

An Audit on Nutritional Status Using Weight as a Marker of Nutrition in Head and Neck Cancer Patients Undergoing Radiotherapy

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INTRODUCTION

Cancer is a disease that has a catabolic nature, fueled from the nutrition of the patient. There is weight loss, and sometimes even malnourishment.¹ Treatment of cancer through surgical or non-surgical techniques is also of a catabolic nature where the body uses nourishment to repair and reconstruct itself. Malnutrition can lead to poor healing and impaired recovery.²

At our unit, we utilize the Harris-Benedict equation to estimate our patient's basal metabolic rate (BMR) and daily calorie requirements.

Estimated BMR:

Men	$88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years})$
Women	$447.593 + (9.247 \times \text{weight in kg}) + (3.098 \times \text{height in cm}) - (4.330 \times \text{age in years})$

The Harris-Benedict (HB) equation calculates the estimated calories an individual requires to maintain their body weight based on the level of physical activity one undertakes weekly.

Estimated calorie requirements:

Little or no exercise	BMR x 1.2
Light exercise (1-3 days weekly)	BMR x 1.375
Moderate exercise (3-5 days weekly)	BMR x 1.55
Heavy exercise (6-7 days weekly)	BMR x 1.725
Very heavy exercise (2x daily, extra heavy workouts)	BMR x 1.9

Understanding that cancer and the management of cancer is a catabolic process, the nutritional requirements of our patients is compensated by using the next higher multiplier, eg a cancer patient who does no exercise has his calorie requirement measured with the multiplier for that of light exercise – BMR x 1.375.

AIMS

1. Audit the nutritional status in head and neck cancer patients undergoing radiotherapy in our head and neck unit.
2. Determine if the nutritional estimation of our patients is sufficient to provide the nutritional needs of our head and neck cancer patients.

GOLD STANDARD

All patients undergoing radiotherapy for head and neck cancer treatment have no loss in weight.

All head and neck cancer patients to have seen the dieticians for nutritional advice.

METHODS

A retrospective study of all patients diagnosed with Head and Neck Cancer and treated with radiotherapy (RT) between Jan 2011 and June 2011.

31 patients were identified to fit our criteria. Patients who needed surgery in addition to RT were excluded.

Using their weights as a surrogate marker for nutritional status, these were compared at diagnosis, after the completion of RT, 3 and 6 months after RT. Losing >15% of the initial body weight was deemed a significant finding in our study.

We also monitored if they had been reviewed by a dietician.

RESULTS

A total of 17 patients of the 31 had seen a dietician and were recommended a dietary regime based on their estimated calorie requirements. The remaining 14 patients did not see a dietician.

Post RT results show that the dietician reviewed group had a change of body weight between 73.9 – 104.7% compared to 81.3 – 103.6% in the group that did not see the dietician. There were 3 patients in each group (17.6% vs 25% respectively) that maintained their body weight. 3 patients in each arm (17.6% vs 25% respectively) had their body weight drop >15% after RT. 2 patients that did not see the dieticians also did not have their post RT weights charted.

RESULTS

At 3 months after RT, 12 of the 14 patients (85.7%) in the dietician seen group regained or maintained 85% of their weight compared to 10 of the 12 patients (83.3%) of the group that did not see the dieticians. 2 of the 14 (14.3%) of patients had a drop loss > 15% body weight among those who had seen the dieticians compared with 2 in 12 patients (16.7%) in the group that did not see the dietician. 2 patients in each group did not have their weights recorded and 1 from the dietician group had passed away.

Table 1: Dietician reviewed group

ID	% Weight Change after RT	% Weight Change 3/12 after RT	% Weight Change 6/12 after RT
1	104.7	88.7	84.3
2	91.8	94.3	98
3	100.0	90.2	89.7
4	95.8	91.9	71.1
5	86.7	89.1	92.8
6	98.4	86.9	90.4
7	92.1	92.1	92.7
8	73.9	78.3	76.1
9	77.3	88.1	-
10	94.1	89.0	86.7
11	101.6	87.2	-
12	98.0	-	89.8
13	85.6	-	98.6
14	98.5	96.8	RIP
15	92.8	96.4	RIP
16	88.7	83.6	RIP
17	83.7	RIP	RIP

At 6 months after RT, 8 of 11 patients (72.7%) of patients who saw the dietician regained over 85% of their initial weight compared with 7 of the 11 patients (63.6%) in the group that did not see the dieticians. 3 of 11 patients (27.3%) in the dietician seen group had weights below 85% of initial body weight compared with 4 (36.4%) in the not seen dietician group. 2 and 3 patients from each arm respectively did not have their weights recorded. 4 in the dietician reviewed group had passed away.

Table 2. Non dietician-reviewed group

ID	% Weight Change after RT	% Weight Change 3/12 after RT	% Weight Change 6/12 after RT
1	81.3	93.5	104.7
2	85.6	86.6	89.4
3	97.7	106.4	97.8
4	94.6	88.0	86.1
5	83.6	89.2	94.9
6	81.9	81.9	79.6
7	103.6	88.7	84.6
8	96.5	88.0	84.7
9	91.0	90.2	-
10	-	83.9	79.1
11	100.0	-	91.9
12	101.7	-	97.6
13	96.4	84.1	-
14	-	86.5	-

DISCUSSION

Nutrition plays an important role in the recovery of patients after cancer treatment. The involvement of the dietician is important not only during the treatment process but also after treatment when the body repairs itself.

Our audit results have shown that despite seeing the dieticians, between 14-27% of our patients have had their weights drop > 15% of their initial body weight immediately after, 3 months and 6 months after RT. They only fared marginally better than the group that did not see the dieticians at 17 – 36% in the same period.

More work is needed to ensure that all our cancer patients get dietician input. The estimated calorie requirement could also be altered to compensate more for the patients using a multiplier 2 levels higher than that the HB estimation.

CONCLUSION

Cancer management involves working in a multi-disciplinary setting closely with our colleagues in radiation oncology and dietetics. A malnourished patient is less likely to tolerate the full planned dose of RT and more likely to succumb to other illness while under therapy. Our results indicate potential for improvement of patient care with higher caloric intake and through better monitoring of their weight change with the help of our dietician colleagues.

REFERENCES

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