

Weight Change During Hospitalization in a Tertiary Cardiological Center in Sri Lanka

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ABSTRACT

Malnutrition is common in hospitalized patients and many undergo further deterioration of the nutritional level during the stay at the hospital. Patients who are malnourished on admission have a tendency to further depletion of nutrition level during the hospital stay. The aim of this study was to assess the weight changes of hospitalized patients during the hospital admission. Body weight was measured on admission and discharge for two hundred and ninety four patients in a cardiology hospital. Body mass index (BMI) cut offs were used to categorized patients to underweight (BMI<18.5kg.m⁻²), normal (18.5-22.9kg.m⁻²), overweight (23.0-24.9kg.m⁻²), obese (25.0-29.9kg.m⁻²) and very obese. Study population included 190 (64.4%) males and 105 (35.6%) females. One hundred and twenty eight (43.4%) patients lost their weight, while 131 (44.4%) and 36 (12.2%) patients had gained and had no change in their weight respectively. Of the patients who had their BMI in the underweight category (26, 8.81%), most (15, 57.7%) gained their weight. In the normal BMI range (112, 37.97%) majority (51, 45.5%) gained their weight. In the category of overweight (64, 21.69%), half of the patients (32, 50.0%) lost their weight. Forty three patients (46.23%) who were in the obese or very obese category (93, 31.53%) lost their weight. Weight changes within different BMI categories were not statistically significant (P=0.19). Two fifths of patients lost their weight during the hospital stay irrespective of the BMI categories.

Key words: Hospital malnutrition, Cardiac patients, Weight change, Sri Lanka.

INTRODUCTION

Malnutrition is common in hospitalized patients and is associated with poor clinical outcome and increased costs to the state¹. A strong correlation between poor nutritional status and increased mortality, morbidity, length of stay has been documented². Similarly, dehydration and subcutaneous fat loss and muscle wasting are observable consequents of deprived nutritional

status³. Early intervention of the malnourished is shown to improve the hospital outcome in different patient groups⁴. Therefore identifying malnourished and intervening early will benefit patients as well as the state⁴. Despite the importance of recognizing malnourished, a low level of screening is reported resulting in low detection rates⁵. A further deterioration of the nutritional status is known to occur during the hospital stay⁶. Patients who are malnourished on admission have a tendency to

further depletion of nutrition level during their stay in the absence of any nutritional interventions⁷.

Body weight change is a good indicator to measure the progression of the nutritional status⁸. Because, weight lose may be occur due to dehydration, glycogen and subcutaneous fat depletion and muscle wasting⁹. Aim of this study is to investigate the body weight on hospital admission and at the discharge and to compare the changes within different body mass index categories.

METHODS

Study design and Subjects

During a period of 5 months (March 2012 to July 2012) data was collected from all consecutive patients who provided informed written consent and admitted to a cardiology unit of a tertiary care hospital in Sri Lanka. Planned admissions for investigations or interventions, patients who were admitted for less than 24 hours, patients whose medical condition prevented them from having their anthropometric measurements, pregnant and lactating women were excluded from the study. Moreover patients with fluid overloading conditions (i.e. heart failure, liver failure, renal impairment) were not recruited to the study. Ethical approval to carry out the research was obtained from the ethical review committee of the National Hospital of Sri Lanka, Colombo.

Anthropometric assessment

On admission and discharge body weight were recorded. Body weight was measured using an electronic scale (Seca 815, seca GmbH. Co. kg,

Germany) to the nearest 0.1 kg. Height was measured using a standard stadiometer (Seca 217, seca GmbH. Co. kg, Germany) to the nearest 0.1 cm. Body mass index (BMI) was derived by dividing weight (kilograms) by the square of height (meter) and patients were categorized in to five BMI groups; < 18.5kgm⁻²-underweight , 18.5-23.0kgm⁻²-normal, 23.0-25.0kgm⁻²-overweight, 25.0-30.0kgm⁻²-obese, >30.0kgm⁻²- very obese¹⁰.

Statistical analysis

Statistical analysis was performed using the SPSS Version 16.0 statistical package. Categorical variables were expressed as number and percentage (%) and continuous variables were expressed as mean and standard deviation. Chi square test for independence was used to compare weight changes between different BMI categories and P value < 0.05 was considered as statistically significant.

RESULTS AND DISCUSSION

Study population consisted of two hundred and ninety five patients. Of which 190 (64.4%) were males. The mean age (SD) was 58.04 ± 12.48 years and mean BMI was 23.47kgm⁻² (SD 3.93).

One hundred and twenty eight (43.4%) patients lost their weight, while 131 (44.4%) and 36 (12.2%) patients had gained and had no change in their weight respectively. Weight changes during the hospital stay is shown in table 1. Of the patients who had their BMI in the underweight category, most (15, 57.7%) gained their weight. In the normal BMI

Table 1: Weight change and duration of stay according to BMI categories

BMI Category (kg/m ²)	Number of patients in each category	Weight change during hospital stay (295)			Hospital stay (days)
		Number Weight lost	Number No change	Number Weight gained	
<18.5	26 (8.81%)	10 (38.5%)	1 (3.8%)	15 (57.7%)	8.0
18.5-22.9	112 (37.97%)	43 (38.4%)	18 (16.1%)	51 (45.5%)	6.3
23-24.9	64 (21.69%)	32 (50.0%)	9 (14.1%)	23 (35.9%)	5.0
25-29.9	73 (24.75%)	34 (46.6%)	4 (3.7%)	35 (47.9%)	5.7
>30	20 (6.78%)	9 (45.0%)	4 (20.0%)	7 (35.0%)	4.8
Total	295 (100.00%)	128 (43.4%)	36 (12.2%)	131 (44.4%)	

range majority (51, 45.5%) gained their weight followed up by 43 (38.4%) patients who lost their weight. In the category of overweight, half of the patients (32, 50.0%) lost their weight. Forty three patients (46.23%) who were in the obese or very obese category lost their weight while another 42 (45.16%) gained their weight. Weight changes within different BMI categories were not statistically significant ($P=0.19$).

Present study identified a non-significant variation in the pattern of weight change within different BMI categories. Majority of patients with BMI in the range of underweight and normal categories gained their weight, while patients categorized as overweight and obese lost their weight. Similar results are shown in a study done by Venzin *et al* on medical patients over a period of 5 months¹¹. In contrary, majority of the patients lost their weight despite the initial nutritional category in a study done on a group of mixed patients admitted to a teaching hospital¹². Weight change during hospital stay is known as a difficult variable to measure as most patients, specially cardiac admissions have a disturbed fluid balance¹³. However, it becomes an important measurement to monitor the course of the nutritional status when the fluid overloading conditions are excluded¹¹. Present study has excluded patients with fluid overload thus the weight change detected was solely attributed to the disease and nutrition related factors.

Nutrition support may not be the top priority among cardiac patients, but overall neglecting nutritional status among the patients could be contributing to poor clinical outcomes. Although the hospital malnutrition has been described for decades, our finding showed that worsening of the nutritional status of the substantial portion of the patients in a tertiary care hospitals irrespective of the BMI category.

Competing interests

The authors declare that they have no conflict of interests. No specific funding support was taken.

Authors' contributions

AKP, RJ and NCL have made substantial contribution to conception and design the study. WSS and SPP interpreted data. IR analyzed the data. IR, RJ, NCL and AKP were involved in drafting the manuscript. All authors read and approved the final manuscript.

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