The impact of Nutrition Therapy in Cancer Patients

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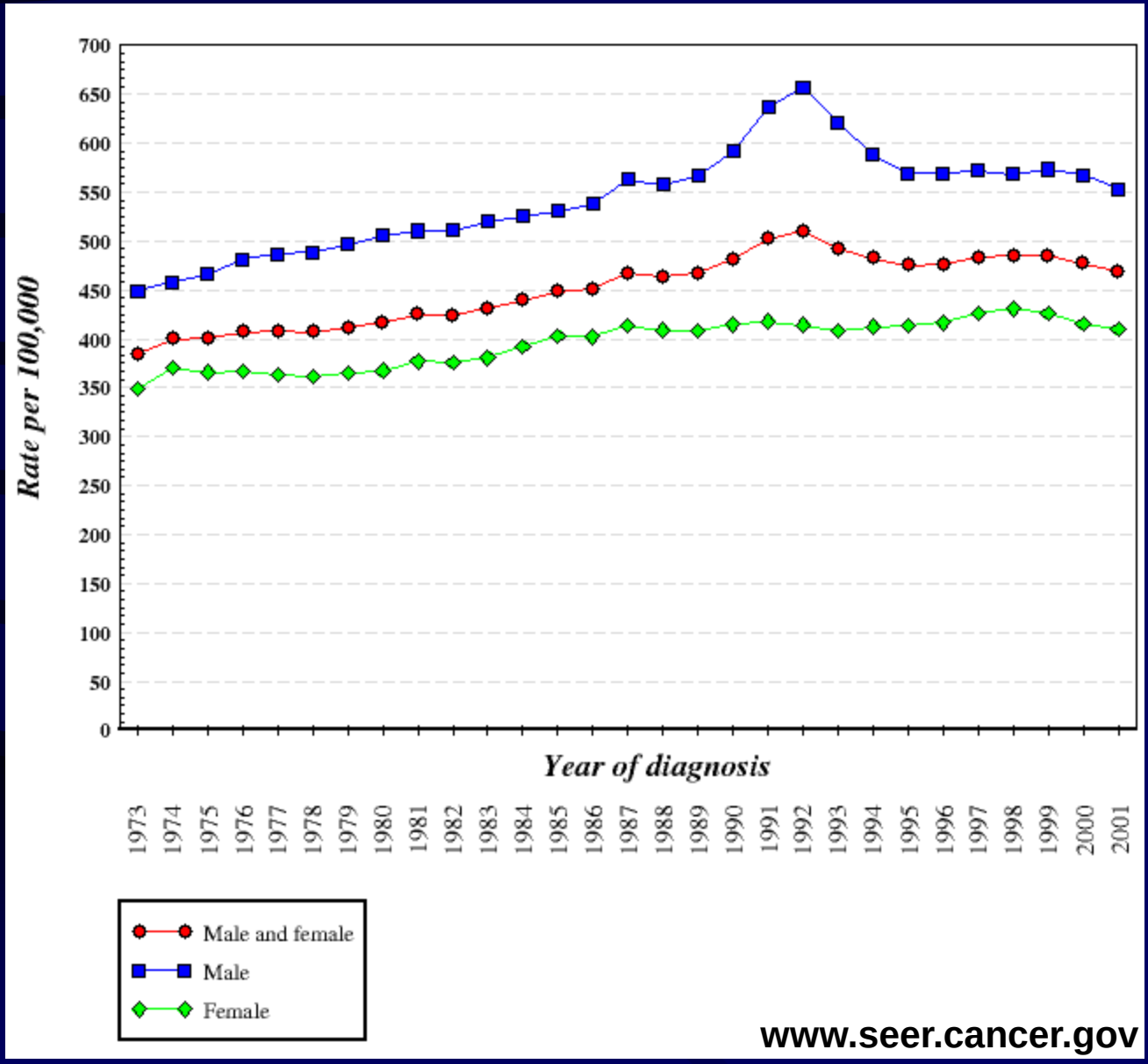
Rates of cancer incidence (all sites) - 1973-2001

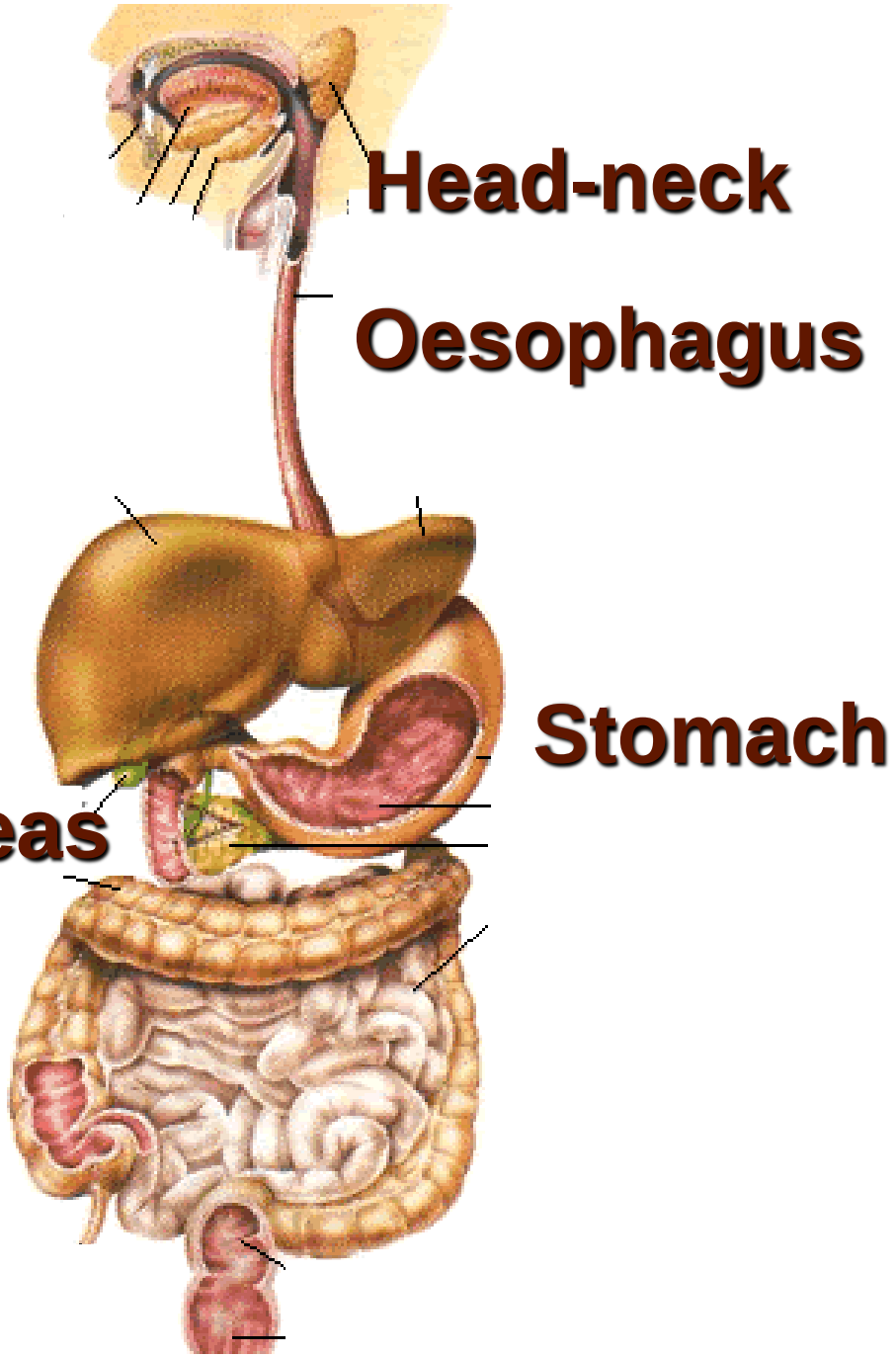


Surveillance, Epidemiology & End Results (SEER) Program; National Cancer Institute, Surveillance Research Program, Cancer Statistics Branch

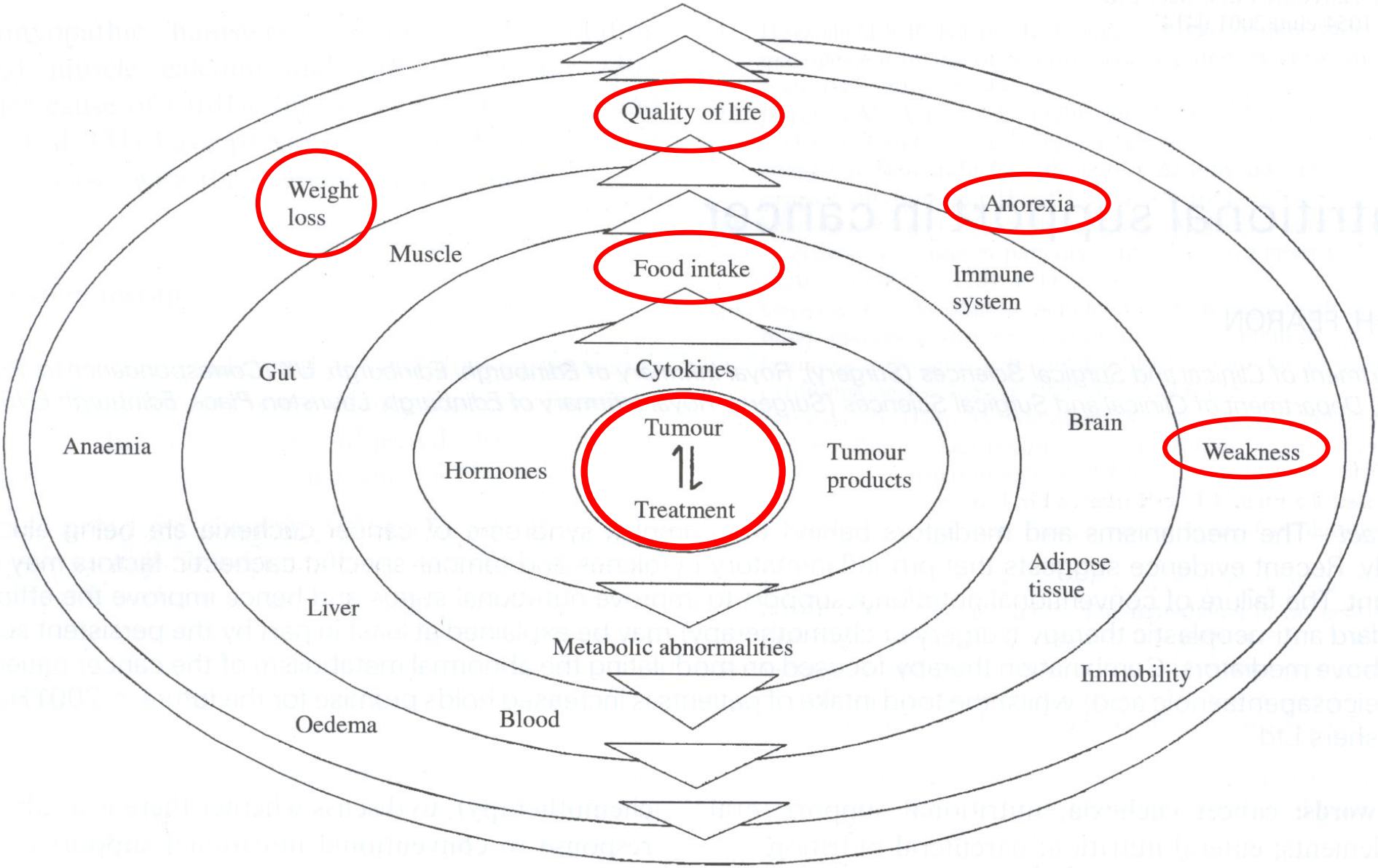
nutritional imbalances

Outcomes

- nutritional
- clinical
- QoL

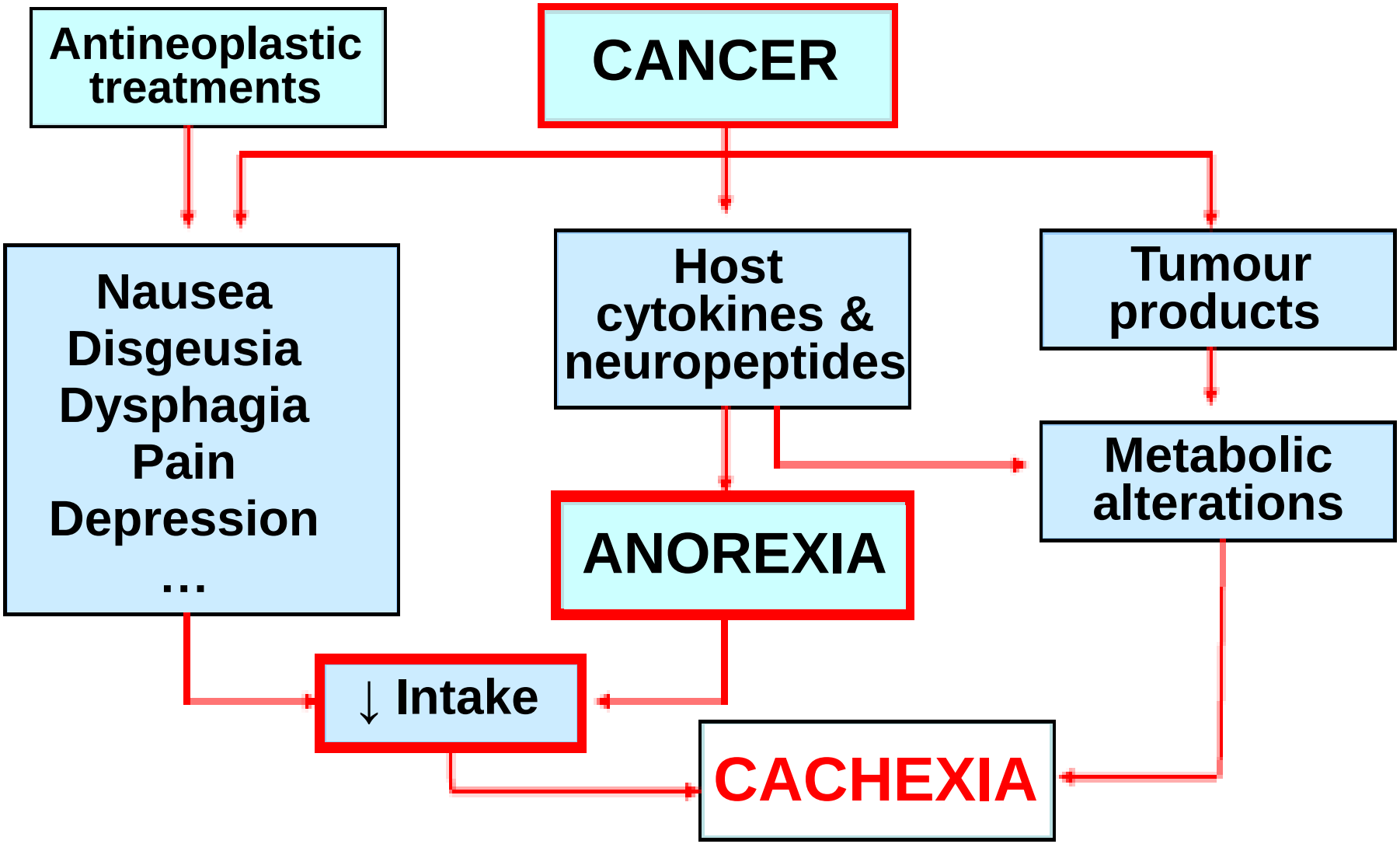

Head-neck
Oesophagus
Stomach
Pancreas
Colon-rectum

The weight of nutrition in the "*oncologic scenario*"



K. Fearon, *Clin Nutr* 2001

Pathophisiology of cancer cachexia



Cancer Cachexia

Clinical condition characterised by anorexia, severe weight loss, asthenia and poor overall condition, which overall may lead to death.

Nelson *et al*, *J Clin Oncol* 1994

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

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Background: gathering validated objective data on **nutritional status** and its **evolution throughout the disease** course is of prime concern

Study Design & Aims: prospective study in head-neck, oesophageal, stomach & colorectal cancer patients, aiming to **explore** the **intricate construct** of various **disease & diet-related factors** potentially **implicated** in **nutritional deterioration**

Conclusions

- ✓ **nutritional deterioration**: **multifactorial** outcome determined by cancer & diet-related factors, all simultaneously evaluated in a general linear model;
- ✓ **advanced stage** was by far the most significantly associated with **worse nutritional status**;
- ✓ cancer **location**, **duration of disease**, **protein & energy** intake **deficits** & previous **surgery/chemotherapy** were also associated.
- ✓ **Novel clinical evidence** on the **complex interactions** between cancer and/or treatment-related variables & diet modifications, **all exerting** a **combined effect** on patients' **wasting**;
- ✓ Cancer **location** was the **dominant factor** influencing the **wasting pattern** and/or **progression**, though the **tumour burden for the host** was of **major importance**.

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

ORIGINAL ARTICLE

Paula Ravasco
Isabel Monteiro-Grillo
Pedro Marques Vidal
Maria E. Camilo

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

Background: necessary to explore the potential interaction(s) between various disease & diet-related factors likely to be implicated in patients' Quality of Life (QoL)

Study Design & Aims: cross-sectional study in head-neck, oesophageal, stomach & colorectal cancer patients aiming to evaluate patients' nutritional status, intake & QoL, valuing cancer stage & previous therapeutic interventions, to determine potential inter-relations, & quantify the relative impacts of cancer/treatments and/or nutrition-related factors on QoL

Conclusions

✓ objective evidence that cancer, diet deficits, nutritional deterioration & therapeutic interventions are determinants of the patients' Quality of Life, but with distinct relative weights;

✓ chemotherapy & surgery were perceived by patients as of minor relevance; nutritional deficits and/or deterioration were intrinsic to cancer location & stage, to energy/protein intake deficits & to weight loss: independent determinants of QoL.

✓ These results concur with Keys et al landmark data revealing that semi-starvation impairs functional & psychological abilities, & corroborated our previous study demonstrating the relationship between progressive disease and wasting.

NUTRITIONAL THERAPY

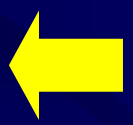
- Assessment of nutritional status &
  NUTRITIONAL INTAKE – Structured Questionnaire
- Dietary preferences / habits / intolerances
- Intake assessment - usual & current: energy + protein
- Diary meal distribution
- Psychological status, autonomy (cooperative? needs support?)
- Symptoms

- To adequate oral intake to individual requirements:
  energy, macro & micronutrients
- Inform the patient / family / care-takers:
  importance of the diet / food types / amounts

NUTRITIONAL INTERVENTION

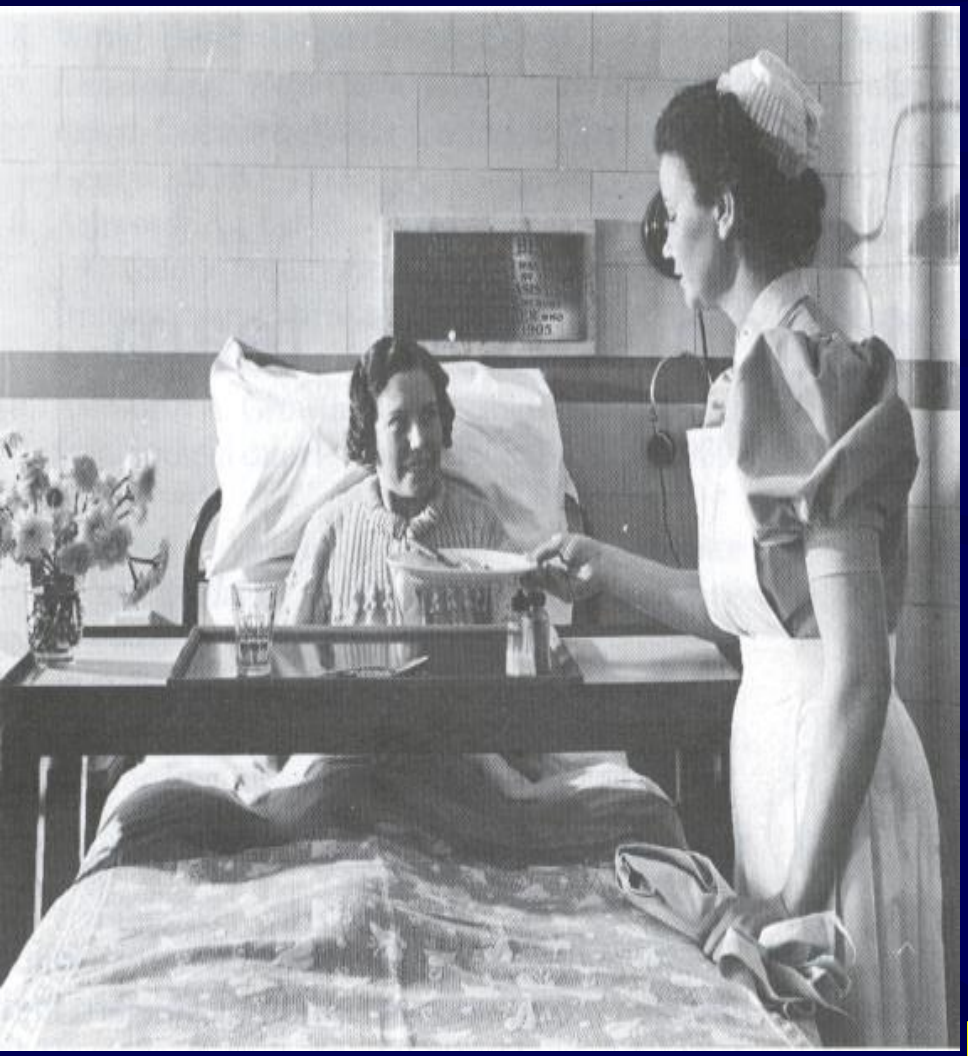
- **Therapeutic diets** modified to fulfill specific nutritional requirements:
  - digestion / absorption
  - disease stage and progression
  - psychological factors
- **Mantain** (as possible) the usual dietary pattern

- **Prescription**
  - type
  - amounts
  - frequency



Patient
Disease
Therapeutic goals

AIMS OF NUTRITIONAL THERAPY



INDIVIDUALISED DIET

- Inform the patient
- Intake ≈ requirements
- Minimise weight loss
- Promote functional recovery

Regular foods
protein / energy supplements

Aims of Nutritional Therapy in Oncology

- **Primary aim is double:**
  - Prevent death subsequent to severe undernutrition
  - Improve and maintain Quality of Life

- **Secondary aims:**
  - Improve the tumour response to treatments
  - Prolong survival
  - Reduce treatment-induced complications & symptoms
  - Reduce hospital length of stay

In **CANCER**,
Prevalence of **undernutrition** ? **8 - 84%** ?
calls for
early detection and **treatment** !

Resolution ResAP(2003)3 on food and nutritional care in hospitals

adopted on 12 November 2003

https://wcm.coe.int/ViewDoc.jsp?id=85747&Lang=en

Appendix to Resolution ResAP(2003)3

1. Nutritional assessment and treatment

1.1 Nutritional risk screening

- ✓ nutritional status & severity of disease
- ✓ method: evidence-based, validated, easy to use & understand
- ✓ routine and systematic use
- ✓ at risk patient ⟶ thorough assessment
  nutritional treatment
  monitoring / adjustments

...

Appendix to Resolution ResAP(2003)3

1.2 Identification of causes of undernutrition

- ✓ which causes are involved ?
- ✓ avoid dietary restrictions !
- ✓ undernutrition is a clinical diagnosis

...

Appendix to Resolution ResAP(2003)3

1.3 Nutritional support

- ✓ integral part of treatment
- ✓ nutritional treatment plan reviewed and adjusted if appropriate, on a weekly basis
- ✓ targeted to the individual patient

...

* Randomised trials evaluating the effect of ordinary food on clinical outcome should be given high priority

Ordinary food improves clinical outcomes

ELSEVIER

Radiotherapy and Oncology 67 (2003) 213–220

RADIOTHERAPY & ONCOLOGY
JOURNAL OF THE EUROPEAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

www.elsevier.com/locate/radonline

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

Paula Ravasco[a,*], Isabel Monteiro-Grillo[a,b], Maria Ermelinda Camilo[a]

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- **Individualised nutritional counselling + monitoring**, according to nutritional status & symptoms, **significantly improves** the patients' **nutritional intake** & **Quality of Life**

- The improvement in **Quality of Life' functional dimensions** was **correlated** with **adequate / improved nutritional intake**

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JOURNAL OF CLINICAL ONCOLOGY

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

Head & Neck 2005; 27: 659-668

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

Paula Ravasco, MD,[1] Isabel Monteiro-Grillo, MD, PhD,[1,2]
Pedro Marques Vidal, MD, PhD,[1] Maria Ermelinda Camilo, MD, PhD[1]

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[2] Radiotherapy Department of the Santa Maria University Hospital, Lisbon, Portugal

- Prospective randomised controlled trial to investigate the impact of nutritional counselling or supplements, on **nutritional intake**, **nutritional status**, **morbidity** & **Quality of Life (QoL)** during radiotherapy (RT) & at 3 months.

- 75 ambulatory patients with head-neck cancer were stratified by cancer stage and block randomised: 25 patients (**G1**) received individualised nutritional counselling based on regular foods, 25 (**G2**) *ad lib* + dietary supplements & 25 (**G3**) maintained their *ad lib* intake.

Methods

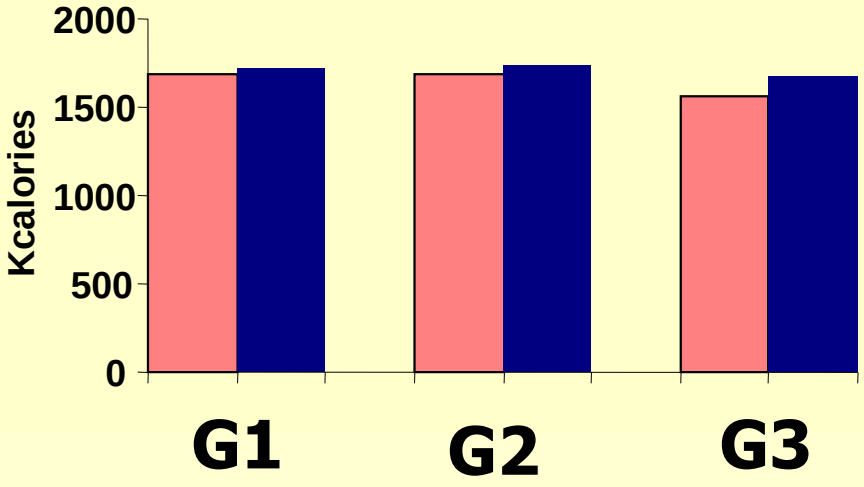
- Based on a pilot study for dietary intake evaluation, which identified protein as the main nutritional deficit, dietary supplements were selected: protein-dense polimeric, 400mL per day: 40g protein+400 kcal

- All patients had identical contact time with the nutritionist; compliance to recommendations and intervention was weekly monitored

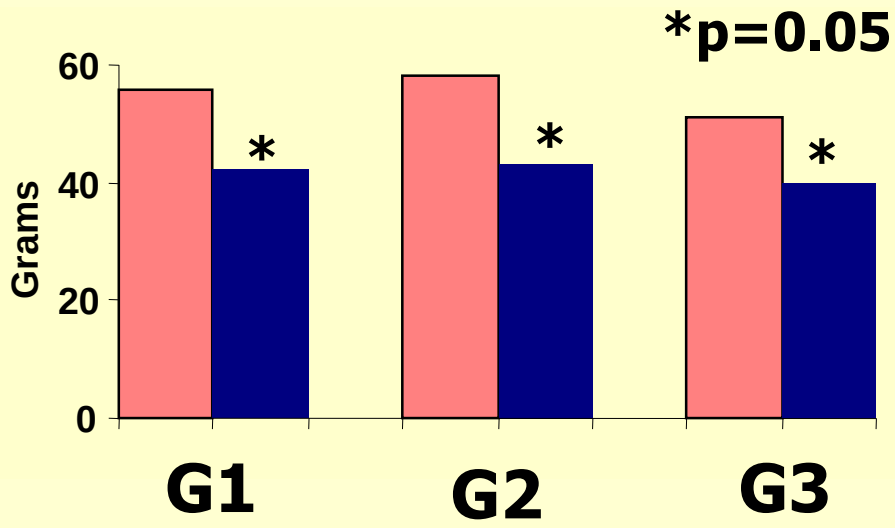
- Intake (diet history), nutritional status (Ottery's Subjective Global Assessment), RT-induced morbidity (ECOG) & QoL (EORTC) were evaluated at the onset, at the end and 3 months after RT.

Baseline nutritional intake

Energy



Protein

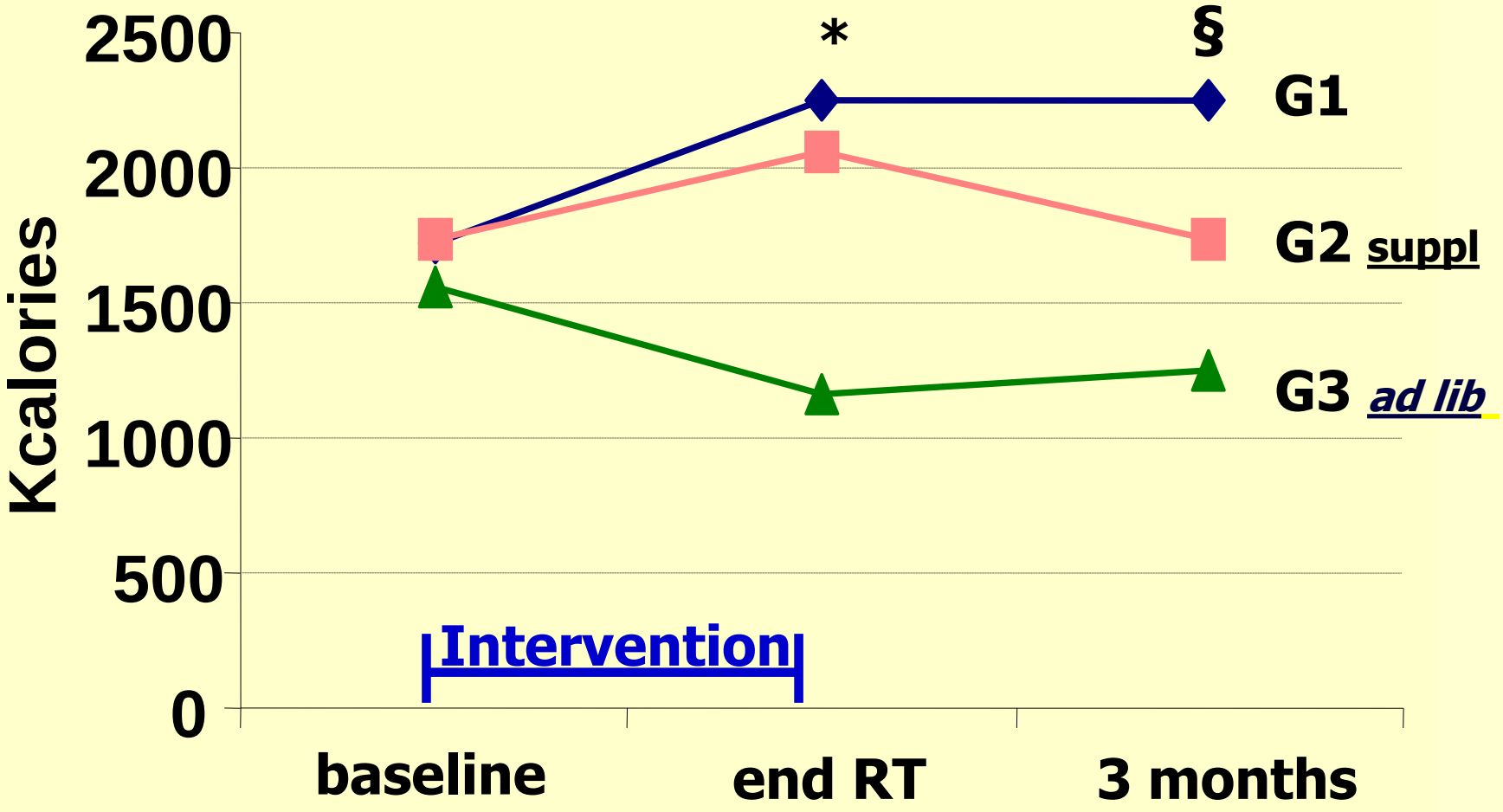


Requirements

Intake

G1 counselling G2 supplements G3 *ad lib*

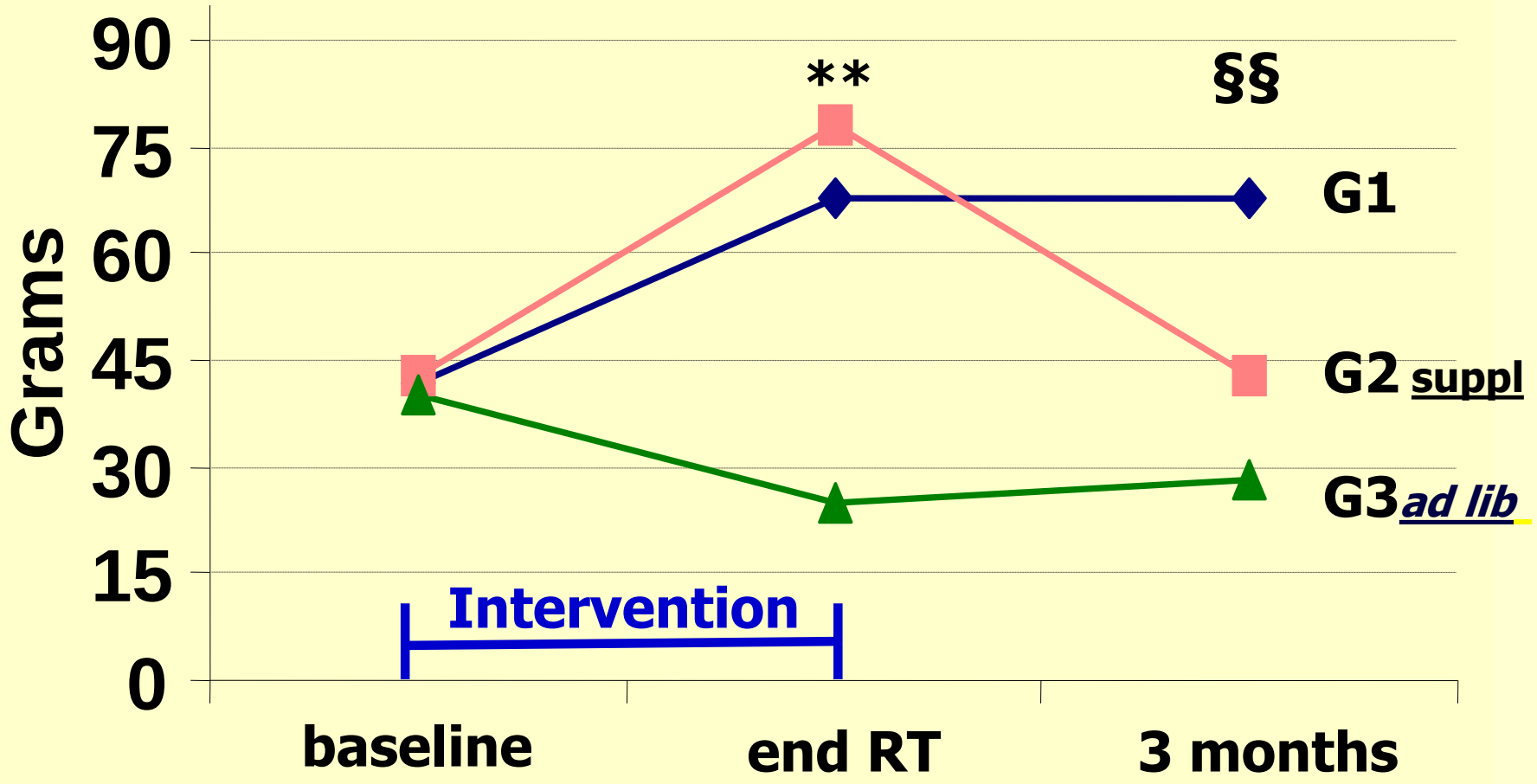
Energy intake



* G1>G2>G3, p=0.005

§ G1>G2>G3, p=0.001

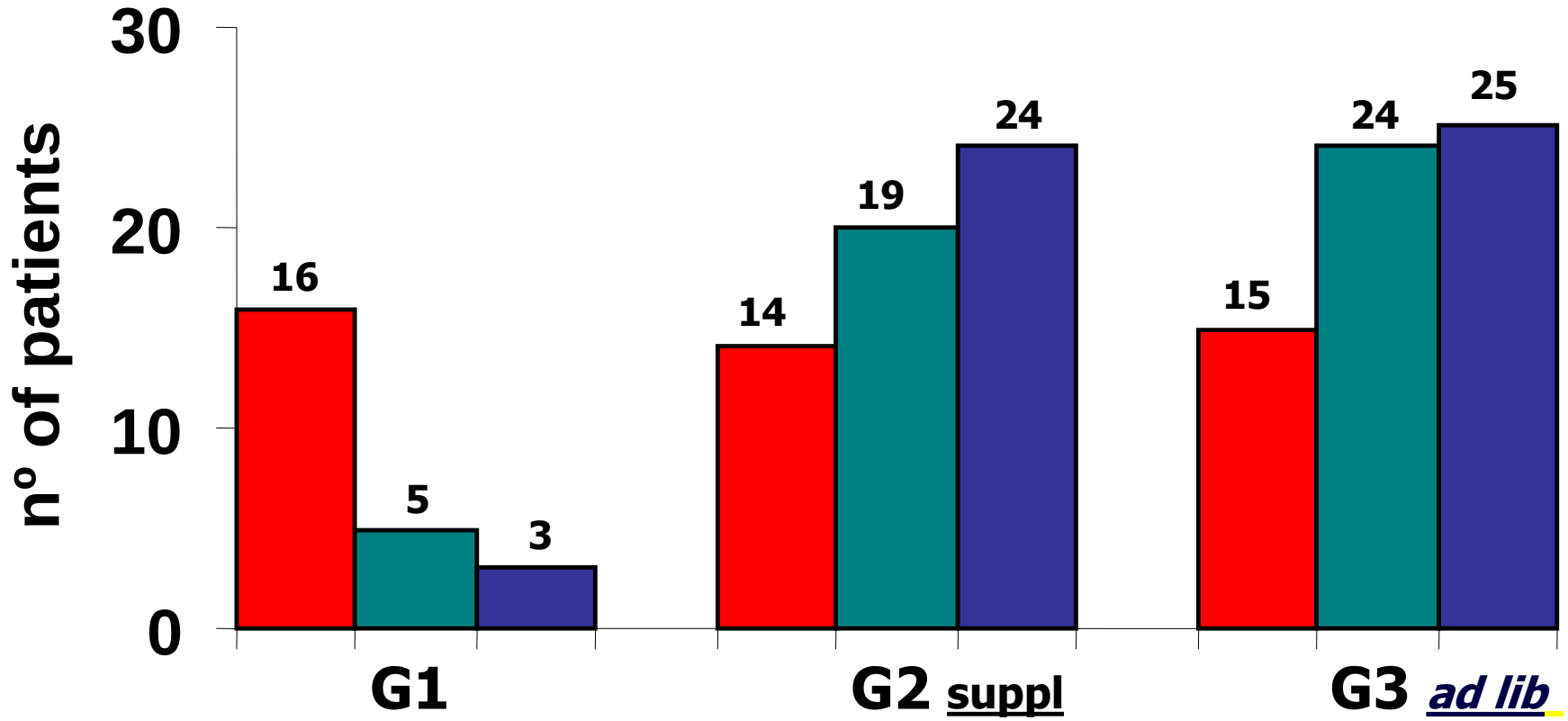
Protein intake



** G2>G1>G3, p=0.006

§§ G1>G2>G3, p=0.001

Nutritional status & deterioration



Baseline malnutrition
(56% stage III/IV, 4% stage I/II)

End RT nutritional deterioration
(all stages)

3 months nutritional deterioration
(all stages)

RT-induced Morbidity: patients

Symptoms Grades 1+2	G1		G2 suppl		G3 *ad lib*	
	End	3-mts	End	3-mts	End	3-mts
Anorexia	12	1	14	7	16	8
Nausea / Vomiting	5	0	5	3	5	3
Xerostomia	15	2	16	9	17	8
Disgeusia	17	3	21	11	23	11
Odynophagia / Dysphagia	20	3	22	6	24	12

≠ groups ↓ symptoms end RT *vs* 3 months **p<0.001**

QoL * Improvement ** Deterioration

Itens	G1			G2 supl			G3 *ad lib*		
	Baseline	End	3-months	Baseline	End	3-months	Baseline	End	3-months
Functional scales		*			*			**	
Global QoL	48	75	82	46	70	62	47	30	30
Physical function	49	74	79	48	69	60	45	21	22
Role	50	78	80	52	68	58	48	20	19
Emotional function	55	79	83	50	66	62	51	28	28
Social function	52	82	85	51	66	61	49	19	20
Função cognitiva	38	58	60	35	51	54	37	20	20
Symptom scales		**	*		**			**	
Astenia	30	55	26	43	75	78	45	78	79
Pain	55	63	15	52	74	45	51	78	73
Nausea / vomiting	25	79	10	55	71	60	56	72	73
Itens individuais		**	*		**			**	
Dyspnea	15	39	8	14	40	38	18	38	38
Insomnia	30	55	29	47	55	75	45	60	78
Anorexia	45	68	48	52	59	72	50	65	75
Constipation	12	10	10	11	9	8	9	8	8
Diarrhoea	7	7	7	6	6	6	7	7	7
Financial impact	38	38	38	37	37	37	40	40	40

Signif.

End RT

- >90% patients had RT-induced toxicity, not ≠ between groups, with a trend for ↓ symptoms in G1 *vs* G2/G3 (p<0.07)

G1 counselling

- QoL function scales improved (p<0.001) proportionally to ↑energy + protein intake (p<0.003); there was a linear positive association with nutritional status (p<0.05)

G2 supplements

- QoL function scales improved (p<0.03) proportionally to ↑energy + protein intake (p=0.06); there was no association with nutritional status

G3 *ad lib*

- All patients deteriorated all their QoL dimensions (p<0.05)

Follow-up 3 months

↓ symptom incidence/severity (grades 1+2) was different: 90% patients improved in G1 *vs* 67% in G2 *vs* 51% in G3 ($p<0.0001$)

G1 counselling

All patients maintained or improved their QoL, positively associated to an adequate nutritional intake status, $p<0.02$

G2 supplements / G3 *ad lib*

All patients maintained or worsened ($p<0.05$) their global QoL associated with the deterioration of nutritional intake/status, $p<0.01$

Conclusions

- **During RT:** diet intake, nutritional status & QoL all improved, with nutritional counselling or supplements.

- In the **medium term** only nutritional education & and the maintenance of the dietary recommendations were effective in maintaining QoL & nutritional status.

- RT-induced **morbidity** was **positively influenced** only by **individualised nutritional counselling**.

Individualised nutritional counselling, education & monitoring in patients with head-neck cancer undergoing RT was, *per se*, a **major determinant** of **improved outcomes: nutritional, clinical & of QoL.**

Therapeutical approach

Multiprofessional

NUTRITION

It is our obligation to provide and integrate Nutrition in the overall treatment, mandatory to sustain life throughout the patient's disease journey…

John Hunter, 1794

and to significantly improve Quality of Life !