

# Artificial nutrition and hydration in end-stage cancer patients - A systematic review

Pașca Denisa

Universitatea Transilvania Brașov, România

Received: 19.05.2023 • Accepted for publication: 23.10.2023

## Abstract

The following article is a review of the specialized literature on artificial nutrition and hydration of patients with cancer in the terminal stage with the aim of showing what is its specificity.

*The objectives* pursued were the selection of relevant articles and works and the identification of the particularities of nutrition and hydration of patients with terminal cancer. The selected bibliographic material comes from the online databases Academia Edu, PubMed and Google Scholar, being retained 19 scientific papers and articles published in Romanian and English, from 2008 to 2022, and was subjected to the inductive content analysis method, leading to the following results : the specificity of nutrition and hydration for the terminal cancer patient lies in its artificial nature, in the fact that it is a medical treatment that allows a person to receive nutrition (food) and hydration (fluids) when he is no longer able to take them orally, to sustain life or health, through various artificial means: intravenous approach, nasogastric tube, surgical feeding devices, including percutaneous endoscopic gastrostomy (PEG), percutaneous endoscopic jejunostomy and radiologically inserted gastrostomy. There are controversies regarding the usefulness / need of artificial nutrition and hydration in patients with terminal cancer, as well as ethical and legal considerations that need to be considered.

*The conclusion* of the specialized literature review on the subject is that there is a specificity of nutrition and hydration of the patients with cancer in terminal stage, which consists mainly in their artificial character. The various practical, ethical, and legal considerations related to their use must take account of this specific character.

## Rezumat

Articolul următor este o revizie a literaturii de specialitate pe tema nutriției și hidratării artificiale a bolnavilor cu cancer în stadiul terminal cu scopul de a arăta care este specificul acesteia.

*Obiectivele* urmărite au vizat selectarea articolelor și lucrărilor relevante și identificarea particularităților nutriției și hidratării pacienților cu cancer în stadiu terminal.

*Materialul* bibliografic selectat provine din bazele de date online Academia Edu, PubMed și Google Scholar, fiind reținute 19 lucrări și articole științifice publicate în limbile română și engleză, din perioada 2008 – 2022, și a fost supus *metodei analizei inductive de conținut*, conducând la următoarele *rezultate*: specificul nutriției și hidratării pacientului cu cancer în stadiu terminal constă în caracterul artificial al acesteia, în faptul că este un tratament medicamentos ce permite unei persoane să primească nutriție (mâncare) și hidratare (fluide) atunci când nu mai este capabilă să le ia pe cale orală, pentru a-și susține viața sau sănătatea, pe diverse căi artificiale - abordul intravenos, sonda nazogastrică, dispozitive chirurgicale de hrănire, inclusiv gastrostomia endoscopică percutanată (PEG), jejunostomia endoscopică percutanată și gastrostomia inserată radiologic. Există controverse referitoare la utilitatea / necesitatea administrării nutriției și hidratării artificiale în cazul bolnavilor cu cancer în stadiul terminal, precum și considerente de ordin etic și legal care trebuie să fie avute în vedere.

*Concluzia* reviziei literaturii de specialitate pe subiect este că există un specific al nutriției și hidratării pacientului cu cancer în stadiu terminal, care constă mai ales în caracterul artificial al acestora. Variatele considerații practice, etice și legale legate de utilizarea lor trebuie să țină cont de acest caracter specific.

## Introduction

Nutrition and artificial hydration refer to providing essential nutrients and fluids to individuals who are unable to meet their nutritional and hydration needs through oral intake. This may be due to medical conditions, such as cancer or due to a lack of access to adequate food and water.

Artificial hydration can be provided through intravenous fluids (IV). Artificial nutrition can be provided through nutrients (IV), enteral feeding (through a tube in the stomach) or parenteral nutrition (in the vein). The decision to provide artificial nutrition and hydration should be made on a case-by-case basis.

Consideration is given to the individual's general health, quality of life and personal values and beliefs.

## Purpose of the research

The purpose of the research is to find out how nutrition and hydration of patients with terminal cancer differs from nutrition and hydration of a healthy person.

## Research objectives

1. Selection of the most relevant articles and papers relating to nutrition and hydration of the terminal cancer patient from the literature.

## 2. Identification of nutrition and hydration peculiarities of patients with terminal cancer.

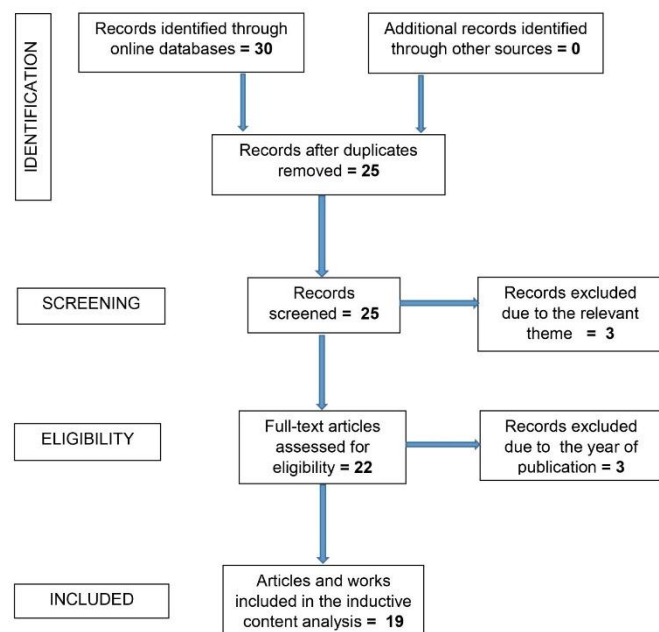
### Research question

Is there a specific aspect of nutrition and hydration for patients with terminal cancer?

### Material and method

#### Material

In the online databases Academia Edu, PubMed, Google Scholar, the search strategy combined the following keywords - *nutriție și hidratare artificială, cancer, sfârșitul vieții, îngrijiri paliative* (for Romanian) and *artificial nutrition, artificial hydration, cancer, end of life, palliative care* (for English) - for articles relevant to our topic. 19 scientific papers published between 2008 and 2022 were retained.



**Figure 1 - Flowchart of of the selection of papers and specialized articles**

### Method

We used the inductive content analysis method (a qualitative research method applied to rich descriptive data) to find the answer to the research question. In a brochure from the U.S.A. National Hospice and Palliative Care Organization [1], we identified a set of questions that were then used as a guideline when reviewing the literature. The questions and the answers from the brochure are marked in bold and italics below.

### Results

#### Question 1: *What is artificial nutrition and hydration?*

*In the American Palliative Care Organization brochure [1], artificial nutrition and hydration is defined as medical treatment that allows a person to receive nutrition (food) and hydration (fluids) when they are no longer able to take them orally.* Schwartz D.B., Barrocas A., Annetta M.G. et al. [2] define artificial nutrition and hydration as a "medical treatment". The word "administered" clarifies the route of administration as artificial and not physiological.

Lembeck, M.E., Pameijer C. R., Westcott A.M [3] showed that nutrition and artificial hydration are a medical intervention. Therefore, it has a certain degree of invasiveness (eg: intravenous access in case of parenteral administration) and increased risk of complications (eg: associated infections). Carter A.N. [4] mention clinically assisted feeding and hydration methods: intravenous approach, nasogastric tube or placement of surgical feeding devices, including percutaneous endoscopic gastrostomy (PEG), percutaneous endoscopic jejunostomy and radiologically inserted gastrostomy.

#### Question 2: *When is it used?*

*Artificial nutrition and hydration is used when, for some reason, the person cannot eat or drink enough to sustain life or health [1].*

Van de Vathorst S. [5] presents the ethical principles that should be considered when deciding whether artificial nutrition or artificial hydration should be initiated or not.

*The principle of beneficence* implies that artificial nutrition and hydration should be beneficial to the patient's current condition and serve no other primary purpose. Doctors may avoid recommending them for several reasons: a) to avoid disputes with the patient or his family; b) to avoid legal complications; c) if there are only purely academic interests in testing the effectiveness of this type of treatment. The principle of palliative care involves minimizing as much as possible the discomfort of patients.

*The principle of maleficence* or "doing no harm" involves assessing the risk of harm of administered treatments. Interventions that don't lead to beneficial effects and have side effects should be eliminated.

Heuberger R. A. [6] shows that in the case of nasogastric tube feeding (non-surgical method) there is an increased risk of aspiration compared to oral feeding, favoring aspiration pneumonia. The placement of the percutaneous endoscopic gastrostomy tube is associated with an increased risk of "infections" [5] or "local complications such as intestinal obstruction, perforation or dislocation of the tube" [4]. Due to the patient's low degree of mobility, there is the possibility of pressure ulcers, a significant cause of morbidity.

Heuberger R. A. [6] showed that the method of total parenteral nutrition (insertion of a catheter and ports in the subclavian vein) implies the existence of a major risk of sepsis, gas embolism or displacement of the central venous line.

The European Association for Palliative Care [7] advocates that, in terminal cancer patients, parenteral nutrition and hydration should be provided only to those who: a) expressly desire this route; b) have an estimated survival rate of more than 3 months.

*The principle of patient autonomy* requires that the doctor does not treat the patient without ensuring that this is what he wants. In many countries, this is regulated by informed consent by which the patient receives information about the goals of the treatment, the chances of achieving them and the associated risks. It also includes discussions with family or caregivers to inform them about the decisions of the patient [4].

"The principle of justice is different from the other three in that it does not regulate the relationship between doctors and patients. Patients should be "treated equally." If two patients were "in equal medical need" then they should be offered the same treatment [5].

**Question 3: How is it given?**

Doctors can provide nutrition and hydration by intravenous administration or by inserting a tube in the stomach [1].

Heuberger R. A. [6] showed that some artificial nutrition and hydration procedures are less invasive than others. Surgical procedures or intravenous methods are riskier in a person who is diagnosed with terminal cancer due to the low immune status.

The following table shows the methods of feeding and artificial hydration.

**Table 1 - Methods of artificial nutrition and hydration**

Methods of artificial feeding		Methods of artificial hydration	
Invasive	Noninvasive	Invasive	Noninvasive
Percutaneous endoscopic gastrostomy tube (PEG)	Nasogastric tube feeding	Percutaneous endoscopic gastrostomy tube (PEG)	Nasogastric or nasoduodenal tube feeding
Parenteral nutrition	Nasoduodenal tube feeding	Parenteral hydration	Hypodermoclysis
			Rectal hydration (proctoclysis)

**Artificial nutrition through a tube (Enteral nutrition)**

- Non-surgical methods*

Feeding patients through tubes is as close as possible to a physiological route of nutrition. The nasogastric tube is a flexible plastic tube that is inserted through the nose and pushed down the esophagus into the stomach. The duodenal tube is inserted down past the pylorus into the duodenum.

- Surgical methods*

A more invasive procedure includes the placement of the percutaneous endoscopic gastrostomy tube (PEG). It involves making an opening in the abdominal wall (stoma), through which the tube is placed that facilitates the administration of a special formula directly into the stomach. When the stomach is not functional, the tube can be placed below on the digestive tract, in the duodenum or jejunum.

**Parenteral nutrition**

According to Lembeck M.E. et al. [3], parenteral nutrition is provided via the intravenous approach. However, it is associated with prolonging the patient's suffering, rather than increasing survival. It is indicated in case of intestinal obstruction or dysphagia.

**Artificial hydration**

Dev R., Dalal S., Bruera E. et al. [7] showed that, at the end of life, patients reduce their fluid intake orally, due to causes such as: anorexia, nausea, vomiting, dysphagia, intestinal obstruction, cognitive disorders, general fragility. Dehydration can cause or aggravate pre-existing symptoms such as fatigue, sedation and delirium.

Heuberger R. A. [6] described different methods of providing artificial hydration.

- Hydration through a tube (enteral)*, if tubes are already placed, such as a nasogastric or duodenal tube, or a percutaneous endoscopic gastrostomy is performed.

- Intravenous hydration (parenteral)*

Peripheral or central catheterization is rarely recommended at the end of life, but may be considered if a catheter or venous line is already in place.

- Hypodermoclysis* involves the subcutaneous administration of fluids by means of a butterfly needle, the absorption being longer and lasting. The disadvantage of the method is the possibility of edema or infections.

- Rectal hydration (proctoclysis)* is indicated when resources for subcutaneous routes are limited but produces major discomfort.

**Question 4: Is artificial nutrition and hydration different from regular nutrition and hydration?**

Yes, providing nutrition and artificial hydration requires technical skills and has many serious risks. Professional skills and training are needed to insert the tube, to make decisions about how much and what type of nutrition to give and to monitor side effects. It doesn't provide the comfort that comes from the taste and texture of food and liquids [1].

Schwartz D. B. and collaborators [2] argued that the decision to give up artificial nutrition and hydration can lead to moral distress for caregivers and family. Beliefs and attitudes about nutrition and hydration at the end of life can be deeply rooted in religion, ethnicity and culture.

The oral route is commonly used by people to feed and hydrate. Artificial nutrition and hydration are considered medical treatment. Therefore, they are initiated in certain situations and medical conditions, being associated with different risks. Objectives and expectations of patients and families include: improved nutritional status, improved functional status and quality of life, increased survival rate, decreased risk of aspiration, and decreased risk of developing pressure ulcers (eschars).

Carter A. N. [4] noted that artificial nutrition and hydration do not necessarily bring much benefit, nor do they have a significant effect on malnutrition / cachexia. Their disadvantages are the loss of taste and perception of the texture of food, but also of the social and human contact that comes with oral feeding.

Ying I. [8] showed that, on the contrary, artificial support has many risks:

- Pain and other complications associated with tube placement (infection, bleeding);
- Increased risk of aspiration;
- Increased risk of pressure ulcers;
- Gastrointestinal symptoms (diarrhea, constipation, reflux);
- Liquid overload that can lead to pulmonary edema;
- May increase the perception of hunger.

Debourdeau P., Flori N., Vazquez L., et al. [9] noted that adult cancer patients represent a high percentage of all patients still receiving parenteral nutrition at the end of life. The starvation is perhaps one of the biggest fears that can encourage family or relatives to be in favor of parenteral nutrition.

Lembeck E.M. et al., [3] stated that it is difficult to determine whether a patient is dying of disease or starvation and that "it may be unethical to allow a patient to starve, but it may also be unethical to prolong suffering a patient".

The retrospective study of Debourdeau P. et al. [9] which included 1260 cancer patients receiving parenteral nutrition, showed that in 574 of cancer patients, parenteral nutrition was prescribed, and in 113 of them bacterial infections associated with its use were identified. Factors associated with the use of parenteral nutrition identified include: low body mass index,

severe malnutrition, antitumor treatment and longer periods of hospitalization.

**Question 5: What happens when artificial nutrition and hydration are used in terminal cancer patients?**

*Artificial nutrition and hydration will not bring the person back to a healthy state. They can even increase the suffering of dying patients who no longer have the ability or interest in eating food and drinking fluids. These can add a lot of discomfort to a dying person, i.e. bloating, swelling, cramping, diarrhea or difficulty breathing. There are ways to ensure comfort by treating dry lips and mouth, which brings extra comfort to a person at the end of life in patients with terminal cancer [1].*

Dev R. et al. [7] indicate that patients at the end of life often have anorexia causing cachexia. Cancer patients may develop mechanical obstruction of the digestive tract that prevents nutrition of any kind. Unlike other diseases, in cancer patients, cachexia is refractory to treatment. According to Fearon K., Strasser F., Anker S. D. et al. [10], "Cancerous cachexia is defined as a multifactorial syndrome characterized by a continuous loss of skeletal muscle mass (with or without loss of fat mass) which cannot be completely reversed with conventional nutritional aid and leads to progressive functional damage."

Vrânceanu A.R., Băcoanu G., Poroș V. et al. [11] presented the opinions of Romanian specialists regarding the particularities of metabolic changes induced by the presence of a tumor or by the oncological treatment. Malnutrition and loss of muscle mass occur frequently in cancer patients. They have a negative impact on their clinical evolution, due to inadequate food intake, reduced physical activity and catabolic metabolism.

In an article dedicated to the role of hydration at the end of life, Dalal S., Del Fabbro E., Bruera E. et al. [12] noted that decreased oral intake leads to depletion of intracellular or intravascular volume, or both, with decreased renal function. Drugs and metabolites may accumulate in the body, leading to fatigue, dizziness, myoclonus, sedation, and hallucinations. These symptoms further decrease the patient's ability to obtain/drink fluids. Changes in fluid balance can cause the patient to become delirious. The natural progression of delirium is towards coma and death.

Donea O., Dima P. [13] specified that the fluid requirements of a terminal patient are different from that of a healthy adult. "A simple calculation starting from the recommended requirement of 30 ml of water / kg of body shows us from the beginning that a healthy adult of 70 kg cannot have the same need of liquids as a cachectic patient of 40 kg."

Carter A.N. [4] emphasized that the goals of therapy for end-stage cancer patients should be directed at symptoms rather than reversing nutritional deficits. Furthermore, pleasure provided by the taste of favourite foods and the social benefits of attending family meals should outweigh caloric intake. Oral hydration in small amounts should be encouraged, as well as, care for the mucous membranes and dry mouth.

**Question 6: Is the refusal of artificial nutrition and hydration considered suicide?**

*No. Anyone has the right to refuse or interrupt a medical treatment. A person at the end of life dies, not by choice, but by disease. Refusing or stopping a medical treatment that can't restore health is not considered suicide [1].*

People at the end of life often lose interest in eating or drinking. This alerts families and relatives because they know that if you don't drink and eat you can die [5]. Dev R. et al. [7] pointed out that patients' families pleaded emotionally to get healthcare providers to intervene to help them. At some point a clear and consistent dialogue will be needed between healthcare providers and the family, to convince them of the need to discontinue these artificial measures.

Raijmakers, N. J., Clark, J. B., van Zuylen, L. et al. [14] explored relative's perspectives for declining patient's oral intake by the end of their lives. Relatives have generally given positive significance to oral intake:

- *Nutritional* - humans can't survive without food
- *Psychologically* - as long as the patient eats and drinks there is hope for the patient, and the relatives will not have feelings of guilt because they didn't feed him;
- *Social* - eating and/or drinking provides routine and is associated with the social context.

Schwartz D.B. et al. [2] stated that it is important to support the decision of the patient, if he decides to give up artificial support, although the family or relatives may not agree.

According to Goldstein N.E., Cohen L.M., Arnold R.M. et al. [15], in a 2012 survey, to which physicians responded, they recorded the erroneous views of families and their relatives in relation to the discontinuation of artificial nutrition and hydration. They misinterpreted this interruption as euthanasia.

**Question 7: What does the law say about artificial nutrition and hydration?**

*Legally, artificial nutrition and hydration is considered a medical treatment that can be refused at the end of life. If the patient can make decisions, the patient can tell his doctor what he wants. When the patients can no longer speak about their wishes, some states require strong evidence to show what those wishes are. If there is uncertainty or conflict about whether a person would like medical treatment, it will usually be continued [1].*

According to Schwartz D. B. et al. [2], patients themselves, family members, caregivers or a person legally designated by the patient may continue to seek artificial support due to fears of starvation, weight loss, malnutrition and dehydration. Gabriel M.S. and Tschanz J.A. [16] stated that the trajectory of the disease and the interventions performed should be taken into account, on the principle of doing no harm.

Discussions on artificial nutrition and hydration need to be addressed in a legal framework, taking into account the current legislation. In the U.S.A. there is informed consent, which includes the right of a competent person to refuse medical treatment. The law providing for informed consent in Romania is Law 95/2006.

The American Nurses Association [17] recognizes the moral and legal right of patients to determine what will be done with their person. This right exists whether we are talking about weighing the benefits, risks and options for treatment, or choosing to refuse a particular treatment through the informed consent process.

Schwartz D. B. [18] noted that the oncological patient should receive related medical and social services in accordance with his values, purposes and preferences and evidence-based practice. Patient decisions should be integrated into their care plan.

According to Quill, T. E., Ganzini, L., Truog R. D. et al. [19], patients with decision-making capacity but not legally

designated persons of patients may decide to voluntarily stop eating and drinking, with the intention of hastening death. The decision remains valid even if the patient loses his decision-making ability.

### Discussions

The review of the literature highlighted an obvious answer to the research question: *Is there a specific aspect of nutrition and hydration for patients with terminal cancer?* **Yes**, there is a specificity of nutrition and hydration of the patient with end-stage cancer. It consists mainly in their artificial character. The various practical, ethical and legal considerations related to their use must take account of this specificity.

### Conflicts of interest

The author reports no relevant conflict of interest.

### References

- National Hospice and Palliative Care Organization. Artificial Nutrition (Food) and Hydration (Fluids) at the End of Life. 2015 accessed on 07.01.2023. available at: [caringinfo@nhpco.org](mailto:caringinfo@nhpco.org)
- Schwartz D. B., Barrocas A., Annetta M. G. et al, Ethical Aspects of Artificially Administered Nutrition and Hydration: An ASPEN Position Paper, *Nutrition in Clinical Practice*. 2021; 36(2): 254–267. doi:10.1002/ncp.10633, accessed on 08.01.2023, available at: <https://aspenjournals.onlinelibrary.wiley.com/doi/10.1002/ncp.10633>
- Lembeck M. E., Pameijer C. R., Westcott A. M. et al, The Role of Intravenous Fluids and Enteral or Parenteral Nutrition in Patients with Life-limiting Illness. *The Medical Clinics of North America*. 2016; 100(5): 1131–1141. <https://doi.org/10.1016/j.mcna.2016.04.019>
- Carter A.N. To What Extent Does Clinically Assisted Nutrition and Hydration Have a Role in the Care of Dying People?, *Journal of Palliative Care*. 2020; 35(4): 209-216, accessed on 07.01.2023, available at: <https://journals.sagepub.com/doi/10.1177/0825859720907426>
- Van de Vathorst S. Artificial nutrition at the end of life: Ethical issues. *Best Practice & Research Clinical Gastroenterology*. 2014; 28(2): 247–253. doi:10.1016/j.bpg.2014.02.005. accessed on 06.01.2023. available at: [https://www.academia.edu/47243944/Artificial\\_nutrition\\_at\\_the\\_end\\_of\\_life\\_Ethical\\_issues](https://www.academia.edu/47243944/Artificial_nutrition_at_the_end_of_life_Ethical_issues)
- Heuberger R. A. Artificial Nutrition and Hydration at the End of Life. *Journal of Nutrition For the Elderly*. 2010; 29 (4): 347-385, DOI: 10.1080/01639366.2010.521020. accessed on 06.01.2023. available at: [https://www.academia.edu/76321719/Artificial\\_Nutrition\\_and\\_Hydration\\_at\\_the\\_End\\_of\\_Life](https://www.academia.edu/76321719/Artificial_Nutrition_and_Hydration_at_the_End_of_Life)
- Dev R., Dalal S., Bruera E. Is there a role for parenteral nutrition or hydration at the end of life?. *Current opinion in supportive and palliative care*. 2012; 6(3): 365-370, DOI:10.1097/SPC.0b013e328356ab4a.
- Ying I. Artificial nutrition and hydration in advanced dementia. *Can Fam Physician*. 2015; 61(3): 245-8, e125-8. PMID: 25767168; PMCID: PMC4369630, accessed on 08.01.2023, available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4369630/>
- Debourdeau P., Flori N., Vazquez L. et al, Non-compliance with end-of-life parenteral nutrition prescription recommendations: retrospective study of 1,260 cancer patients. *Annals of palliative medicine*. 2022; 11(11): 3417–3425, <https://doi.org/10.21037/apm-22-499>, accessed on 09.01.2023, available at: <https://apm.amegroups.com/article/view/104556/html>
- Fearon K, Strasser F., Anker S.D. et al, Definition and classification of cancer cachexia: an international consensus. *The Lancet Oncology*. 2011;12(5): 489–495 [https://doi.org/10.1016/S1470-2045\(10\)70218-7](https://doi.org/10.1016/S1470-2045(10)70218-7)
- Vrănceanu A.R, Băcoanu G., Poroch V. Hidratarea și nutriția parenterală la finalul vieții argumente pro și contra. 2018; p. 39 , In: *VOCI PENTRU CEI ÎNCĂTUȘAȚI DE SUFERINȚĂ* , A 19-a Conferință Națională de Îngrijiri Palliative Poiana Brașov, 18-20 octombrie 2018, accessed on 07.01.2023, available at: [https://www.anip.ro/media/2014/08/cartea-conferintei-2018\\_final1.pdf](https://www.anip.ro/media/2014/08/cartea-conferintei-2018_final1.pdf)
- Dalal S., Del Fabbro E., Bruera E. Is there a role for hydration at the end of life?, *Curr Opin Support Palliat Care*, 2009; 3(1): 72–78.
- Donea O., Dima P., Hidratarea parenterala a pacientului cu cancer in perioada terminala: da sau nu? *Medicina Interna* 2008, 3, pp: 59 – 64, accessed on 08.01.2023, available at: <http://www.medicina-interna.ro/articol.php?articol=108>
- Raijmakers N.J.H., Clark J.B., Zuylen, L., van Allan S.G., Van der Heide A., Bereaved relatives' perspectives of the patient's oral intake towards the end of life: a qualitative study, *Palliative Medicine*: 2013; 27(7): 665-672
- Goldstein N.E., Cohen L.M., Arnold R.M., Goy E., Arons S., Ganzini L. Prevalence of formal accusations of murder and euthanasia against physicians, *J Palliat Med*. 2012 Mar, 15(3): 334-339. doi: 10.1089/jpm.2011.0234. PMID: 22401355; PMCID: PMC3295854.
- Gabriel M.S., Tschanz J.A. Artificial nutrition and hydration. In: Ferrell B.R., Coyle N., Paice J.A. Oxford Textbook of Palliative Nursing. 4th ed. New York, NY: Oxford University Press; 2015, pp: 237-246.
- American Nurse Association Center for Ethics and Human Rights . Position Statement: Nutrition and Hydration at the End of Life. *Nursing World*. 2017. accessed on 08.01.2023. available at: [https://www.nursingworld.org/~4af0ed/globalassets/docs/ana/ethics/ps\\_nutrition-and-hydration-at-the-end-of-life\\_2017june7.pdf](https://www.nursingworld.org/~4af0ed/globalassets/docs/ana/ethics/ps_nutrition-and-hydration-at-the-end-of-life_2017june7.pdf)
- Schwartz D.B. Ethics in action column: applying dietetics practitioner's code of ethics to ethical decisions for withholding/withdrawing medically assisted nutrition and hydration, *J Acad Nutr Diet*. 2015; 115(3): 440-443, accessed on 09.01.2023, available at: [https://www.jandonline.org/article/S2212-2672\(15\)00005-2/fulltext](https://www.jandonline.org/article/S2212-2672(15)00005-2/fulltext)
- Quill, T. E., Ganzini L., Truog, R.D., Pope T.M. Voluntarily Stopping Eating and Drinking Among Patients With Serious Advanced Illness—Clinical, Ethical, and Legal Aspects". *JAMA Internal Medicine*. 2018; 178(1):123-127 doi:10.1001/jamainternmed.2017.6307