Hospital Readmission ,Malnutrition and Associated Factors among Elderly Hospitalized Patients in Internal Medicine Wards, Menoufia University Hospitals

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Abstract

Objectives: to identify reasons for re-hospitalization, assess nutritional status of elderly hospitalized patients using a validated nutritional assessment tool and analyze which factors are associated with readmission within the last year after discharge from index hospitalization for elderly hospitalized patients including nutritional related factors. **Methodology:** A cross-sectional study design was conducted in the internal medicine wards of Menoufia university hospital. All patients over 65 years of age within the first 72 hours of admission were eligible for the study. 162 patients were recruited with (93.6%) response rate.   Data being collected using a structured questionnaire includes patients' sociodemographic, admission characteristics, severity of chronic disease using Cumulative Illness Rating Scale (CIRS) for geriatric. Assessment of nutrition status was performed using Mini Nutritional Assessment (MNA) tool and anthropometric measurements. **Results**: readmission within one year was found among (46.3%) of elderly participants. Relapse of initial condition was the most common reason (42.7%) followed by complications (24%). Half of readmitted group was malnourished and nearly one third at risk of malnutrition. Logistic regression identified strong association of hospital readmission with advanced old age ,smoking habit , poor dietary compliance , assistance needed feeding pattern ,severity of chronic disease ,comorbidities and lower MNA score **Conclusion :** Factors associated with readmission in elderly patients are multiple and complex. Malnourished elderly patients with cardiac , respiratory disease or diabetic with complex medical and social needs who are severely ill , with advanced age, smoker , who not compel well with dietary advice ,need assistance with feeding are tend to be readmitted. **Recommendations:** Re-hospitalized elderly patients should be identified and targeted by follow up and post hospital care to reduce readmissions.

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Introduction

Hospitalized patients, especially elderly and those with chronic disease are at high risk for hospital readmissions. These readmissions result in high costs to the healthcare system and to the patient, in regards to quality of care and quality of life [1]. Hospital readmission rates are considered as indirect marker for reduced quality of care and premature hospital discharge [2-5]. Readmission is defined as a hospitalization that occurs

shortly after a discharge; which is most often measured as within 30 days but it could be shorter or longer up to one year. Readmissions may or may not include conditions that were listed as the principal diagnosis during the index stay [6]. They also can be caused by deterioration in a patient's health after discharge due to inadequate management of their condition, misunderstanding of how to manage it, or lack of access to appropriate services or medications. Readmissions were tracked across the same or different hospitals [6,7].

Hospital readmission are generally related to health-care factors (such as sub-optimal health and social care), factors related to the patient (social and family environment or treatment adherence), factors related to the disease (such as its natural progression) or a combination of all of these. While some of these factors maybe avoidable, the disease factors cannot always be controlled [7].

Nutrition risk factors including weight loss and inability to self-feed are associated with higher readmission rates [1]. Malnutrition is prevalent in hospitalized patients especially elderly and leads to poor clinical outcomes [8-10]. Many studies have shown strong association between malnutrition and longer length of hospital stay (LOS), increased mortality, higher rate of readmission and increased hospitalization cost [8-12].

Interventions to decrease re - hospitalization rates require an understanding of the causes of and risk factors for hospital readmission. Specifically defining these factors would help to identify people at higher risk and design preventive tailored and effective interventions from hospital stay and discharge to out-patient follow-up[7].

While many studies that investigate readmission risk factors for elderly patients have focused on, functional disability and morbidity[13-17] ,patient's nutritional status may be overlooked . As a result preventive strategies may be also neglected. The specific aims of this study were to (1) Identify reasons for re-hospitalization (2) Assessment of nutritional status of elderly hospitalized patients using a validated nutritional assessment tool (3) Analyze which factors are associated with readmission within the last year after discharge from index hospitalization for elderly hospitalized patients including nutritional related factors.

Subjects and methods:

Study design, sample and setting:

Across-sectional study was conducted in the internal medicine wards of Menoufia university hospital, Shebin Elkom City between 1st of June and end of August 2015. All patients over 65 years of age within the first 72 hours of admission were eligible for the study. The exclusion criteria were elderly patients on a ventilator, mentally unstable or who were critically ill or required treatment in specialized units such as the intensive care units and admitted patients for planned reasons. Eligible subjects were identified daily from a patient admission list at internal medicine (general and special) departments. The objectives of the study were explained to individual patients and voluntary informed consent of the patient or caregiver was obtained.

Data collection tool

Data were collected on each ward through personal interview using a predesigned structured questionnaire by two research assistants who were trained on use of the instruments , anthropometric measurements and filling the questionnaire. Some of the

data were obtained from the patients" medical record. All data was confirmed also by caregiver or family member when needed.

The study questionnaire involves 5 parts; *First part*: includes patients' sociodemographic data as age, sex, residence, marital, educational level, occupation, income, smoking and household status and living arrangement in addition to mobility.

Second part : includes heath status and admission characteristics as current admission diagnosis, history of hospitalization within the last year after discharge from the first admission during this year (index hospitalization) prior the current admission where data was collected either to the same hospital or other health care setting , number of doctor visits during the last year , length of stay of last admission , cause of current admission if related to the initial condition , the diagnoses were grouped according to the chapters of International Classification of Disease, Tenth Revision (ICD-10)[18].

This part includes also nutrition related questions as mode of feeding , weight loss in the last 3 months , age related or medical problems involving GIT or interfering with eating process for example : oral or dental problems , dyspepsia ,loss of appetite, constipation which defined as food related problems, degree of patients' dietary compliance (good or poor) beside drug compliance.

The third part : includes information on the chronic conditions affecting patients. The Cumulative Illness Rating Scale (CIRS) for geriatric [19]. This instrument considers the severity of disease and impairment in each of 14 major organ groups, including mental disease and hypertension. Every item is scored from 0 (0- no disease, 1- Mild impairment - class 1-2) to 3, 4 (3-severe impairment ,4-maximal severity of disease – class 3-

4). The CIRS total score was calculated and patients were subdivided in two groups, according to severity: Group 1 = classes 1-2; Group 2 = classes 3-4.

Forth part: includes assessment of nutritional status of participants that was done according to Arabic version of the Mini Nutritional Assessment (MNA) tool validated by Abd-Al-Atty, et al.(2012) beside anthropometric measurements [20]. MNA was developed as a reliable screening test to detect malnutrition in old-aged people. Without any laboratory data, nutritional status of the patients can be easily predicted with questions and anthropometric measurements [21].

Mini Nutritional Assessment (MNA) nutrition screening tool that was recently revised in 2009 by Nestlé Nutrition Institute. The MNA-SF and also the full form were found translated into different languages including Arabic and these Arabic versions were revised by Nestlé Nutrition Institute and available at www. mna-elderly.com.[22].

The MNA is 18-item questionnaire comprising anthropometric measurements (weight and height for calculation of Body mass index , mid-arm MAC and calf circumference CC) and history of weight loss in last 3 months combined with a questionnaire regarding dietary intake (number meals consumed, food and fluid intake, and feeding autonomy), a global assessment (lifestyle, medication, mobility, presence of acute stress, and presence of dementia or depression) and a self assessment (self-perception of health and nutrition). It is a two step procedure; screening with the MNA small form (MNA-SF, 6 questions) followed by the assessment (9 questions and 3 anthropometric measurements), if needed, by the full MNA [23, 24]. MNA-SF score ≥12 excludes malnutrition and/or

malnutrition risk, which rendered further assessment unnecessary. MNF-SF score <12 indicates full MNA test. Total score >23 means normal nutritional status, 17-23 shows malnutrition risk and <17 indicates malnutrition. Mid-arm circumference <21 cm and calf circumference <31 cm are related with malnutrition risk [21, 23, 24].

A guide to complete the MNA [24] was used to have a uniform system of addressing the questions towards the patients as well as to have a uniform and clearer definition of some of the terms used in the questionnaire.

Before the start of the study, the questionnaire was pre-tested with 20 patients as validation . They were excluded from the study. Some essential modifications were made to better adapt the statements and answers to Arabic context.

Anthropometric measurement:

Height and weight measurements used to calculate BMI were taken in a private area using standard techniques or alternative methods when needed as recommended by the WHO [25]. Body mass index (BMI) was calculated manually as the weight in kilograms divided by the square of the height in meters). BMI between 20.00 and 24.99 kg/m² is optimal weight in elderly according to ESPEN guidelines. A BMI <20.00 kg/m² suggests that the patient is underweight while overweight with BMI ≥ 25.00 kg/m². MAC and CC was measured as per standard techniques applicable for the ambulatory and non-ambulatory individuals [26-28].

Among 173 elderly patients who fulfilled the inclusion criteria, a total of 162 patients who agreed to participate and complete questionnaire with clearly filled up entries were finally included in the study with a response rate of (93.6%). According to age, they were classified into young old (65–74.9 years), old old (75–84.9 years), and oldest old (≥85 years)[29].

Statistical analysis :

SPSS 16.0 (SPSS Inc., Chicago, IL) statistical software was used to analyze data. Continuous variables were described by means ± standard deviations. Discrete variables were described as counts and percentages. the differences of means were tested with the independent group t test and the distribution of proportions with the chi-square test. Bivariate correlation analyses were conducted to evaluate the relationship between the independent variables and MNA Score. Univariate analysis was used to reduce the pool of initial variables entered into the multiple regression analysis. A multiple regression analysis was used to examine the relationship between the variables and admission status. Statistical significance was set at P-value of 0.05, highly significance at P-value of 0.001

Results

A total of 162 elderly patients (female/male: 1.66) were included into the study. Mean age of the patients was 71.7± 6.7 years (65-89). According to different age subgroups [29] (63%) of patients were young elderly (65-74.9 years), (28.4%) were older elderly (75-84.9 years) and only (8.6%) patients were oldest old (≥ 85 years) with no significant difference between males and females patients. More than forth of participants (27.8%) admitted with cardiovascular diseases while 22.2% , 21% with chest and endocrine disease mainly diabetes respectively . One third of them (33.3%) were of severe to extremely sever disease (CIRS classes 3-4). History of readmission were found among (46.3%) of elderly

participants at least once after their index discharge within the last year before the current admission (readmitted group) and 53.7% were not (non readmitted group). Relapse of initial condition was the most common reason for readmission (42.7%) followed by complication (24%). While new health or medical problem responsible for 14.7% of cases, early discharge 10.4%, poor overall condition of elderly patients was the main reason for 8% of readmitted group. (Table-1)

Table (2) shows sociodemographic characteristic of readmitted and non readmitted group . Compared to non readmitted elderly group , more than half (53.4%) of readmitted patients were above 75 years old where the mean age (±SD) was 74.5 ± 7.1 that was significantly higher than that of non readmitted patients (p <0.001) . Also significantly higher percent (56%) of them were living either alone or with only his wife or relative person (p =0.007) and more than two thirds of them were smoker (69.3%). No significant difference was found regarding sex, residence, educational level, work status or income adequacy.

Table 3 and 4 illustrated the health and disease characteristics, nutritional related factors and baseline nutrition parameters of both readmitted and non-readmitted patients. Statistically significant differences were found as regard chronic disease severity and duration where more than half (57.3%) of readmitted patients were of CIRS classes 3,4 and duration of chronic disease was more than 20 years for 53.3% of them with mean (28.4±16.4) compared to 18.1±10.5

Also data analysis detected a significant high percent of readmitted patients (46.3%) compared to 14.9% with restricted mobility ,more than half (57.4%) either need assistance or feed with some difficulty ,consequently loss

of weight in the last 3 months was reported in about two thirds of them (64%) and most of them (73.3%) poorly adhere to diet prescribed and (16%) to drug prescribed also . Relatively high percent of readmitted patients (25.3%) were underweight and more than one third 37.3% overweight or obese. (Table 3).

Statistically significant differences were found between readmitted group regarding most of health and nutritional parameters (P <0.001) MAC, CC, CIRS total score, and number of food related health problems (Table 4).

Table 5 shows the nutritional assessment of study participants using MNA nutritional assessment tool where nearly one third of patients were at risk of malnutrition (32.1%) and (29%) were malnourished while only 38% were found of normal nutritional status .When compared readmitted and non readmitted patients , high statistically significant difference was found (p <0.001) where more than one half of readmitted group (50.6%) were malnourished and nearly one third at risk of malnutrition (34.7%) compared to only 10.3 % and 29.9 % of non readmitted group respectively.

When all the significant factors associated with readmission were simultaneously entered in a multivariate logistic regression analysis, hospital readmission found to be associated with advancing old age (OR=3.5, CI 1.14-10.66) P=(0.02), smoking where (OR=12.26, CI 4.22-35.59) (p <0.001), poor dietary compliance (OR =7.82 ,CI 2.49-24.52) (p <0.001), difficult feeding (OR=4.48, CI 1.61-12.46) (P value 0.004), lower MNA score (OR =0.28,CI 0.09-0.90) (P= 0.03) higher CIRS score (OR =0.19, CI 0.05-0.72) (P=0.015) (Table 6)

Discussion

Many studies have shown that elderly patients discharged from hospitals are at high risk of readmission [30-34]. Consequently, in the current study, the high percent of elderly patients with past history of repeated hospital admission within the last year (46.3%) was not surprising. Readmission was found mainly among cardiovascular disease patients; congestive heart failure (one third of readmitted group) followed by respiratory; chronic obstructive pulmonary disease (26.7%) and diabetic (17.4%) .

These came in line with that reported by several studies as Dobrzanska and newell,2006 who reported that people with cardiac disease and respiratory tended to have higher rates of hospital readmission [35] and by Silow- Carroll et al ,2011 that the highest readmission rates have been observed in "high-risk" or severely ill geriatric patients, mostly with heart failure and chronic obstructive pulmonary disease (35 % after 1 month, 26% to 44% after 4 to 6 and 70% after 1 year)[6].

Different factors associated with readmission have also been identified; some are related to the patient's sociodemographic and disease characteristics, others to the health care setting itself and quality of care[7].

The present study did not show that readmission was related to patient sociodemographic characteristics except advanced age and smoking. We found no significant association with gender, marital status, education, working status or income. This came in line with some studies as Franchi et al, 2013 [17] and Allaudin, 2011[36] who reported the prominent role of patients 'clinical characteristics than sociodemographic in prediction of readmission among elderly patients.

The significant associations with advanced age , smoking , living alone , severity of disease expressed by higher CIRS score and CIRS Class 3-4 among readmitted group and restricted motility were consistent with several studies which identifies these factors as predictors for early as well as late readmission [7,14,17,37-40].

The role of age in addition to these factors being explained by the fact that older people with advanced age have more chronic diseases , sever morbidity , restricted motility and a lower mean functional status [17]. Also it is quite obvious that patients with multiple chronic and sever diseases have more chances to be rehospitalized than patients with only one or a few associated diseases [16].

In the current study ,unsatisfactory social conditions as living alone (p value =0.007) and neuropsychological problems (p <0.001) were significantly associated with readmission among elderly patients that coincide with that reported by Di Lorio et al ,1998 [16], Dobrzanska and newell,2006 [35] and a more recent study done by Franchi et al ,2013 [17] about the effect of patients' social support and psychiatric morbidity as risk factors for early and late hospital readmission .

The role of nutrition in causing readmissions is complex. In spite of many studies that have shown the strong association between malnutrition and longer length of hospital stay (LOS), increased mortality, higher rate of readmission , relatively few studies have looked at assessment of nutrition status of patients with multiple hospitalization [1,8-12].

In the present study, by assessment of nutrition status of elderly patients using MNA nutritional assessment tool ,strong association was found between patients nutritional status and readmission where nearly two thirds (61.1%) of readmitted at high nutritional risk or already malnourished.

If these also confirmed by the statistically significant differences that were found between readmitted group and non readmitted regarding mean ±SD for most of nutritional related parameters (P <0.001) as MNA score , MAC, CC , number of food related health problems and association of readmission with unintentional weight loss , assistant need feeding pattern , poor dietary compliance , lower and higher BMI that all indicate manifestations of poor nutritional status .

Theses came in line with the relatively few studies that examine nutritional status among elderly patients at risk for hospital readmission [41-44] while many studies have focused only on functional disability and morbidities.

In the current study ,when correlation was done , data analysis detected also the significant inverse correlation (p < 0.001) between MNA total score with patient's age (r = - 0.649) means either at risk or malnourished patient, CIRS score (r = -0.542) , readmission frequency (r = -0.582) , length of stay at hospital (r =-0.297),duration of chronic disease (r =-0.520). While positive correlations were found between MNA total score and weight, BMI (r =0.443) (r=0.403) respectively Logistic regression identified the strong relationship of hospital readmission of elderly patients with advanced old age ,smoking habit , poor dietary compliance , assistance needed feeding pattern ,severity of chronic disease and comorbidities and lower MNA score ; malnutrition.

Conclusion and recommendations

Therefore, we can conclude that factors associated with hospital readmission in elderly patients are multiple and complex. Malnourished elderly patients with cardiac, respiratory disease or diabetic with complex medical and social needs who are severely ill, with advanced age, smoker, who do not compel well with dietary advice, need assistance with feeding tend to be readmitted. These patients should be identified and targeted by follow up and post hospital care to reduce readmissions. MNA nutritional assessment can be used to screen newly hospitalized patients for nutrition risk so that early detection and appropriate intervention can be initiated to reduce malnutrition and hospital readmission.

Limitations of the study

This study has limitations that must be identified and accounted for when interpreting the results presented. A major limitation is that the design is cross-sectional rather than longitudinal which limits study findings to reporting of only associations between different factors and hospital readmission. We recorded re-admission within previous year without prospectively following up the patients also due to lack of resources.

The second limitation is that the study involved self-reported data beside hospital records. However, any data related to the previous history of hospitalization or frequency of admission diagnosis and comorbidities and severity of illness was confirmed by patients ' hospital reports usually kept by patient himself, family or caregivers . Another limitation in this study was that findings are based on elderly patients only in medical wards while surgical and emergency patients were excluded, so further studies should investigate a wider range of patients and wards

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Table 1- Admission Characteristics of studied patients /participants

Characteristic	Total (n=162)
Type of admission	
Emergency	104 (66.2)
Transfer	58 (35.8)
Admission status within the last year *	
No previous admission	87 (53.7)
Previous admission	75(46.3)
number of previous admission (Mean ±SD)	1.67±0.74
Current Admission diagnosis	
Cardiovascular	45(27.8)
Respiratory	36(22.2)
Renal disease	14(8.6)
Endocrine & Metabolic	34(21.0)
Gastrointestinal disease	15(9.3)
Neurological disease	18(11.1)
Chronic disease	
**CIRS classes 1-2	108(66.7)
CIRS classes 3-4	54(33.3)
Causes of readmission*(n=75)	
Relapse of initial condition	32(42.7)
Complication of initial disease	18(24.0)
New heath or medication problem	11(14.7)
Early discharge	8(10.6)
Poor overall condition	6(8.0)
Length of stay of previous admission	
Mean ±SD	6.03±1.4

*to the same hospital or other hospitals before current admission

**CIRS(Cumulative Index Rating Scale)

Table 2 - Sociodemographic characteristic of participants by admission status

Characteristic	Total N(%)	Admission within the last year		x^2	P value
		Yes (n=75)	No (n=87)		
Gender					
Male	61 (37.7)	30(49.2)	31(50.8)	0.327	0.567
Female	101 (62.3)	45(60.0)	56(64.4)		
Age (years)					
65 – 74.9	102 (63.0)	35 (46.7)	67(77.0)		
75–84.9	46 (28.4)	29(38.7)	17(19.5)	16.94	<0.001**
≥85	14(8.6)	11(14.7)	3(3.4)		
Marital status					
Married	115 (71.0)	50 (66.7)	65(74.7)	1.266	0.261
Without spouse	47 (29.0)	25(33.3)	22(25.3)		
Residence					
Rural	97(59.1)	42(56.0)	55(63.2)	0.874	0.35
Urban	65(40.1)	33(44.0)	32(36.8)		
Educational level					
Illiterate	82 (50.6)	34(45.3)	48(55.2)	4.79	0.187
Basic education	64(39.5)	36(48.0)	28(32.1)		
Secondary &its level	10 (6.2)	3(4.0)	7(8.1)		
University degree	6 (3.7)	2(2.7)	4(4.6)		
Work status	35 (21.6)	17(22.7)	18(20.7)	0.093	0.79
Worked	127(78.4)	58(77.3)	69(79.3)		
Not worked/retired					
Smoking	72(44.4)	52(69.3)	20(23.0)	35.037	<0.001**
Yes	90(55.6)	23(30.7)	67(77.0)		
No					
Income adequacy	76(46.9)	39(52.3)	37(42.5)	2.908	0.234
Not enough	61(37.7)	23(30.7)	38(43.7)		
Barely enough	25(15.4)	13(17.3)	12(13.8)		
Enough					
Living arrangement	26(16.0)	12(16.0)	14(16.1)	9.981	0.007*
Living alone	90(55.6)	33(44.0)	57(65.5)		
With family	46(28.4)	30(40.0)	16(18.4)		
Spouse or other only					
Total	162(100)	75(46.3)	87(53.7)		

*Significant at P < 0.01, **Significant at P < 0.001. Age range (65-89 years)

Table 3 - Health and nutritional related factors of participants by admission status

| Characteristics | Total N(%) | Admission within the last year | | x^2 | P value |
		Yes (n=75)	No (n=87)		
Chronic disease					
CIRS classes 1-2	108(66.7)	32(42.7)	76(87.4)	36.19	<0.001***
CIRS classes 3-4	54(33.3)	43(57.3)	11(12.6)		
Duration of chronic disease (years)					
< 10	18(11.1)	2(2.7)	16(18.4)	15.687	<0.001***
10-20	79(48.8)	33(44.0)	46(52.9)		
>20	65(40.1)	40(53.3)	25(28.7)		
Mobility					
Bed /chair bound	6(3.7)	6(8.0)	0(0.0)	20.179	<0.001***
Limited	41(25.3)	28(37.3)	13(14.9)		
Free mobility	115(71.0)	41(54.7)	74(85.1)		
Neuropsychological problems					
Yes	34(21.0)	27(36.0)	7(8.0)	18.98	<0.001***
No	128(79.0)	48(64.0)	80(92.0)		
No. of doctor visits#					
Less than 5	42(25.9)	23(30.7)	19(21.8)	1.634	0.201
More than 5	120(74.1)	52(69.3)	68(78.2)		
BMI classification					
Underweight	23(14.2)	19(25.3)	4(4.6)	14.447	0.001**
Normal	73(45.1)	28(37.3)	45(51.7)		
Overweight / obese	66(40.7)	28(37.3)	38(43.7)		
Wt. loss in last 3ms.					
Yes	85(52.5)	48(64.0)	37(42.5)	7.446	0.006**
No	77(47.5)	27(36.0)	50(57.5)		
Mode of feeding					
Need assistance	9(5.6)	8(10.7)	1(1.1)	32.631	<0.001***
Some difficulty	47(29.0)	35(46.7)	12(13.8)		
Self feed	106(65.4)	32(42.6)	74(85.1)		
Dietary compliance					
Good	71(43.8)	20(26.7)	51(58.6)	16.705	<0.001***
Poor	91(56.2)	55(73.3)	36(41.4)		
Drug compliance					
Good	70(43.2)	31(41.3)	39(44.8)	7.662	0.022*
Moderate	77(47.5)	32(42.7)	45(51.7)		
Poor	15(9.3)	12(16.0)	3(3.4)		
Total	162(100)	75(46.3)	87(53.7)		

\#   with the last year *Significant at P < 0.05, **Significant at P < 0.01,***Significant at P < 0.001.

Table 4- Baseline nutrition parameters and disease related factors between study participants by readmission status

Parameters	Total	Admission within year		t	P value
		Yes(n=75)	No (n = 87)		
	N(%)	N(%)	N(%)		
*MAC(cm)	28.6±4.5	26.7 ± 4.8	30.5 ± 4.3	-5.314	<0.001
*CC(cm)	31.3±4.3	30.5±4.6	32.1±4.2	-2.313	0.021
*CIRS total score	7.9±0.4	8.7±0.4	7.2±0.3	27.21	<0.001
Chronic disease duration	22.8±14.5	28.4±16.4	18.1±10.5	4.820	<0.001
No. of food related problem	2.1±2.6	3.27±3.01	0.99±1.5	6.184	<0.001

*MAC (Mid arm circumference), CC (Calf muscle circumference) CIRS (Cumulative Index Rating scale)

Table 5- Nutritional assessment of elderly patients /participants by readmission status

MNA assessment	Readmission		Total		
	Yes n(%)	No n(%)			
Normal	11(14.7)	52 (59.8)	63 (38.9)	x^2	43.92
At risk of malnutrition	26(34.7)	26(29.9)	52(32.1)		
Malnourished	38 (50.6)	9 (10.3)	47(29.0)	p	<0.001
Total	75 (100)	87 (100)	162 (100)		

Table 6 : Logistic regression examining factors associated with hospital readmission of elderly patients within last year (n=162,R^2 =0.629)

Variable	*Unstandardized* β confession	Wald (p value)	(OR)	95% CI
Age (years)	1.253	4.85 (0.02)*	3.50	1.14-10.66
Smoking	2.507	21.26(<0.001)***	12.26	4.22-35.59
Living alone	-0.013	0.001 (0.97)	0.98	0.46-2.11
Duration of chronic disease(yrs)	0.516	1.22 (0.26)	1.67	0.67-4.18
CIRS total score	-1.641	5.92 (0.015)*	0.19	0.05-0.72
Mobility	0.627	0.76 (0.38)	1.87	0.45-7.64
Neuropsychological problems	-0.003	0.00(0.99)	0.99	0.23-4.25
BMI classification	0.119	0.08 (0.77)	1.12	0.50-2.51
Wt. loss in last 3 months	-1.086	2.78(0.09)	0.33	0.09-1.20
Mode of feeding	1.501	8.28(0.004)**	4.48	1.61-12.46
Dietary compliance (poor)	2.057	12.46(<0.001)***	7.82	2.49-24.52
MNA Score	-1.257	4.53 (0.03)*	0.28	0.09-0.90

OR Odds Ratio , CI Confidence Interval ,BMI (Body Mass Index)MNA(Mini Nutritional Assessment)
*Significant at P < 0.05, **Significant at P < 0.01, ***Significant at P < 0.001.