

A.T. Still University

**Still ScholarWorks**

---

OT Student Capstones

Occupational Therapy Department

---

2022

## The Relationship Between Head and Neck Lymphedema and Dysphagia for Individuals with Oropharyngeal Cancer: A Retrospective Study

Madison A. Cherry  
A. T. Still University

Follow this and additional works at: <https://scholarworks.atsu.edu/ot-capstones>



Part of the [Occupational Therapy Commons](#)

---

### Recommended Citation

Cherry, Madison A., "The Relationship Between Head and Neck Lymphedema and Dysphagia for Individuals with Oropharyngeal Cancer: A Retrospective Study" (2022). *OT Student Capstones*. 58. <https://scholarworks.atsu.edu/ot-capstones/58>

This Capstone is brought to you for free and open access by the Occupational Therapy Department at Still ScholarWorks. It has been accepted for inclusion in OT Student Capstones by an authorized administrator of Still ScholarWorks. For more information, please contact [mohammadaslam@atsu.edu](mailto:mohammadaslam@atsu.edu).

## Background

**54,000** new cases of oropharyngeal cancer in 2022

**Up to 90%** of patients with HNC develop lymphedema

- Lymphedema, caused by the obstruction of lymphatic vessels, presents as soft-tissue swelling and localized accumulation of high-protein fluid.
- There are physical, psychological, and functional symptoms associated with lymphedema.
- About 60-75% of patients develop dysphagia, or difficulty swallowing, after radiation therapy.
- The relationship between head and neck lymphedema and dysphagia is understudied and only recently emerged in other literature.

## Methods

### Research Questions

- Does a relationship exist between head and neck lymphedema and dysphagia for individuals diagnosed with oropharyngeal cancer?
- Is there a relationship between the participation in lymphedema therapy and/ or speech therapy and the severity or incidence of dysphagia in individuals diagnosed with oropharyngeal cancer post radiation?

**Capstone Site**  
Banner Gateway MD Anderson Cancer Center

## Methods (cont.)

### Participants

95 individuals who received radiation treatment for oropharyngeal cancer

- 85 males & 10 females
- Mean age was 64.2

### Design

Retrospective chart review using data collection form on RedCap

### Statistical Analysis

SPSS Software 28.0.0.1 using ANOVA, Chi-Square, and Independent Samples T-Test

### Outcome Measures

Participation in Therapy

- Documentation of an evaluation and at least 1 treatment session

Dysphagia

- Functional Oral Intake Scale (FOIS)- 1 (nothing by mouth) to 7 (total oral diet)
- PEG Tube Placement and Removal
- Hospital Stay Incidence and Duration

Lymphedema

- MD Anderson Cancer Center Head and Neck Lymphedema (MDACC HNL) Scale- 0 (no visible edema) to 3 (irreversible; tissue changes)

## Results

78.9% of participants participated in lymphedema therapy and 80% participated in speech therapy (see Table 1).

Independent samples t-tests::

- Patients in speech therapy had significantly less negative changes in FOIS scores ( $M = -0.13$ ) compared to patients not in speech therapy ( $M = -1.32$ ),  $p = .008$ .
- Patients in lymphedema therapy had less negative changes in FOIS scores ( $M = -0.187$ ) compared to patients not in lymphedema therapy ( $M = -1.050$ ), although not statistically significant,  $p = .079$ .
- Patients in speech therapy had a significantly shorter average days hospitalized ( $M = 2.82$ ) compared to patients not in speech therapy ( $M = 6.84$ ),  $p < 0.001$ .

Chi-square tests results:

- Patients who participated in speech therapy were more likely to get their peg tube removed compared to participants not in speech therapy ( $N = 22$ ),  $p = .010$ .
- Patients with edema at the end of treatment indicated by MDACC HNL scale were more likely to get a PEG tube placed compared to patients with no visible edema ( $N = 56$ ),  $p = .033$ .
- Patients with edema at the end of treatment indicated by MDACC HNL scale were more likely to be admitted to the hospital during treatment compared to patients with no visible edema ( $N = 56$ ),  $p = .022$ .

ANOVA tests results:

- There was a significant difference in mean change in FOIS scores among patients in the no visible edema, soft visible edema, and firm pitting groups,  $p = 0.010$  (see Table 2). Post hoc tests could not be performed because one group had less than 2 participants.
- There was a significant difference in mean change in FOIS scores between participation in neither, one, or both therapies groups,  $p = 0.002$  (see Table 3). The no therapy group had a more negative change in FOIS scores compared to the one therapy and the both therapies group.
- There was a significant difference in lowest FOIS score among patients in the no visible edema, soft visible edema, and firm pitting groups,  $p = 0.035$  (see Table 4). The no visible edema group had a higher lowest FOIS score compared to the soft visible edema group.

**Table 1**

Participation in Therapy Frequency

Participation in Therapy	N	%
No Therapy	8	8.4%
Speech Therapy	76	80%
Lymphedema Therapy	75	78.9%
Both Speech and Lymphedema Therapy	64	67.3%

**Table 2**

ANOVA Head and Neck Lymphedema and Change in FOIS Score

MDACC HNL Score at Assessment	N	Mean Change in FOIS Score
No visible edema	11	0.000
Soft visible edema	67	-0.269
Firm pitting edema	1	-5.000
Total	79	-0.291
ANOVA	F= 4.91	$p = 0.010^*$

**Table 3**

ANOVA Participation in Therapy and Change in FOIS Score

Participation in Therapy	N	Mean Change in FOIS Score
No Therapy	8	-2.1250
Speech or Lymph Therapy	23	-0.5217
Both Speech and Lymph Therapy	64	-0.0938
Total	95	-0.3684
ANOVA	F= 6.52	$p = 0.002^*$

**Table 4**

ANOVA Head and Neck Lymphedema and Lowest FOIS Score

MDACC HNL Score at End of Treatment	N	Mean Lowest FOIS Score
No visible edema	11	5.64
Soft visible edema	43	4.07
Firm pitting edema	2	4.50
Total	56	4.39
ANOVA	F= 3.568	$p = 0.035^*$

## Discussion

The results suggest a significant relationship between head and neck lymphedema and dysphagia, between diet level and participation in therapy, and between the patient's lowest diet level during treatment and their severity of lymphedema for patients post radiation with oropharyngeal cancer at Banner Gateway MD Anderson. The results also suggest that Banner Gateway MD Anderson has a good lymphedema and speech therapy referral rate.

### Limitations

- Inconsistent outcome measures used by therapists
- Unable to control variables due to retrospective design
- Widely varied duration of therapy

### Implications for Occupational Therapy

- Eating is fundamental to social well-being and personal health. OTs can adapt environments, promote safe eating habits, and provide family education.
- Being aware of potential relationship between lymphedema and dysphagia with patients.
- Recommending speech therapy as appropriate.
- Adopting universal outcome measures at facilities to encourage research.
- Future research is warranted to confirm the results from this study.

## Acknowledgments

Katherine Jones, MA, OTR/L, CLT-LANA, Bernard Muriithi, PhD, OTR/L, Leah Mackie, MSLP, SLP-CCC, and Curt Bay, PhD

## References

See provided references list.