

# Nutritional care in cancer patients in Italy: state of the art and perspectives

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Malnutrition is a common condition in cancer patients, with a detrimental impact on morbidity and mortality, as demonstrated by many clinical studies<sup>1,2</sup>. In particular, malnutrition is associated with prolonged hospitalization, higher rates of treatment-related toxicity, lower chemotherapy dose-intensity, reduced response to cancer treatment, impaired quality of life, and increased mortality<sup>1,2</sup>.

Many factors contribute to the unfavorable energy balance in cancer patients. Tumor-related factors include cytokine production leading to deregulation of systemic inflammation pathways and metabolic derangement (i.e., increase in muscle catabolism, lipolysis, and synthesis of acute-phase proteins) and local factors impairing gastrointestinal function (e.g., obstruction, exocrine insufficiency). Non-tumor-related factors include psychological effects due to cancer diagnosis and its consequences, reduction in physical activity and, above all, treatment toxicities. As a consequence, anorexia, malabsorption, and possibly increased energy expenditure lead to cancer-related malnutrition and altered body composition<sup>3,4</sup>.

Despite the strong evidence of the benefits of nutritional care, the proportion of cancer patients undergoing nutritional evaluation and support is still suboptimal<sup>5</sup>. This may be due to multiple factors, including:

1. Poor attention to malnutrition signs at early stages. In clinical practice, it is relatively easy to diagnose malnutrition when it becomes overt, i.e., in the case of very low body mass index. It is far more difficult to pay attention to the first signs of malnutrition, with small weight losses being often interpreted as natural components of the disease process.

2. Need of increasing outpatient visits' time-efficiency and shortening hospital stays. Nutritional evaluation and support are time-consuming interventions that are often considered non-necessary, with the risk of being cut to fulfill the productivity requirements.

3. Scarce nutritional education in clinicians. During the last decades, nutrition was not part of University courses, and entire generations of doctors had to learn by themselves the basis of nutritional support.

4. Small amount of nutritionists compared to the cancer patients' population. Many hospitals do not have a dedicated Clinical Nutrition service, with other specialists performing nutritional support (e.g., intensivists or gastroenterologists).

5. Lack of nutrition community services. Nutritional support is effective if administered in the long term and should also be monitored and prescribed in the community setting, which requires adequate resources.

National and international scientific societies have greatly increased clinicians' awareness of the essential role of nutritional care<sup>6</sup>. Moreover, multidisciplinary working groups have been constituted in several countries to set up initiatives for improving nutritional care in Oncology. The Italian Working Group (WG) might be taken as an example to analyze the role of these teams.

In recent years, a panel of experts and representatives from the Italian Society of Medical Oncology (AIOM), the Italian Society of Artificial Nutrition and Metabolism (SINPE), the Italian Federation of Volunteer-based Cancer Organizations (FAVO), the Italian Society of Surgical Oncology (SICO),

the Technical Scientific Association of Food, Nutrition and Dietetics (ASAND), the National Federation of Orders for Nursing Professions (FNOPI) and the Italian Association of Radiation Oncology (AIRO) established an intersociety multidisciplinary network. The main activities of the WG included the conduction of surveys, the implementation of inter-society consensus documents, and the elaboration of patients' rights declarations. In particular, several surveys explored the attitudes of Italian oncologists towards nutritional care, which was found to be under-considered by the majority of clinicians<sup>7</sup>.

Intersociety consensus recommendations focused on early recognition of nutritional risk, nutritional counseling, oral supplementation, and nutritional support across the different phases of the cancer trajectory (active medical treatment, surgery, palliative care)<sup>8</sup>. In 2017, the "Cancer patients' bill of rights to appropriate and prompt nutritional support" was presented, with the main purpose of making cancer patients aware of their rights and to involve the public opinion and institutions<sup>9</sup>.

These multidisciplinary approaches have obtained significant results in improving awareness on the importance of nutritional care, but many other factors contributed to the advances in this field. In particular, patient associations have been among the clinicians' greatest allies. In recent years, the paradigm of a passive role of patients in a one-directional doctor-patient relationship has significantly evolved, with patients being conscious of the key role of nutrition for their health and doctors involving their patients in the health care process. For example, patient empowerment is of crucial importance for the timeliness of nutritional interventions. If educated on the first signs of nutritional status worsening, patients can have an active role in the early diagnosis and treatment of malnutrition. Moreover, they can be involved in the choice of the most appropriate nutritional support by focusing on patients' perspectives and quality of life preservation. Finally, a constructive doctor-patient dialogue can be started to reduce the influence of anti-scientific nutritional approaches and to make patients aware of the risks of useless "anticancer" diets.

Also, from a scientific point of view, significant advances have been made in oncologic nutritional research. Novel approaches (e.g., immunonutrition) are the results of international research projects, and many other innovative ideas are being tested<sup>10</sup>. Nutritional research has reached high-quality levels and is now presented in the most prestigious journals, with many clinicians interested in developing research projects in the nutritional field.

In conclusion, raising awareness on the complex reality of nutritional care is a hard but extremely important task. Despite several critical issues still to be solved, significant advances have been made in implementing nutritional support and making nutrition a respected field of research.

In the future, clinical nutritionists should cultivate the multidisciplinary cooperation with professionals and patient representatives without forgetting the importance of scientific research, to continue improving cancer patients' outcomes and quality of life.

#### Conflicts of Interest.

The authors declare that they have no conflicts of interest or competing financial interests.

#### REFERENCES

1. Correia MI, Waitzberg DL. The impact of malnutrition on morbidity, mortality, length of hospital stay and costs evaluated through a multivariate model analysis. *Clin Nutr.* 2003;22(3):235-239. Doi: 10.1016/s0261-5614(02)00215-7.
2. Norman K, Pichard C, Lochs H, Pirlich M. Prognostic impact of disease-related malnutrition. *Clin Nutr.* 2008;27(1):5-15. Doi: 10.1016/j.clnu.2007.10.007.
3. Cereda E, Pedrazzoli P, Lobascio F, Masi S, Crotti S, Klersy C, Turri A, Stobäus N, Tank M, Franz K, Cutti S, Giaquinto E, Filippi AR, Norman K, Caccialanza R. The prognostic impact of BIA-derived fat-free mass index in patients with cancer. *Clin Nutr.* 2021;40(6):3901-3907. Doi: 10.1016/j.clnu.2021.04.024.
4. Bossi P, Delrio P, Mascheroni A, Zanetti M. The Spectrum of Malnutrition/Cachexia/Sarcopenia in Oncology According to Different Cancer Types and Settings: A Narrative Review. *Nutrients.* 2021 Jun 9;13(6):1980. Doi: 10.3390/nu13061980.
5. Caccialanza R, Goldwasser F, Marschal O, Ottery F, Schiefke I, Tilleul P, Zalcman G, Pedrazzoli P. Unmet needs in clinical nutrition in oncology: a multinational analysis of real-world evidence. *Ther Adv Med Oncol.* 2020;12:1758835919899852. Doi: 10.1177/1758835919899852.
6. Arends J, Bachmann P, Baracos V, Barthelemy N, Bertz H, Bozzetti F, Fearon K, Hütterer E, Isenring E, Kaasa S, Krznaric Z, Laird B, Larsson M, Laviano A, Mühlebach S, Muscaritoli M, Oldervoll L, Ravasco P, Solheim T, Strasser F, de van der Schueren M, Preiser JC. ESPEN guidelines on nutrition in cancer patients. *Clin Nutr.* 2017 Feb;36(1):11-48. Doi: 10.1016/j.clnu.2016.07.015.

7. Caccialanza R, Lobascio F, Cereda E, Aprile G, Farina G, Traclò F, Borioli V, Caraccia M, Turri A, De Lorenzo F, Pedrazzoli P; AIOM-SINPE-FAVO and Fondazione AIOM Working Group. Cancer-related malnutrition management: A survey among Italian Oncology Units and Patients' Associations. *Curr Probl Cancer*. 2020;44(5):100554. Doi: 10.1016/j.currprobcancer.2020.100554.

8. Caccialanza R, Cotogni P, Cereda E, Bossi P, Aprile G, Delrio P, Gnagnarella P, Mascheroni A, Monge T, Corradi E, Grieco M, Riso S, De Lorenzo F, Traclò F, Iannelli E, Beretta GD, Zanetti M, Cinieri S, Zagonel V, Pedrazzoli P. Nutritional Support in Cancer patients: update of the Italian Intersociety Working Group prac-

tical recommendations. *J Cancer*. 2022;13(9):2705-2716. Doi: 10.7150/jca.73130.

9. Caccialanza R, De Lorenzo F, Gianotti L, Zagonel V, Gavazzi C, Farina G, Cotogni P, Cinieri S, Cereda E, Marchetti P, Nardi M, Iannelli E, Santangelo C, Traclò F, Pinto C, Pedrazzoli P. Nutritional support for cancer patients: still a neglected right? *Support Care Cancer*. 2017;25(10):3001-3004. Doi: 10.1007/s00520-017-3826-1.

10. Slim K, Badon F, Vacheron CH, Océan BV, Dziri C, Chambrier C. Umbrella review of the efficacy of perioperative immunonutrition in visceral surgery. *Clin Nutr ESPEN*. 2022;48:99-108. Doi: 10.1016/j.clnesp.2022.02.015.

