



Do MDADI Scores Associate with Symptoms Beyond Dysphagia? A Longitudinal Prospective Registry Analysis

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Introduction

The MD Anderson Dysphagia Inventory (MDADI) is a patient-reported outcome (PRO) questionnaire that has been widely adopted as a primary endpoint for swallowing outcomes in clinical research. The MDASI-HN is a multi-symptom PRO that measures the severity and impact of swallow and non-swallowing items on daily function. Various cooperative group trials have implemented MDADI scores of <60 to reflect functional failure as a co-primary endpoint. For this reason, it is important to understand the symptom profile associated with MDADI scores (continuous and dichotomized) and whether MDADI reflects a broader symptom profile beyond swallowing.

Purpose

The purpose of this secondary analysis was to examine symptoms (per the MDASI-HN) associated with MDADI scores before and after treatment for low-to-intermediate risk oropharyngeal cancer (OPC) 12 months after treatment.

Methods

257 patients with previously untreated HPV/P16+ T1-T3, N0-2b, and N0-1 (AJCC VII, VIII) low-to-intermediate risk squamous cell carcinoma of the oropharynx and were sampled from a prospective registry (enrolled between 2015-2018; see Table 1). The following patient-reported outcomes (PROs) were prospectively collected at baseline and 12 months after primary treatment:

- MD Anderson Symptom Inventory for Head and Neck Cancer (MDASI-HN)¹;
- MD Anderson Dysphagia Symptom Inventory (MDADI) score²:
 - Composite score range from 20 (poor swallow function) to 100 (optimal swallow function)
 - Dichotomized scores: composite scores of <60 reflect functional failure

Strength of association for each MDASI-HN symptom item and MDADI scores (composite and dichotomized <60) were assessed using Spearman’s correlation with Bonferroni correction for multiple comparisons (p<0.001) and interpreted by Pearson’s standards.

Table 1. Patient, Tumor, and Initial Treatment Characteristics

Variable	Value	All Patients n=257		Primary TORS n=75		Primary RT n=182		p-value
		n	%	n	%	n	%	
Age at primary treatment start	Mean(SD)	59	9	58	10	59	9	0.32
Sex	Female	35	14%	10	13%	25	14%	0.55
	Male	222	86%	65	87%	157	86%	
Primary tumor site	Tonsil	135	53%	38	51%	97	53%	0.51
	BOT	116	45%	34	45%	82	45%	
	GPS	6	2%	3	4%	3	2%	
T-classification of primary, 7th ed	1	124	48%	40	53%	84	46%	0.50
	2	126	49%	34	45%	92	51%	
	3	7	3%	1	1%	6	3%	
N-classification of primary, 7th ed	N0	50	19%	31	41%	19	10%	<0.001
	N1	35	14%	15	20%	20	11%	
	N2a	19	7%	4	5%	15	8%	
	N2b	153	60%	25	33%	128	70%	
Induction chemotherapy	Yes	21	8%	4	5%	17	9%	0.21
Radiation therapy	Yes	219	85%	37	49%	182	100%	<0.001
CRT	Yes	162	63%	15	20%	147	81%	<0.001
RT dose (Gy)	(min, max)	68	(50, 70)	60	(50, 70)	70	(60, 70)	<0.001
RT Laterality	Unilateral	54	21%	17	23%	37	20%	<0.001
	Bilateral	164	64%	19	25%	145	80%	

Results

Patients reported significantly worse impairment on the MDADI at 12 months post-treatment (mean±SD: 85.7±13.3) relative to baseline (91.3±10.4, p<0.001). MDASI-HN scores were significantly different at baseline and 12 months (mean±SD: 0.5±1; 1±1.2, p<0.001). MDADI scores <60 had significantly greater MDASI-HN symptom prevalence at 12 months than at baseline (p=0.01, see Fig 2). Average MDADI scores had significant (weak) correlations with MDASI-HN at baseline (r_s=-0.3, p<0.001) and significantly strong negative correlations at 12months (r_s=-0.65, p<0.001).

When correlated with individual MDASI-symptom components, **baseline MDADI** scores (composite and dichotomized) were significantly negatively (weak) correlated chew/swallowing & activity (r_s= -0.32, p<0.001, respectively). At **12 months, MDADI** scores were significantly negatively correlated (moderate to strong) with multiple (75%, 21/28) MDASI components, see Fig 1).

MDASI Components and MDADI Composite Score Correlations

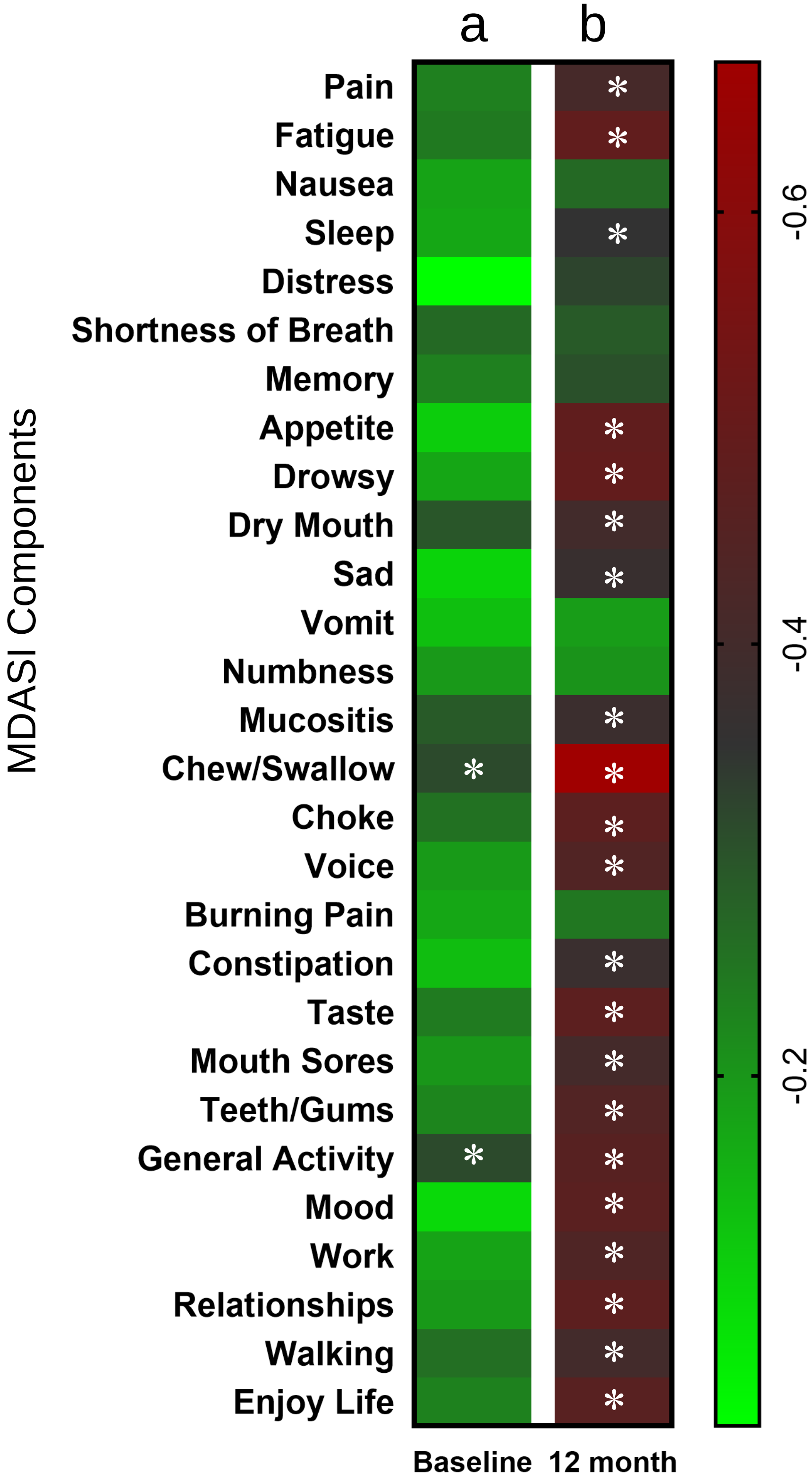


Figure 1. Spearman’s correlations (r_s) for all MDASI-HN & MDASI-Interference components with MDADI composite scores at (a) baseline and (b)12 months. Red colored cells depict stronger, negative correlations between MDASI and MDADI.
*indicates a significant negative correlation, p<0.001.

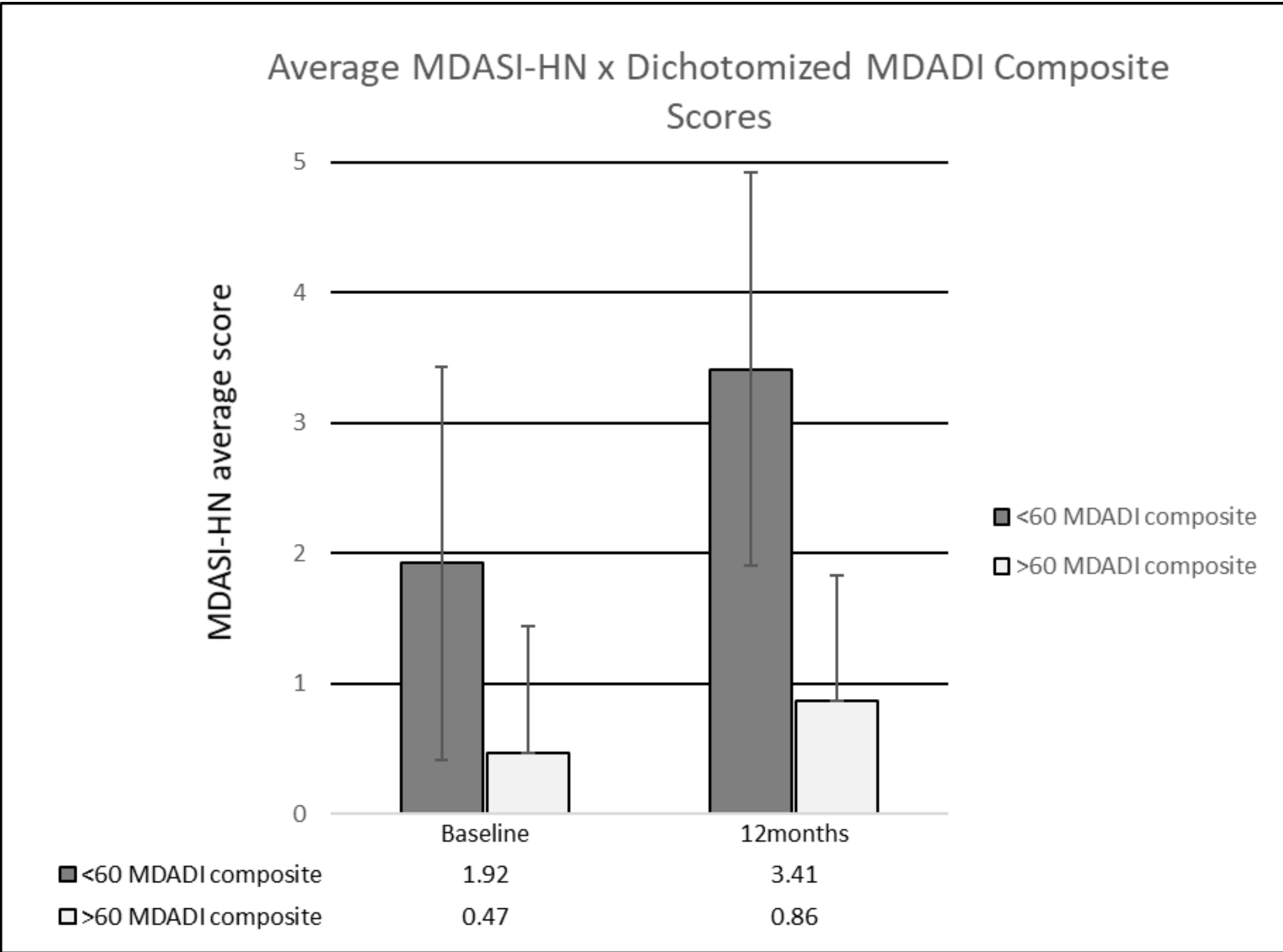


Figure 2. Mean MDASI-HN score as a function of MDADI composite score.

Conclusions

Symptoms associated with MDADI evolve over the first year after primary treatment for low-to-intermediate risk OPC. At baseline, MDADI weakly associates with concerns regarding general activity and chewing and swallow symptoms. As MDADI composite scores decline at 12 months, an increase in the symptom burden associated with head and neck cancer arise. MDADI was also associated with a broader spectrum of symptoms beyond dysphagia at 12 months such as psychosocial symptoms and interference of daily life.

The data suggest swallowing may not be the sole driver of swallow-related quality of life, and the MDADI represents a wider toxicity profile as it relates to eating and swallowing.

References/Acknowledgements

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- Amit et al., Oral Oncology, 2019.

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