

# Relationship of Nutritional Status at Time of Admission to the Length of Hospital stay and Mortality

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## ▶ Background / Arm

LOS has become an important economic factor for hospitals. This study was conducted to determine the relationship of nutritional status at the time of admission to the LOS and mortality.

## ▶ Methods

The study subjects were 1,619 patients with cancer admitted to Kosin University Gospel Hosp. during 2005 who met study criteria were included in the study.

Patients were classified to Not At Risk, At Risk I, At Risk II, At Risk III, and At Risk IV for malnutrition on the basis of established criteria serum albumin  $<3.0\text{g/dl}$ , total lymphocyte count  $<1500$  cells/ $\text{mm}^3$ , cholesterol  $\geq 240$  mg/dl or  $\leq 130$  mg/dl, weight for height  $\geq 120\%$  or  $< 90\%$  ideal body weight according to the number of risk factor.

## ▶ Results 1

### General characteristics and nutritional status of patients

Nutritional status	Patients n (%)	Sex		Age (yrs) M ± SD
		Male	Female	
Not At Risk	393 (24.3)	249	144	60.0±11.49
At Risk I	609 (37.6)	371	238	58.9±11.85
II	392 (24.2)	221	171	58.3±12.13
III	166 (10.3)	113	53	59.6±11.15
IV	59 ( 3.6)	36	23	56.3±10.64
Total patients	1619	990(61.1)	629(38.9)	59.0±11.73

## ▶ Results 2

### Prevalence of malnutrition by site of cancer

Carcinoma original site (Site)	Not At Risk n (%)	At risk I n (%)	II n (%)	III n (%)	IV n (%)	Total n
Oral Cavity and Pharynx	4(25)	6(37.5)	6(37.5)	0(0)	0(0)	16
Esophagus	6(15.4)	19(48.7)	10(25.6)	1(2.6)	3(7.7)	39
Stomach	203(33)	212(34.5)	130(21.1)	53(8.6)	17(2.8)	615
Colon and rectum	42(17.5)	91(37.9)	70(29.2)	31(12.9)	6(2.5)	240
Liver and intrahepatic bile ducts	29(10.8)	87(32.5)	73(27.2)	55(20.5)	24(9)	268
Respiratory and Intrathoracic organs	48(25.8)	83(44.6)	37(19.9)	14(7.5)	4(2.2)	186
Bone and articular cartilage	1(12.5)	6(75)	1(12.5)	0(0)	0(0)	8
Breast	15(19)	38(48.1)	19(24.1)	6(7.6)	1(1.3)	79
Genital organs	25(21.7)	47(40.9)	33(28.7)	6(5.2)	4(3.5)	115
Central nervous system	6(27.3)	10(45.5)	6(27.3)	0(0)	0(0)	22
Thyroid and other endocrine	14(45.2)	10(32.3)	7(22.6)	0(0)	0(0)	31

## ▶ Results 3

Comparison of LOS and mortality in patients criteria for malnutrition

	Not At Risk n (%)	At risk I n (%)	II n (%)	III n (%)	IV n (%)	p =
LOS <sup>1)</sup> (days)	13.8±14.30	14.8±19.52	14.1±13.53	13.7±10.94	16.6±22.29	NS
Mortality(%)	1.02	3.28	6.63	12.05	11.86	p < 0.01

1) M ± SD

M ± SD LOS was 14.4±16.38 days for all patients

## ▶ Results 4

Comparison of LOS and mortality in patients with criteria or non criteria for malnutrition

	Mortality(%)			LOS <sup>1)</sup> (days)		
	criteria <sup>1)</sup>	non-criteria <sup>2)</sup>	p =	criteria	non-criteria	p =
albumin	12.3	3.4	P < 0.05	15.8±16.54	14.5±13.68	NS
cholesterol	7.7	3.6	P < 0.05	14.5±13.15	14.8±14.56	NS
TLC	7.3	2.0	P < 0.05	15.1±14.82	14.2±13.38	NS
%IBW	5.6	4.3	NS	14.3±14.32	14.1±14.08	NS

1)criteria : serum albumin <3.0 g/dl, cholesterol <130 mg/dl, > 240 mg/dl, TLC <1500 cells/mm<sup>3</sup>, %IBW < 90%, > 120%

2)non criteria : serum albumin ≥3.0 g/dl, cholesterol 130–240 mg/dl, TLC ≥1500 cells/mm<sup>3</sup>, %IBW ≙ 90–120%

## ▶ Conclusion

Although the estimated LOS was similar in all groups, the average LOS was  $14.4 \pm 16.38$  days in the malnourished group (At risk Group IV) compared to approximately 2.8 days in Not at risk Group.

The more the patients had the nutritional risk factors, the LOS was slightly longer but mortality rate was significantly higher.