic regression analysis to investigate the effect of 15 consumer value factors on hospital selection of patients with spinal surgery. The results showed that the important predictors for selecting general hospitals included kindness of human services, reliability of medical skills, reliability of specialty, and social status and connections. The important predictors for selecting spinal specialty hospitals were specialty of medical services, rapidity and expediency of services, spatial convenience, the active married middle class and upper class group, state-of-the-art services, the qualitative difference of medical services, image freshness, and the atmosphere of medical care, novelty and social fame.

Among the satisfaction factors with hospital use of the respondents with reuse intention, the factor with the highest mean score was treatment system, followed by reputation and awareness, services of medical and general staff, geographical accessibility and hospital environment. For the respondents without reuse intention, the factor with the highest score was geographical accessibility, followed by services of medial and general staff, treatment system, reputation and awareness and low medical cost. The factor with a significant difference between the two groups was hospital facility, with the score of the group without reuse intention higher.

The factors with a significant difference between the importance of hospital selection and satisfaction with hospital use in the group with reuse intention were hospital facility, treatment system, reputation and awareness, and services of medical and general staff. The satisfaction was significantly lower in both hospital facility and reputation and awareness than the importance, while the satisfaction was higher in treatment system and services of medical and general staff than the importance. The factors with a significant difference between the importance and satisfaction in the group without reuse intention included hospital facility, reputation and awareness, services of medical and general staff, geographical accessibility and acquaintance working in hospital. The satisfaction was significantly lower than the importance in hospital facility, reputation and awareness, and geographical accessibility, while the satisfaction was higher than the importance in services of medical and general staff and acquaintance working in hospital. In a study on the importance and satisfaction of hospital selection attributes of users visiting orthopedic specialty hospitals<sup>2</sup>, the satisfaction was significantly lower in all 7 factors.

The multiple logistic regression analysis showed that the significant importance factors of hospital selection associated with reuse intention were hospital facility (OR=0.622) and geographical accessibility (OR=0.622) and the significant satisfaction factors with hospital use included hospital facility (OR=0.658) and hospital environment (OR=1.381). It was found that hospital facility and geographical accessibility were the factors associated with hospital selection for inpatients in spine specialty hospitals without reuse intention; inpatients in spine specialty hospitals with reuse intention were satisfied with hospital environment, although they were not satisfied with hospital facility.

In a study on the selection factors of patients with spinal diseases between specialty hospitals and general hospitals<sup>1</sup>, facility and environment were investigated as a single factor, showing that general hospitals were significantly preferred to specialty hospitals when considering the facility and environment factors. In this study, where facility and environment were separately analyzed, the importance of facility was higher and the satisfaction with facility was lower in patients without reuse intention, while the importance of facility was lower and the satisfaction with facility was higher in patients with reuse intention. The opposite results were obtained in hospital environment in a univariate analysis, although not significant. It is considered that the satisfaction with internal environment was regarded as more important than external environment, given the characteristics of inpatients. Hwang et al<sup>1</sup>. suggested that the probability of selecting specialty hospitals over general hospitals was significantly higher when patients regarded accessibility in a comprehensive concept as a hospital selection factor, such as short waiting time to treatment, short waiting time to hospitalization, low medical cost, distance and traffic to hospital. It was found from this study that geographical accessibility as the importance factor of hospital selection was more significant in patients without reuse intention.

Most of previous studies suggested that customer satisfaction has a significant effect on reuse intention<sup>7</sup>. A study on inpatients in small and medium hospitals<sup>8</sup> revealed that reuse intention in selecting hospitals was the most significantly affected by internal environment, followed by medical services, services of medical team and external environment, and the effect of patient satisfaction on reuse intention had the explanatory power of 69.8%. A study on the relationship between the awareness of public medical institutions and revisit<sup>14</sup> suggested that the awareness of service quality and the environment of medical treatment were highly associated with the intention to revisit. A study on outpatients and caregivers<sup>7</sup> found that the external image factor, among hospital selection factors, had a significant effect on reuse intention. It is suggested that inpatients considered internal environment important, while outpatients regarded image and reputation important.

It seems that, in the past, the domain of human services, including kindness, was an important factor, but

in recent years, professionalism, accessibility, facility and environment of hospitals have been more fundamentally important factors. Satisfaction with services of medial and general staff was significantly higher than importance, probably due to the fact that patients are more accustomed with the services because services are now more emphasized and familiarized by patients<sup>9</sup>.

This study has a fundamental limitation in generalizing its findings because it was conducted on inpatients of a randomly selected specialty hospital.

The results of the analysis suggested that hospital facility and geographical accessibility were important factors for hospital selection for inpatients in the spine specialty hospital without reuse intention, while inpatients of the spine specialty hospital with reuse intention were satisfied with hospital environment, although they were not satisfied with hospital facility.

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