

# Supportive Care Interventions In Taste And Smell Alterations In Childhood Cancer And Hematopoietic Stem Cell Transplantation





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# Introduction



- ❑ Over the past few decades, great progress has been made in the survival rates of **childhood cancer**.
- ❑ As survival rates have improved, there has been an increased focus on **supportive care therapy**.

# Introduction...

- ❑ **Taste and smell changes (TSCs)** are common and may contribute to **malnutrition**.
- ❑ **Malnutrition** is often seen at the point of diagnosis **in childhood malignancy or may develop during the course of treatment**.
- ❑ **Malnutrition** is highly prevalent in cancer patients and an important predictor of **morbidity, mortality, treatment response, and toxicity**.

# Introduction...

- ❑ **Malnutrition** during treatment for childhood cancer not only has **substantial clinical implications**, but may also **adversely affect a child's quality of life**.
- ❑ Therefore, **nutrition is important** in childhood cancer patients.



# Introduction...

**Nutrition is a supportive-care modality** that has been associated with improved tolerance to chemotherapy, **improved survival**, **increased quality of life**, and **decreased risk of infection** in children undergoing anticancer therapy.



# Background and aim

Improvement in survival for children with cancer has been attributable to the provision of intensive therapies (*i.e.*, *high-dose chemo/radiotherapy and hematopoietic cell transplantation-HCT*)



# Background and aim...

**Multiple oral complaints develop following high-dose chemo/radiotherapy and hematopoietic cell transplantation (HCT) which can influence quality of life.**



# Background and aim...

Many pediatric oncology patients undergoing hematopoietic stem cell transplantation (HSCT) require nutritional support (NS) because of their inability to consume adequate caloric intake enough calories orally.



## Background and aim...

However, as a result, most children suffer and experience severe and distressing treatment-related symptoms such as **taste and smell alterations**, that can hamper quality of life of these patients by influencing their **appetite, body weight and psychological well-being**.



# Background and aim...

- ❑ **Change in taste** appeared to be closely associated with **dry mouth**.
- ❑ Patients appeared to have difficulty in differentiating sour and bitter, which had been more affected than salt and sweet





# Background and aim...

□ Beside the fact that **taste is essential for life** because it **regulates food intake**, taste also provides **hedonic pleasure from eating**.

□ The **taste perception** also **activates neuronal pathways**, leading to the **preparation for digestion, absorption, and storage of nutrients**.



# Background and aim...

The symptoms of taste impairment may vary depending on the cause.

- ❑ Anything that negatively affects either the physical make-up of the taste buds or their cells, saliva production, the nerve pathway, or brain can cause a taste disorder.
- ❑ Patients may experience a reduced ability to taste (**hypogeusia**), the distortion of taste (**dysgeusia**) and/or the total lack of taste (**ageusia**).

# Background and aim...

**A study on (N=66); Chemoterapy induced taste and smell changes in pediatric cancer patients in Turkey;**

**Demonstrated that ;**

- **84% (n=56) of patients had taste changes**
- **92% (n=61) had smell changes.**

# Background and aim...

There are several factors that may affect taste perception, including:

- 
- Infection,
  - Nerve diseases,
  - Tumors,
  - Radiation treatment,
  - Drugs,
  - Chemicals,
  - Head injury,
  - Zinc deficiency,
  - Dry mouth,
  - Poor oral hygiene.

# Background and aim...

Taste impairment may be caused not only by an altered threshold of taste and sensory pathway but also by various mental and physical disorders, including:

- Depression,
- Taste bud or mucosal lesions,
- Gum disease,
- Gastrointestinal diseases,
- Medication.

Therefore the symptoms of taste impairment may vary depending on the cause.

# Background and aim...

- ❑ In some patients, **taste and smell alterations** may continue well after their cancer treatment has been completed.
- ❑ Such disorders can **increase distress, reduce appetite** and contribute towards **poor nutritional status** in these patients.



# Background and aim...

- ❑ Since children have more nutritional requirements for growth and development, they are **more vulnerable to malnutrition**.
- ❑ **The incidence of malnutrition in pediatric oncology patients is between 6% and 50%.**



*Elena J. et al. Standards of nutritional care in pediatric oncology: Results from a nationwide survey on the standards of practice in pediatric oncology. a Children's Oncology Group study.(2005)*

## Background and aim...

Therefore, **nutrition is very important in children with cancer who have taste and smell alterations, in order to prevent the development of malnutrition.**

# Background and aim...

**The rapid increase of malnutrition after the start of treatment underlines the need to develop evidence-based and efficient methods to provide nutritional support for children with cancer.**

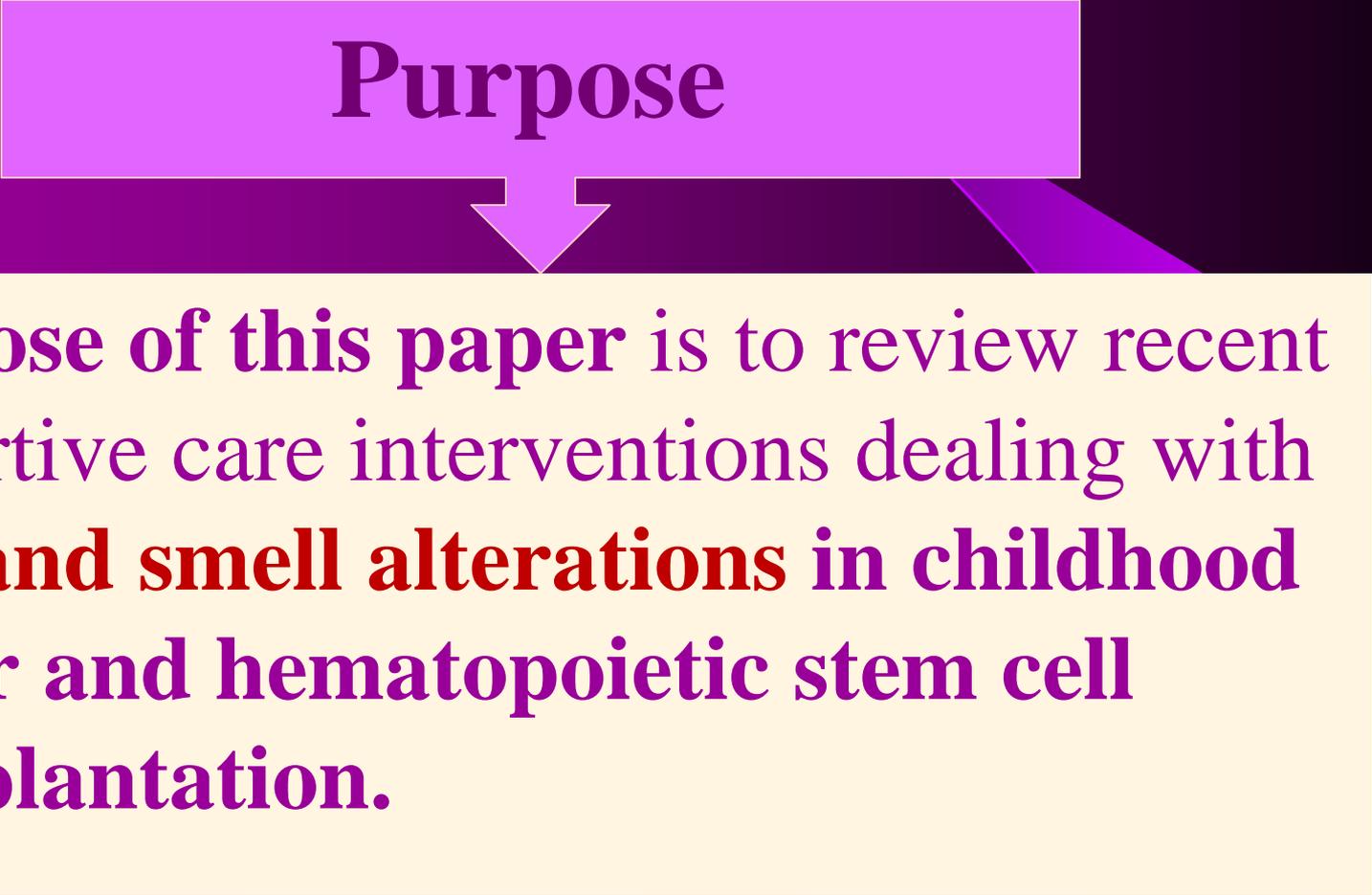
**Malnutrition due to  
hunger !!!**



**The shame of all  
mankind  
!!!?????**

# Background and aim...

## Purpose



**Purpose of this paper** is to review recent supportive care interventions dealing with **taste and smell alterations** in childhood cancer and hematopoietic stem cell transplantation.

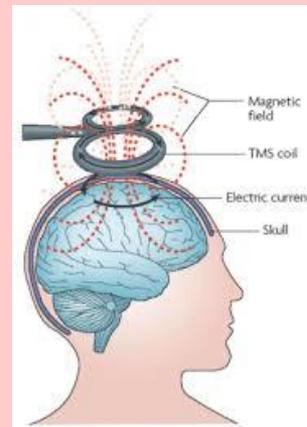
# Material and methods

- ❑ The research was conducted by searching **PubMed, Scopus, Cochrane, CINAHL,**
- ❑ with no restrictions related to the kind of publication, in a time span that includes the last 5 years
- ❑ and **20 studies** were included.

# Results

According to recent interventional studies, various treatment modalities have been used to improve taste disorders. These include :

- The use of zinc,
- Transcranial magnetic stimulation,
- Alpha lipoic acid,
- Ginkgo biloba,
- Pilocarpine.



# Results...

**Other than these interventional studies,  
many individual case reports  
on management of taste disorders like:**

- ❑ High dose biotin,
- ❑ Application of glutamate,
- ❑ Branched-chain amino acid-enriched supplementation (Aminofeel),
- ❑ Transient cooling of the mouth by using ice cubes, **are found in the literature.**

# Conclusion

**In order to increase the sensitivity of taste buds in treatment and care;**

- Mild spices and sweeteners,
- Nutritional aromas can be used,
- Excessive fluid intake,
- Attention to oral care,



# Conclusion

- Meats can be kept in sweet liquids,
- Easily digested protein sources fish, eggs and cheese, etc.,
- Frequent and small consumption,
- If possible the preparation of food should be done in another place.
- Cold foods instead of warm or hot foods,



# Conclusion

- Fluid intake should be increased in order to increase salivation,
- Soft lemon or fruit candy, chewing gum and lozenges,
- The ambient air should be humidified,
- Sour or tart food (lemonade), if the patient does not have mucositis,
- Artificial saliva, **is recommended.**

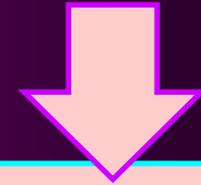


# Conclusion

**Based on the analyzed studies; additional to mentioned treatment and care interventions to prevent anorexia/ malnutrition risk which is caused by taste and smell changes, the following should be included:**

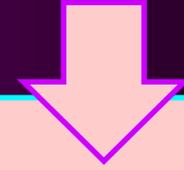


# Conclusion...

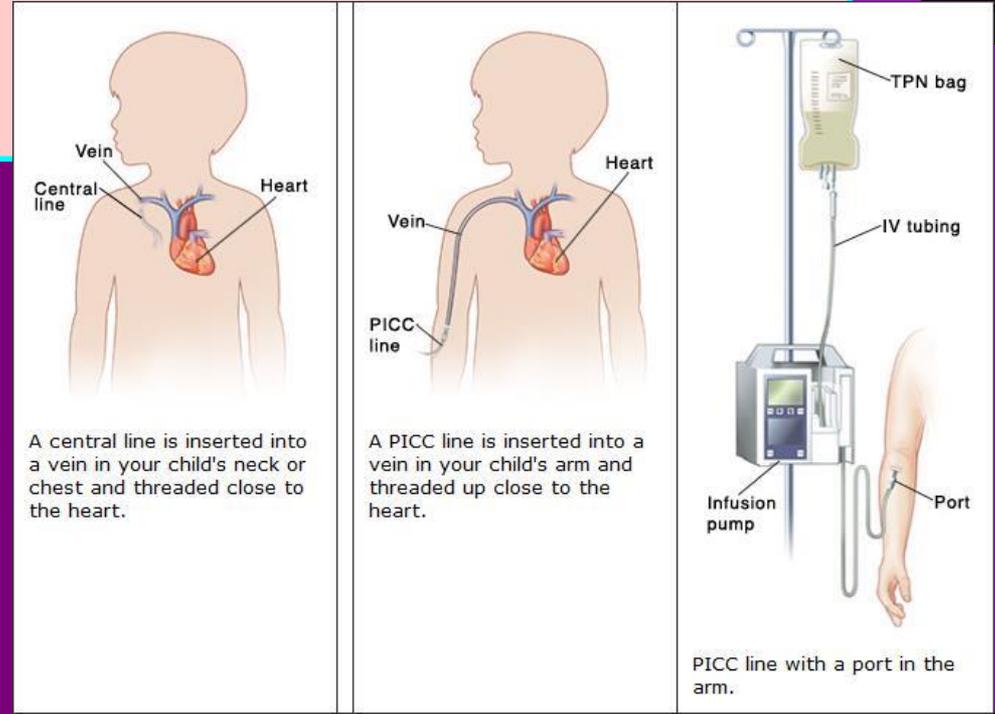


- ❑ **Identification of children who can be malnourished or at nutritional risk** must be achieved through improved approaches for risk stratification and classification- i.e. *Paediatric Yorkhill Malnutrition Score (PYMS); A.S.P.E.N. Guidelines for the Use of Parenteral and Enteral Nutrition; Protein energy malnutrition (PEM); WHO Z-score ; Body mass index (BMI), Weight for height (WFH), Arm anthropometry, etc.*

# Conclusion...



After the determining risk factors, various strategies (parenteral and enteral nutrition) have been demonstrated to reduce malnutrition, minimise side effects of treatment and improve survival.



# Conclusion...



- ❑ According to these factors, an individualized nutritional care plan may be initiated.
- ❑ **Absolutely desirable** is the multidisciplinary management including close communication and collaboration between the child, family, and the medical team to determine together the expectations for dietary support as well as to develop further objectives.

# Conclusion...



**In addition, providing psychosocial support to children with cancer and their families will help them cope with disease.**



# Conclusion...

Health care providers for children who receive cancer therapy, have the difficult task of skillfully combining the roles of scientist and clinician.

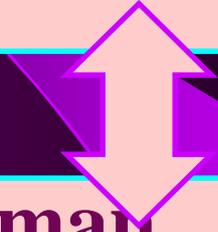


## Conclusion...



**These simultaneous roles require the health care providers to be a humanist practitioner who is skilled in treatment decision making, competent in clinical care practices,**

**AND**



**compassionate and empathic in human interactions while maintaining the ability to theoretically explain therapeutic and person-specific care outcomes.**

I wish all the children in the world a healthy life with full of love, peace and freedom...



*Thank you...*



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