

# **Colorectal Cancer Nutritional & Quality of Life**

**parameters predict patients outcomes after radiotherapy:**

**long term follow-up from a**

**prospective randomised controlled trial**

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## Background

- The long term follow-up of a published randomised controlled trial of nutritional therapy in colorectal cancer (CRC – stage II/III) patients undergoing radiotherapy (RT), showed that individualised nutritional counselling & education optimised patient's outcomes.

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ORIGINAL REPORT

Dietary Counseling Improves Patient Outcomes: A Prospective, Randomized, Controlled Trial in Colorectal Cancer Patients Undergoing Radiotherapy

*Paula Ravasco, Isabel Monteiro-Grillo, Pedro Marques Vidal, and Maria Ermelinda Camilo*

# Study Design

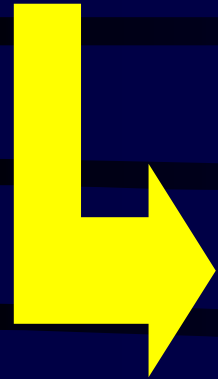
- Long term data were collected from patients' records.
  - Randomisation for the controlled trial, had been:
    - 1) Group 1 (n=37): received individualised nutritional counselling & education with regular foods;
    - 2) Group 2 (n=37): maintained their *ad libitum* intake & received 2 polymeric protein supplements per day;
    - 3) Group 3 (n=37): maintained their *ad libitum* intake.
- At the onset, end and 3 months after RT, evaluations were performed: 1) nutritional status (Ottery's Subjective Global Assessment), 2) diet intake (Diet History) & QoL (EORTC QLQ-C30).

## **Nutritional status - Ottery's Subjective Global Assessment (validated for cancer patients)**

- 1. % Weight loss – previous 6 months, 1 month, 2 weeks**
- 2. Nutritional intake reduction (last month) & type of diet**
- 3. Symptoms**  
Anorexia & oral cavity / oesophagus / GI tract - related
- 4. Functional capacity**
- 5. Other diseases, cancer stage**
- 6. Metabolic stress (fever, corticosteroids)**
- 7. Physical examination (muscle / adipose tissue depletion, oedema, ascitis)**

## Diet History

### - Usual nutritional intake



Intake in the previous 24 hours

+

Food Frequency Questionnaire

+

72 hours self reported diary (2 week days, 1 weekend)

### - Description of all foods usually consumed:

per meal

frequency of intake of the various foods

precise amounts

# Aim

- To **evaluate the predictive value** of individual **nutritional & Quality of Life (QoL) parameters**, after nutrition intervention & RT, on predefined long term patient's outcomes: **survival**, **late RT toxicity** (RTOG/EORTC) & **disease outcome**.

# Methods

- Multivariate analysis of coded time-dependent variables & landmark analysis were used to evaluate the **ability of nutritional & Quality of Life (QoL) parameters to predict:**

- survival

- late RT toxicity

(permanent flatulence, diarrhoea, sub-occlusion, beeding)

- disease outcome

(loco regional recurrence, distant metastases)

- All patients complied to the RT Department routine follow-up;

- Median follow-up time was 3.7 (2.0-5.8) years.

# Parameters at the end of RT

## 1. Energy & protein intake

↑ G1 > G2,  $p \leq 0.007$

↓ G3,  $p < 0.01$

## 2. Weight loss

↑ G3 > G2,  $p < 0.05$

## 3. Quality of Life

↑ G1,  $p < 0.01$

↓ G3 > G2,  $p < 0.05$

# Multivariate analysis of coded time-dependent variables

	↓ Survival		↑ Late RT toxicity	
	RR	p	RR	p
↓ Diet intake	7.65	.002	6.70	.002
↓ Weight	8.60	.001	6.74	.003
↓ QoL scores	8.60	.001	6.71	.002

RR=Relative Risk

	LRR		DM	
	RR	p	RR	p
↓ Diet intake	5.78	.01	7.67	.005
↓ Weight	5.81	.02	7.69	.005
↓ QoL scores	5.77	.01	7.68	.005

RR = Relative Risk; LRR = Locoregional Recurrence; DM = Distant Metastases

# Landmark analysis

↓ Nutritional intake + ↓ weight + ↓ QoL



↓ Survival

HR: 8.25; 95% CI 2.74 - 26.47,  $p < 0.001$   
+

↓ Disease outcome

HR: 8.15; 95% CI 2.22 - 25.40,  $p < 0.002$   
+

↑ Late RT toxicity  $\geq 2$

HR: 7.15; 95% CI 2.25 - 16.11,  $p < 0.004$

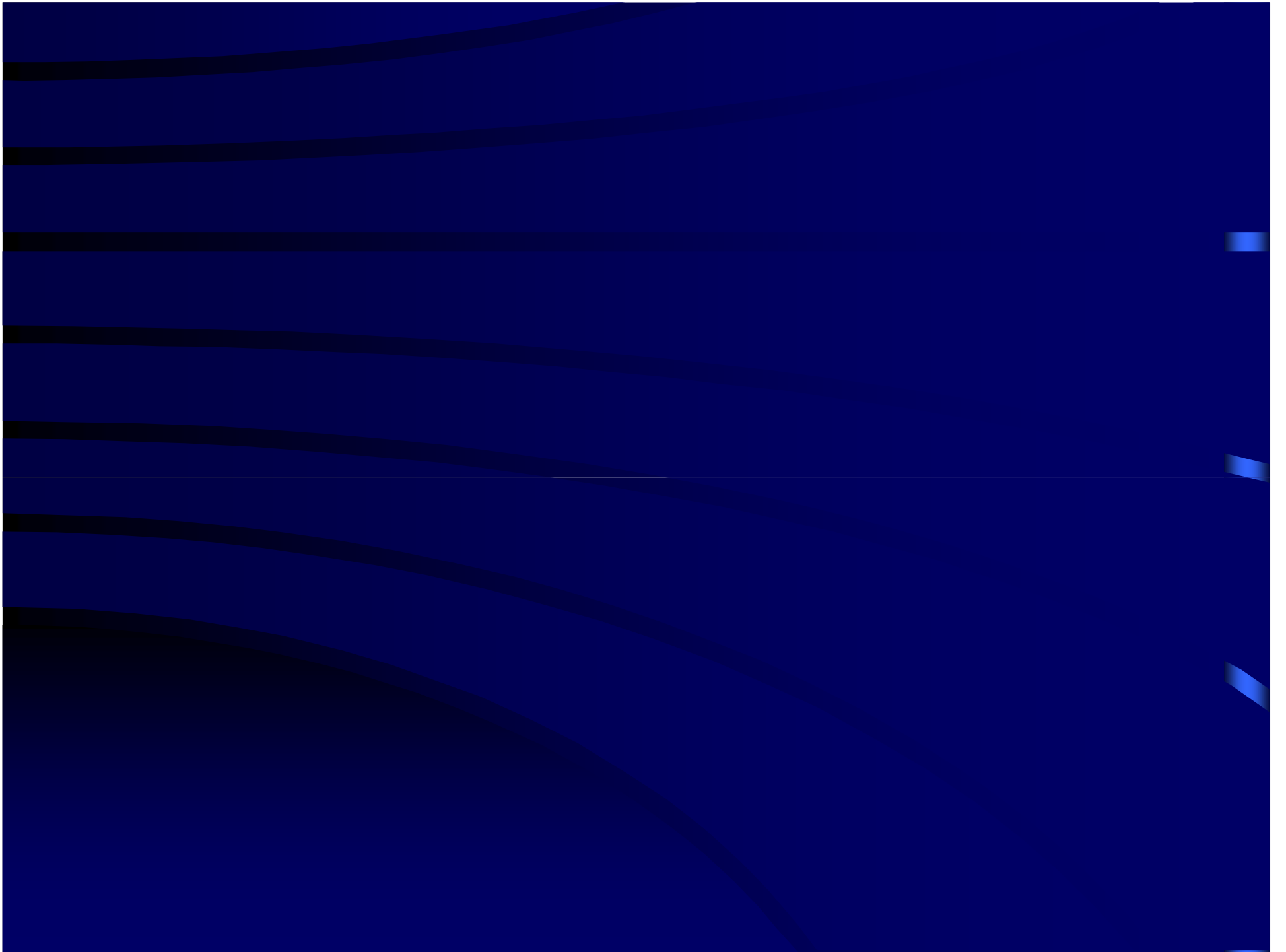
HR=Hazard Ratio; CI=confidence interval

# Summary

- The follow-up of the randomised controlled trial of nutritional therapy in CRC patients that undergone RT, did **point towards a strong relationship** between **nutritional & Quality of Life parameters**, and the **patients' long term disease outcome**.
- This relationship, **though of different magnitude and directions**, was valid for all 3 groups of the clinical trial.

# Conclusion

- In CRC patients after RT, **poor diet intake, worse nutritional status & poorer Quality of Life**, are significant predictors of survival, of disease outcome, and of late RT toxicity.
- Such patients may endure a more aggressive clinical course.
- Conversely, individualised nutritional counselling & education seems valuable for an improved disease outcome.





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## Does nutrition influence quality of life in cancer patients undergoing radiotherapy?

*Clinical Oncology* (2003) 15: 443–450  
doi:10.1016/S0936-6555(03)00155-9

*Original Article*

### Nutritional Deterioration in Cancer: The Role of Disease and Diet

*Support Care Cancer* (2004) 12:246–252  
DOI 10.1007/s00520-003-0568-z

ORIGINAL ARTICLE

**Cancer: disease and nutrition  
are key determinants of patients' quality of life**

*Head & Neck* 2005 27(8):659-668

**IMPACT OF NUTRITION ON OUTCOME: A PROSPECTIVE  
RANDOMIZED CONTROLLED TRIAL IN PATIENTS WITH  
HEAD AND NECK CANCER UNDERGOING RADIOTHERAPY**

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