J Chin Med Assoc

ORIGINAL ARTICLE

Effectiveness of early palliative care in patients with head and neck cancer in Taiwan

Tzu-Chun Chen[a,b], Shih-Hao Wang[c,d], Cho-Ming Ho[e], Hwan-Chung Lin[e], Chun-Liang Tung[e], Chih-Chia Chang[f], Ching-Fang Tsai[g], Tsung-Hsien Chen[h], Yi-Chun Fang[a], Wei-Ting Lin[e], Yu-Ting Lee[i], Yu-Sung Chang[c], Ming-Yang Lee[b,i,*]

[a]Cancer Center, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [b]Min-Hwei Junior College of Health Care Management, Tainan, Taiwan, ROC; [c]Department of Otolaryngology, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [d]Department of otolaryngology, St. Martin De Porres Hospital, Chiayi, Taiwan, ROC; [e]Department of Oral and Maxillofacial Surgery, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [f]Department of Radiation Therapy and Oncology, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [g]Department of Medical Research, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [h]Department of Internal Medicine, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC; [i]Department of Internal Medicine, Division of Hemato-Oncology, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan, ROC

Abstract

Background: Early palliative care (EPC) benefits some cancers, but its clinical outcomes differ depending on patients' racial and ethnic disparities, and customs. To determine whether EPC improves symptoms, emotional distress, and quality of life among Taiwanese patients with early or advanced-stage head and neck cancer (HNC).

Methods: Based on participants' pathological stages, they were categorized as having early and advanced-stage HNC. Those willing and unwilling to undergo EPC were assigned to the EPC and standard groups, respectively. Their daily cancer-related symptoms were assessed using the Distress Thermometer (DT) and MD Anderson Symptom Inventory (MDASI), whose scores' concurrent validity was evaluated using the European Organization for Research and Treatment of Core Quality of Life (EORTC-QLQ-C30) and Head and Neck 35 (EORTC-QLQ-H&N35) questionnaires.

Results: Patients (n = 93) diagnosed with HNC at Taiwan's Chia-Yi Christian Hospital from November 2020 to October 2022 were recruited. The patients voluntarily split into two groups: EPC groups and standard groups (23 and 11 in early-stage; 46 and 13 in advanced-stage, respectively). DT assessment showed significant emotional distress improvements for all patients with HNC who received EPC. The EORTC-QLQ-C30 questionnaire indicated that, compared to standard interventions, EPC groups significantly improved the quality of life and some symptoms for both early and advanced-stage HNC patients. However, the EORTC-QLQ-H&N35 questionnaire found no significant difference between the two groups. Furthermore, advanced-stage patients' anticancer treatment completion rates with EPC and standard interventions were 95.35% and 75%, respectively.

Conclusion: EPC improves symptoms, emotional distress, quality of life, and treatment completion rates in Taiwanese patients with early or advanced-stage HNC. Nonetheless, further extensive clinical studies are required for validation.

Keywords: Early/advanced-stage; Early palliative care; Head and neck cancer; Quality of life; Treatment completion rates

1. INTRODUCTION

In 2018, head and neck cancer (HNC) was the seventh most common cancer worldwide.[1] In the United States, it accounts for 3% of all cancers and over 1.5% of cancer deaths.[2] In Taiwan, it ranked seventh in incidence and fifth in mortality in 2020.[3] It is approximately 2 to 4 times more common in men than in women worldwide and increases with age, especially after the age of 50.[4,5] However, according to the 2021 Cancer Registry Annual Report in Taiwan, the incidence rate of oral cavity, oropharynx, hypopharynx, and lip cancer in men is about 8 to 10 times higher than in women.[6] Currently, its treatment plan helps determine the expected treatment path. Its patients mainly receive surgical treatment in the early stages, and radiotherapy and chemotherapy in advanced stages. When patients receive anticancer treatments, the side effects—severe mucositis, difficulty in opening the mouth, dry mouth, myelosuppression, pain, vomiting, malnutrition, and infection—that commonly occur can cause short, long, or even lifelong effects, depending on the type of treatment.

These patients may have difficulty in swallowing because of the disease, its treatment, or both, which can cause a significant burden of morbidity. Besides physical symptoms, they often have personal behavioral problems, including tobacco and alcohol dependence and complex psychosocial problems,[7,8] which can affect their quality of life (QoL) and even cause them to refuse/

*Address correspondence: Dr. Ming-Yang Lee, Division of Hemato-Oncology, Department of Internal Medicine, Ditmanson Medical Foundation Chia-Yi Christian Hospital, 539, Zhongxiao Road, Chiayi 600, Taiwan, ROC. E-mail address: cych05825@gmail.com (M.-Y. Lee).

Conflicts of interest: The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

Journal of Chinese Medical Association. (2024) 87: 643-652.

Received February 2, 2024; accepted April 4, 2024.

doi: 10.1097/JCMA.0000000000001104

interrupt treatment, thereby affecting its effectiveness, and their survival. While palliative care improves the QoL of patients and their families, facing disease-related challenges, whether physical, psychological, social, or spiritual, it is well known that it is particularly appropriate for patients with HNCs.[7]

Early palliative care (EPC) should be initiated early (ie, within 8 weeks of diagnosis).[9,10] According to some treatment guidelines, patients with early or advanced-stage cancers should receive high-quality palliative care provided by the primary oncology team during initial diagnosis. Highly symptomatic patients should be referred to a co-care team for interdisciplinary palliative care.[11–13] Studies in Western countries[14–20] reveal that EPC improves advanced-stage cancer patients' QoL, physical symptoms, communication with their physicians, emotional distress, patient satisfaction, end-of-life care quality, survival rates, and benefits caregivers.[14,15,17,21–24] However, evidence shows that racial and ethnic disparities exist in accessing high-quality palliative or EPC, and clinical outcomes, such as symptom management and communication.[25–27] In Eastern countries, its effectiveness and benefits among patients with early-stage HNCs are unclear. This study aimed to investigate the effects of EPC in improving symptoms, emotional distress, QoL, depressive symptoms, and anticancer treatment compliance in Taiwanese patients with early or advanced-stage HNCs.

2. METHODS

2.1. Study population

The study was approved by the Ditmanson Medical Foundation Chia-Yi Christian Hospital's ethics committee (approval number: CYCH-IRB-2020070). Those enrolled had to meet the following criteria: (a) stages I to IV HNC (within 8 weeks of a physician's diagnosis based on radiological/ histological information), (b) aged over 20 years and willing to cooperate, (c) having a HNC treatment plan, and (d) literate/able to communicate in Chinese and/or Taiwanese, and understand the questionnaire's contents. Patients clinically diagnosed as comatose, having mood disorders/psychotic illness, or too weak/unwell to complete the survey, were excluded.

There are 393 patients diagnosed and treated with HNC at Taiwan's Chia-Yi Christian Hospital from November 2020 to October 2022. We introduced this study to them and 93 patients agree to join this study. Most of 300 patients who refuse to joint this study due to they felt current multidisciplinary cancer treatments were satisfied and enough. Another reason they refuse to joint this study was impatient to complete four Multiple-symptom assessment tools (The Taiwan version of the MD Anderson Symptom Inventory [MDASI-T], The Chinese version of the Distress Thermometer [DT], The Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 [EORTC QLQ-C30], and The Taiwan Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Head and Neck 35 [EORTC QLQ-HN35]) in different four times.

2.2. Study design and EPC intervention

The researcher explained the study's content, purpose, and interventions to those meeting the acceptance criteria. After obtaining their consent and signature on the consent form, the oncology case manager, attending physician and/or EPC physician assessed their symptoms. The participants who were willing to receive EPC were assigned to the EPC group, and those unwilling were used as the standard group. Each group was subdivided into early (stages I-II) and advanced (stages III-IV), according to the physician's diagnosis. The questionnaires were simultaneously administered four times to both groups: T0: before the EPC intervention; T1: a month after the intervention; T2: 3 months after the intervention; and T3: 12 months after T0 (Fig. 1).

2.3. EPC intervention

Oncology case managers and EPC physicians must complete an EPC education and training course. The team that assists in

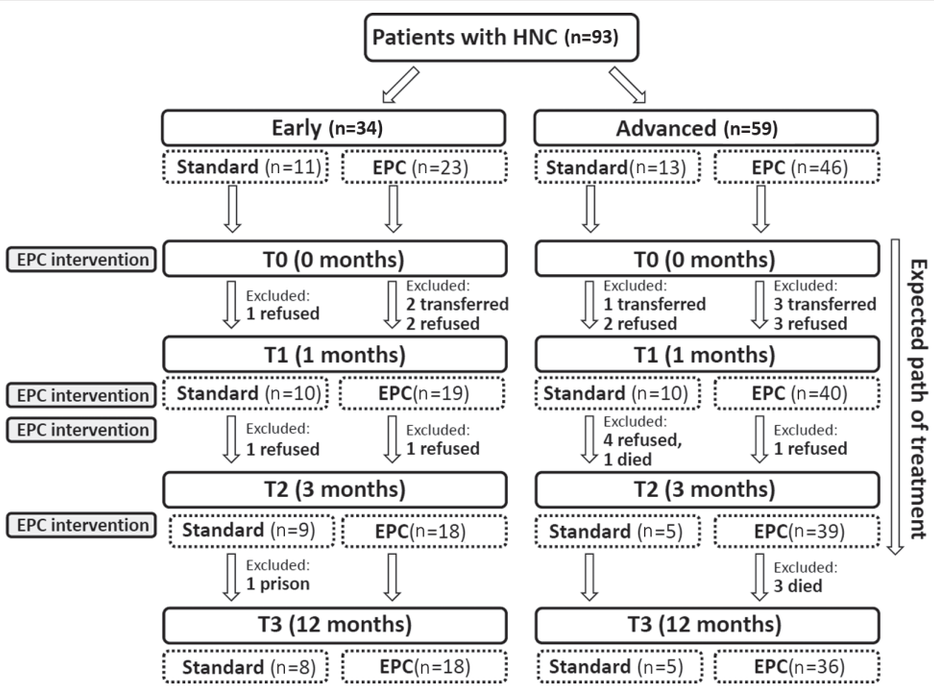

Fig. 1 Diagram displaying cohort recruitment and status of patients receiving EPC or standard at baseline, 1 mo (T1), 3 mo (T2), and 12 mo (T3). EPC = early palliative care; HNC = head and neck cancer.

EPC includes clinical psychologists, social workers, nutritionists, rehabilitation therapists, pharmacists, religious teachers, hospice specialists, psychiatrists, medical oncologists, and surgical oncologists.

The oncology case manager visits each newly diagnosed HNC patient and provides relevant assessment and health education in nursing, nutrition, rehabilitation, and other aspects. The service includes patients in the EPC and standard groups. In the standard group, the patient's attending physician evaluates whether it is necessary to consult relevant medical departments for multispecialty team treatment based on the patient's condition assessment.

The original oncology team routinely questions patients about their symptoms and discomfort. Physicians tend to rely on their preferred habits or medical practices during these inquiries. As a result, there may be fewer questions compared to the "Consultation reconfirmation form." For patients in the EPC group, in addition to the patient's primary physician assessing the patient's needs, another fully trained EPC physician conducts a systematic assessment of the patient's condition. To avoid missing clinical assessments, EPC physicians must perform individual assessments based on the "Consultation reconfirmation form" including troubles related to cancer diagnosis and treatment; pain condition; emotional problems; gastrointestinal problems, respiratory problems, neurological problems, dermatological problems, and other clinical problems; nutrition, economics, spirituality, and other issues (Supplementary Fig. S1, http://links.lww.com/JCMA/A255). Based on the results of the assessment, the EPC physician needs to communicate with the original care team what items require ongoing monitoring. If treatment is necessary, the EPC physician can directly administer it or refer it to the original treatment team. If the assessment results require the assistance team described above, the EPC physician or the original treatment team can initiate a consultation mechanism. The oncology case manager and EPC physician establish goals and timelines for tracking the effectiveness of the patient issues listed above and engage in proactive tracking and follow-up (every 4 weeks over a 12-month period) (Fig. 1). If the participants rejected the questionnaire's evaluation, subsequent EPC was discontinued (stop follow-up). The EPC will ask questions sequentially, following the "Consultation reconfirmation form". If probed further, the patient will elaborate on their discomfort or consider if the symptoms queried by the doctor persist. This process aids the doctor in understanding the patient's condition and potentially adjusting the medication.

2.4. Multiple-symptom assessment tools

2.4.1. The Taiwan version of the MD Anderson Symptom Inventory

It is reliable and valid, and mainly measures the severity of Taiwanese patients' cancer-related symptoms and their interference with daily life. The Cronbach's α was 0.89 and 0.94 for symptom severity and interference items, respectively; whereas test-retest reliability was 0.97 and 0.96 for the severity and interference composite scores, respectively.[28]

2.4.2. The Chinese version of the DT

It has been tested (Supplementary Fig. S2, http://links.lww.com/JCMA/A255) by psychiatrists using four cut-off points and the Hospital Anxiety and Depression Scale, and the results showed that its sensitivity for anxiety and depression screening was 98% with a specificity of 73%.[29] It is a short, quick, and easy-to-interpret self-reporting tool developed by the National Comprehensive Cancer Network for psychological and emotional screening of cancer patients.[30] To avoid excessive referrals owing to a lack of psychologists in the research field, a score of $\geqq 5$ is taken as the cut-off point, and subsequent referrals to psychologists or other EPC team members is carried out under the Patient Problem List case-by-case.

2.4.3. The Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30

Its version 3 was used to assess the physical health and QoL of patients with HNC. Its 30 items cover 15 domains: five function scales, nine symptom scales/items, and one global health/QoL scale.[31] Sociodemographic data were analyzed descriptively. The calculated mean scores of the 15 EORTC QLQ-C30 subscales were transformed to a range between 0 and 100.[32] A 10-point difference on a scale of 0 to 100 was considered clinically significant, and a greater than 20-point difference was considered a very significant change according to Osoba et al's[33] recommendations. Thus, high scores on the functional, global health status/QoL, and symptom scale/item represent high/healthy levels of functioning, QoL, and symptomatology/problems, respectively.

2.4.4. The Taiwan Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Head and Neck 35

This 35-item module[34] incorporates seven multiple-item scales that assess symptoms of pain in the head and neck, swallowing ability, senses (taste/smell), speech, social eating, social contact, and sexuality; and six single-item scales, which survey the presence of symptomatic problems, associated with teeth, mouth opening, dry mouth, sticky saliva, coughing, and feeling ill. All the EORTC QLQ-HN35 scales range from 0 to 100, while 10-point differences are clinically relevant.[35] A high score on the symptom scale indicates the presence of symptoms or problems. Osoba et al[33] recommend considering a 10-point difference on a scale of 0 to 100 as clinically significant.

2.5. Statistical analysis

All analyses were performed using SPSS version 28.0 (SPSS Inc., Chicago, IL). The variables analyzed included basic demographic data, diagnosis, treatment modality, family social support, and daily living functions. The Mann-Whitney *U* test and Friedman test were used for nonparametric two-way analysis of variance (ANOVA) for ratio-related samples. It was used to test differences between the EPC and standard groups in terms of symptoms, psychological distress, and pretest scores on QoL. A paired *t* test was performed to compare the differences in QoL between T1, T2, T3, and T3 vs T0.

The generalized estimating equation was used to examine whether the physiological symptoms, emotional distress, and QoL of the EPC and standard groups were different postintervention, and after controlling for interference factors, for exploring differences between both groups, including the effect of improving physical symptoms, emotional distress, and QoL after a period of 1, 3, and 12 months of the intervention. $p < 0.05$ was considered statistically significant.

3. RESULTS

3.1. Participants' characteristics

Patients were randomly assigned to two groups according to their preferences. Those who were willing to join became part of the EPC group, while the others were assigned to the control group. Early-stage and advanced-stage HNC are discussed separately, given that different treatment methods yield different side effects and symptoms for each stage.

Ninety-three HNC patients were recruited and divided into the EPC (n = 69; early n = 23, advanced n = 46) and standard groups (n = 24; early n = 11, advanced n = 13). Their demographic and clinical characteristics are shown in Table 1. Early-stage HNC participants' median age was 57 and 52 years in the standard and EPC groups, respectively, whereas advanced-stage participants' median age was 54 years in both the groups. The standard and EPC groups' participants were mostly male (100% vs 95.7%, $p = 1.00$, and 92.3% vs 91.3%, $p = 1.00$, respectively). Among early-stage HNC participants, in the standard group 90.9% had oral cancer, whereas in the EPC group 73.9%, 8.7%, 13%, and 4.3% had oral, oropharyngeal, hypopharyngeal, and nasopharyngeal carcinoma cancers, respectively. In the standard group, 100% underwent curative surgery, whereas in the EPC group, 78.3% underwent curative surgery, 8.7% radiotherapy, 8.7% chemotherapy, and 4.3% other surgeries. Among advanced-stage participants, in the standard group, 84.6% had oral cancer, whereas in the EPC group, 50%, 13%, 15.2%, and 21.7% had oral, oropharyngeal, hypopharyngeal, and nasopharyngeal carcinoma

Table 1

Patients characteristic

	Early (n = 34)					Advanced (n = 59)				
	Standard		EPC			Standard		EPC		
	No.	%	No.	%	*p*	No.	%	No.	%	*p*
Number	11		23			13		46		
Age-median (Q1-Q3)[a]	57 (47-61)		52 (46-62)		0.640	54 (49-58)		54 (46-61)		0.754
Sex										
Male	11	100.0	22	95.7	1.000	12	92.3	42	91.3	1.000
Female	0	0.0	1	4.3		1	7.7	4	8.7	
Education										
Junior high school or below	4	36.4	12	52.2	0.638	4	30.8	30	65.2	0.019
High school	7	63.6	10	43.5		8	61.5	16	34.8	
College or above	0	0.0	1	4.3		1	7.7	0	0	
Current marital status										
Single	3	27.3	7	30.4	1.000	3	23.1	19	41.3	0.334
Married	8	72.7	16	69.6		10	76.9	27	58.7	
Religion										
No	0	0.0	9	39.1	0.002	3	23.1	13	28.3	0.239
Buddhism	4	36.4	1	4.3		2	15.4	1	2.2	
Diffused religion	4	36.4	2	8.7		1	7.7	9	19.6	
Christianity	0	0.0	0	0		1	7.7	1	2.2	
Taoism	3	27.3	11	47.8		6	46.2	22	47.8	
Full-time/ part-time jobs										
No	1	9.1	6	26.1	0.384	5	38.5	13	28.3	0.509
Yes	10	90.9	17	73.9		8	61.5	33	71.7	
Economic status (per month)										
<30,000 NTD	6	54.5	12	52.2	1.000	7	53.8	28	60.9	0.497
30,000-50,000 NTD	3	27.3	7	30.4		4	30.8	15	32.6	
60,000-90,000 NTD	2	18.2	4	17.4		2	15.4	2	4.3	
>100,000 NTD	0	0.0	0	0.0		0	0.0	1	2.2	
Caregivers support										
Alive alone	1	9.1	0	0.0	0.324	1	7.7	6	13.0	1.000
Caregivers care	10	90.9	23	100.0		12	92.3	40	87.0	
Diagnosis										
Oral cancer	10	90.9	17	73.9	0.869	11	84.6	23	50	0.212
Oropharyngeal cancer	0	0.0	2	8.7		1	7.7	6	13	
Hypopharyngeal cancer	1	9.1	3	13		0	0.0	7	15.2	
Nasopharyngeal carcinoma	0	0.0	1	4.3		1	7.7	10	21.7	
Treatment										
Curative surgery	11	100.0	18	78.3	0.580	3	23.1	14	30.4	0.156
Chemotherapy	0	0.0	0	0		7	53.8	13	28.3	
Radiotherapy	0	0.0	2	8.7		0	0.0	0	0.0	
Radiotherapy with Chemotherapy	0	0.0	2	8.7		2	15.4	18	39.1	
Other	0	0.0	1	4.3		1	7.7	1	2.2	
Performance status										
ECOG: 0	8	72.7	20	87.0	0..363	11	84.6	28	60.9	0.243
ECOG: 1	3	27.3	3	13.0		1	7.7	15	32.6	
ECOG: 2	0	0.0	0	0.0		1	7.7	2	4.3	
ECOG: 3	0	0.0	0	0.0		0	0.0	1	2.2	

ECOG = eastern cooperative oncology group; EPC = early palliative care; TWD = new taiwan dollar .

[a]Age was tested by Mann-Whitney *U* test.

cancers, respectively. In the standard group, 53.8%, 23.1%, 15.4%, received chemotherapy, curative surgery, and radiotherapy with chemotherapy, respectively, while in the EPC group, 39.1%, 30.4%, and 28.3% received radiotherapy with chemotherapy, curative surgery, and chemotherapy, respectively (Table 1).

EPC doctors conduct individual assessments based on the "Consultation reconfirmation form". The results show that 68.9% were troubles related to cancer diagnosis and treatment; 31.9% were pain condition; 4.9% were emotional problems; 18.7% were gastrointestinal problems, respiratory problems, neurological problems, dermatological problems, and other clinical problems; nutritional, economic, spiritual, and other issues 14.5%. After relevant treatments were given, the consultation improvements were evaluated according to MDASI-T, DT, EORTC QLQ-C30, and EORTC QLQ-HN35.

3.2. MDASI-T single symptom and interference severity item scores

Tables 2 and 3 show the evolution of its scores over time for the two groups, and the number of forms completed at each time point. Among early-stage HNC patients who underwent EPC, the scores of the DT items gradually decreased with the time of EPC treatment (4 [2-5], 3 [2-4], 2.5 [1-5], and 1.5 [0-3], p = 0.002). The symptom scores of the EPC group reduced significantly for pain (p = 0.014), nausea (p = 0.033), and distress (p = 0.047), while those of the standard group were reduced significantly for dry mouth (p = 0.048) (Table 2). For patients with early-stage HNC, the "Consultation reconfirmation form" primarily addresses unresolved issues. The form assesses items such as pain, nausea, and discomfort, but it does not include symptoms like dry mouth. Despite this exclusion, patients' symptoms have shown significant improvement compared to the standard group.

The advanced-stage HNC patients accepted EPC, and their scores for the DT items gradually decreased with the time of EPC treatment (5 [2-6], 3.5 [2-5], 3 [2-5], and 1 [0-3.5], p = 0.002). While the symptom scores of the EPC group reduced significantly for pain (p = 0.024), fatigue (p < 0.001), shortness of breath (p = 0.021), dry mouth (p = 0.018), vomiting (p = 0.042), and interference with work (p = 0.024), the standard group's scores reduced significantly for interference with general activity (p = 0.04) (Table 3). Besides, advanced-stage HNC patients had significantly lower lack of appetite scores in both groups (p = 0.029 and p = 0.006).

3.3. Physical health with HNC

Global health status/QoL (p = 0.028), social functioning (p = 0.01), and nausea and vomiting (p = 0.012) in the EORTC-QLQ-C30 significantly improved among early-stage HNC participants who received EPC (Table 4). Besides, in patients with early-stage HNC, pain improved regardless of whether they received EPC. At T2 (3 months), the median for both groups dropped to 0, a change that was statistically significant (p = 0.035 and p = 0.016, respectively) (Table 4). According to the recommendation of Osoba et al,[33] at T3 of the Global health status/QoL2 index, the EPC intervention has a difference of more than 10 points compared with no EPC, which is considered a clinically meaningful improvement.

Advanced-stage HNC patients' global health status/QoL 2 (p < 0.001), emotional functioning (p = 0.006), cognitive functioning (p = 0.006), fatigue (p < 0.001), insomnia (p = 0.033), appetite loss (p = 0.018), diarrhea (p = 0.027), and financial difficulties (p = 0.013) improved significantly over the course of their EPC (Table 5), whereas those who did not receive EPC, had no significant differences (Table 5).

3.4. QoL among patients with HNC

There was no significant difference in the EORTC-QLQ-HN35 items' scores between the two groups, regardless of whether participants with early or advanced HNC received EPC at different time points during treatment (Supplementary Tables S1, http://links.lww.com/JCMA/A255 and Table 6). Advanced-stage participants' T2 scores were higher than their T1 scores. The EPC and standard groups had increased difficulties related to swallowing, sticky saliva, and social eating. Only in the standard group, the T2 scores for pain and dry mouth were greater than 10 points, whereas the difference between this score and weight loss exceeded 20 points. There was a clinically significant difference in deterioration, according to Osoba et al[33] (Table 6). Additionally, the standard group had a decrease in "felt ill," while the EPC group had an increase in speech (Table 6).

3.5. Therapeutic benefits

A year later, most of the functional or symptom indices of the EORTC-QLQ-C30 and EORTC-QLQ-HN35 returned to normal, regardless of whether or not they received EPC (Tables 4–6, and Supplementary Table S1, http://links.lww.com/JCMA/A255). The proportion of HNC participants who completed treatment adherence according to their cancer treatment plan were as follows: standard group (early: 100%, n = 11/11; advanced: 75%, n = 9/12) and EPC group (early: 95.24%, n = 20/21; advanced: 95.35%, n = 41/43). Three patients in the advanced stage from the standard group failed to complete their cancer treatment plans. Two of these patients received only between half to a third of the prescribed chemotherapy dose, while another patient declined concurrent chemoradiotherapy. Similarly, one early-stage EPC patient did not finish treatment, finding the daily radiotherapy too burdensome. Moreover, two advanced-stage EPC patients failed to complete their treatments. One patient received only a third of the chemotherapy dose, and another patient, aged 75, declined radiotherapy due to age-related concerns.

4. DISCUSSION

To the best of our knowledge, this is the first study to evaluate EPC in patients with early or advanced-stage HNC. DT assessments have shown that EPC significantly improved symptom control, reduced distress and depression, and enhanced QoL of patients with early or advanced-stage HNC in Taiwan. Additionally, those in an advanced stage, who received EPC services showed better treatment adherence compared to those who did not. This suggests that EPC may have a beneficial effect on the course of treatment for patients with HNC.

HNC refers to a group of cancers that develop in the mouth, throat, nasal cavity, sinuses, or salivary glands. Owing to its anatomical location, it often results in facial disfigurement[36] and distorted or incomprehensible speech, and patients may experience significant psychological symptoms and healthcare burdens.[37] Compared with other cancers, the palliative care needs of patients with advanced-stage HNC are uniquely complex because of effects on eating, speaking, and breathing,[38] which may require feeding tubes and tracheotomies for supporting vital functions. Curative surgery is often the mainstay of treatment for early-stage HNC, with the intention of removing the tumor and its surrounding margin of healthy tissue.[39] Routine postoperative care after curative surgery for HNC focuses on promoting healing, reducing complications, and supporting patients' recovery. Curative surgery is primarily based on survival benefits, whereas symptom control and QoL are secondary outcomes. Thus, there was no significant difference in the symptom scales of the EORTC-QLQ-C30 and HN35 questionnaires in

Table 2

Evolution of DT and MDASI-T single symptom and interference severity item scores for early head and neck cancer patients over time

	Standard					EPC				
	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]
DT	5 (3-7)	1.5 (0-5)	2 (1-3)	2.5 (0.5-4.5)	0.224	4 (2-5)	3 (2-4)	2.5 (1-5)	1.5 (0-3)	0.002
MDASI Core Items										
Part I. How severe are your symptoms?										
1. Your pain at its WORST?	1 (0-6)	1.5 (0-5)	0 (0-0)	0 (0-1)	0.537	0 (0-3)	0 (0-1)	0 (0-0)	0 (0-0)	0.014
2. Your fatigue (tiredness) at its WORST?	2 (0-3)	0 (0-4)	1 (0-3)	0 (0-5)	0.887	0 (0-1)	2 (0-4)	0 (0-0)	0 (0-2)	0.116
3. Your nausea at its WORST?	0 (0-2)	0 (0-0)	0 (0-1)	0 (0-1)	0.873	0 (0-0)	0 (0-1)	0 (0-0)	0 (0-0)	0.033
4. Your disturbed sleep at its WORST?	3 (0-6)	0 (0-5)	2 (0-5)	0 (0-1)	0.227	0 (0-2)	0 (0-3)	0 (0-0)	0 (0-0)	0.249
5. Your feelings of being distressed (upset) at its WORST?	1 (0-2)	0 (0-4)	0 (0-2)	0 (0-1.5)	0.444	0 (0-3)	0 (0-0)	0 (0-1)	0 (0-0)	0.047
6. Your shortness of breath at its WORST?	0 (0-1)	0 (0-1)	0 (0-0)	0 (0-0.5)	0.831	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392
7. Your problem with remembering things at its WORST?	0 (0-2)	1 (0-3)	0 (0-2)	0 (0-1)	0.801	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-2)	0.225
8. Your problem with lack of appetite at its WORST?	0 (0-1)	0 (0-1)	0 (0-3)	0 (0-0)	0.225	0 (0-0)	0 (0-0)	0 (0-3)	0 (0-0)	0.286
9. Your feeling drowsy (sleepy) at its WORST?	0 (0-1)	0 (0-0)	0 (0-0)	0 (0-1)	0.484	0 (0-0)	0 (0-2)	0 (0-0)	0 (0-0)	0.164
10. Your having a dry mouth at its WORST?	2 (0-8)	1 (0-3)	1 (0-1)	0.5 (0-5)	0.048	0 (0-2)	0 (0-4)	2 (0-5)	1.5 (0-4)	0.356
11. Your feeling sad at its WORST?	0 (0-2)	0 (0-2)	0 (0-0)	0 (0-0.5)	0.126	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.156
12. Your vomiting at its WORST?	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.156
13. Your numbness or tingling at its WORST?	0 (0-1)	0 (0-5)	0 (0-1)	0 (0-2)	0.132	0 (0-1)	0 (0-2)	0 (0-0)	0 (0-0)	0.716
Part II. How have your symptoms interfered with your life?										
14. General activity?	0 (0-3)	0 (0-3)	0 (0-1)	0 (0-1.5)	0.986	0 (0-0)	0 (0-3)	0 (0-0)	0 (0-0)	0.066
15. Mood?	2 (0-3)	0 (0-3)	0 (0-1)	0 (0-2.5)	0.091	0 (0-0)	0 (0-2)	0 (0-0)	0 (0-0)	0.222
16. Work (including work around the house)?	2 (0-5)	0 (0-2)	0 (0-1)	0 (0-1.5)	0.405	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.300
17. Relations with other people?	1 (0-3)	0 (0-0)	0 (0-0)	0 (0-3)	0.379	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.870
18. Walking?	0 (0-2)	0 (0-1)	0 (0-0)	0 (0-0)	0.246	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.468
19. Enjoyment of life?	0 (0-3)	0 (0-0)	0 (0-1)	0 (0-1.5)	0.603	0 (0-0)	0 (0-0)	0 (0-3)	0 (0-0)	0.170

DT = distress thermometer; EPC = early palliative care; MDASI = MD Anderson Symptom Inventory.
[a]Friedman test.

participants with early-stage HNC (Tables 4 and Supplementary Table S1, http://links.lww.com/JCMA/A255). However, in the QL2 function score of the EORTC-QLQ-C30, there was still significant improvement after EPC (Table 4).

It is well known that EPC is essential for patients with advanced-stage cancer and their caregivers,[40] as it is more focused on information and communication tasks, and provides emotional and social support. Interpretation of communication diagnosis and prognosis of cancer has always been a limitation for cancer patients, with 69% to 81% of patients being unaware of the intent of chemotherapy.[41] The routine practice of conducting structured counseling includes providing information on diagnosis, prognosis, treatment options, in-depth information on treatment costs, and availability of financial plans.[42] A key recommendation of the American Society of Clinical Oncology is to offer concurrent palliative care to patients with advanced-stage cancer during their disease course.[43] However, the integration of EPC in patients with advanced-stage HNC (with stage IV or recurrence not amenable to curative treatment) did not improve their QoL or survival rates.[44] Therefore, incorporating EPC from the beginning of diagnosis may be a better strategy. This study's results reflect the recommendations of oncology societies that EPC can improve the QoL and treatment adherence (Tables 5 and 6). Furthermore, EPC can improve the QoL of patients with early-stage HNC during the disease course (Table 4).

HNC treatment plans are primarily based on survival benefits, but symptom control and QoL are its secondary outcomes. Models for standard palliative care include organized collaboration between different oncology units. Factors affecting shared patient

Table 3

Evolution of DT and MDASI-T single symptom and interference severity item scores for advanced head and neck cancer patients over time

	Standard					EPC				
	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]
DT	3 (3-5)	4.5 (1-8)	5 (2-5)	3 (2-5)	0.682	5 (2-6)	3.5 (2-5)	3 (2-5)	1 (0-3.5)	0.002
MDASI Core Items										
Part I. How severe are your symptoms?										
1. Your pain at its WORST?	2 (0-3)	0 (0-7)	1 (0-2)	0 (0-0)	0.199	2 (0-5)	2.5 (0-5)	2 (0-5)	0 (0-0.5)	0.024
2. Your fatigue (tiredness) at its WORST?	2 (0-2)	4.5 (0-7)	5 (3-5)	0 (0-0)	0.154	0.5 (0-4)	3 (0-5)	3 (0-5)	0 (0-1.5)	<0.001
3. Your nausea at its WORST?	0 (0-1)	0 (0-2)	3 (1-5)	0 (0-0)	0.315	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-0)	0.062
4. Your disturbed sleep at its WORST?	0 (0-2)	0 (0-7)	5 (2-7)	0 (0-0)	0.179	0 (0-5)	0 (0-3)	0 (0-3)	0 (0-0)	0.218
5. Your feelings of being distressed (upset) at its WORST?	0 (0-2)	1.5 (0-7)	5 (1-6)	0 (0-0)	0.265	0 (0-3)	0 (0-2.5)	0 (0-5)	0 (0-0)	0.539
6. Your shortness of breath at its WORST?	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.021
7. Your problem with remembering things at its WORST?	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.572	0 (0-0)	0 (0-0)	0 (0-2)	0 (0-2)	0.213
8. Your problem with lack of appetite at its WORST?	0 (0-0)	1 (0-6)	3 (2-3)	0 (0-0)	0.029	0 (0-0)	0 (0-2)	0 (0-3)	0 (0-0)	0.006
9. Your feeling drowsy (sleepy) at its WORST?	0 (0-1)	0 (0-2)	2 (1-2)	3 (0-3)	0.277	0 (0-2)	0 (0-2.5)	0 (0-3)	0 (0-0)	0.394
10. Your having a dry mouth at its WORST?	1 (0-5)	1.5 (0-2)	0 (0-3)	5 (0-5)	0.514	0.5 (0-3)	2 (0-4.5)	3 (0-6)	3 (0-7)	0.018
11. Your feeling sad at its WORST?	0 (0-0)	0 (0-4)	0 (0-0)	0 (0-0)	0.572	0 (0-0)	0 (0-0)	0 (0-2)	0 (0-0)	0.259
12. Your vomiting at its WORST?	0 (0-0)	0 (0-0)	0 (0-1)	0 (0-0)	0.300	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.042
13. Your numbness or tingling at its WORST?	0 (0-2)	0 (0-2)	0 (0-0)	0 (0-0)	0.818	0 (0-1)	0 (0-0)	0 (0-1)	0 (0-2)	0.922
Part II. How have your symptoms interfered with your life?										
14. General activity?	0 (0-0)	1 (0-4)	4 (2-5)	0 (0-0)	0.04	0 (0-2)	0 (0-3)	0 (0-3)	0 (0-0)	0.389
15. Mood?	0 (0-0)	0 (0-5)	3 (2-3)	0 (0-0)	0.228	0 (0-3)	0 (0-3.5)	0 (0-4)	0 (0-0)	0.079
16. Work (including work around the house)?	0 (0-1)	1 (0-5)	5 (5-5)	0 (0-0)	0.181	0 (0-1)	0 (0-5)	0 (0-4)	0 (0-0.5)	0.024
17. Relations with other people?	0 (0-0)	0 (0-2)	2 (0-3)	0 (0-0)	0.488	0 (0-0)	0 (0-0)	0 (0-2)	0 (0-0)	0.392
18. Walking?	0 (0-0)	0.5 (0-2)	2 (1-3)	0 (0-0)	0.053	0 (0-0)	0 (0-2)	0 (0-1)	0 (0-0)	0.141
19. Enjoyment of life?	0 (0, 0)	0 (0, 3)	5 (2, 5)	0 (0, 0)	0.119	0 (0, 0)	0 (0, 1.5)	0 (0, 3)	0 (0, 0)	0.193

DT = distress thermometer; EPC = early palliative care; MDASI = MD Anderson Symptom Inventory.
[a]Friedman test.

decision-making include patients' age, general condition, comorbidities, preferences, motivation, family/caregiver support, tumor type, clinicians' team, healthcare availability, patient and treating surgeon bias, treatment complications, perceived treatment outcomes, and clinician–patient relationships. Surgeons, oncologists, and palliative care specialists should work together to provide individualized care for patients requiring palliative care. Thus, the modern palliative care model is becoming increasingly recognized as an important component of comprehensive cancer care, and is recommended by several national organizations, including the American Society of Clinical Oncology, National Comprehensive Cancer Network, and the European Society for Medical Oncology. As pain and dry mouth were common, and affected most patients with advanced-stage HNC, during treatment (Table 6), EPC can play an important role in their care. In this study, patients with early-stage HNC who received EPC also had a better QoL than those who received standard care.

This study found several benefits for patients with early or advanced-stage HNC, who received EPC immediately after diagnosis. First, through one-by-one inquiries on the form, the care team could understand participants' degree of suffering caused by their cancer diagnosis, treatment, and physical and mental problems. Therefore, using this questionnaire can help the care teams to communicate with patients, clarify treatment decisions, and identify and manage patients' difficult and changing symptom needs. Second, according to the degree of pain indicated in the questionnaire, nutritional, financial, and spiritual support, and appropriate solutions were simultaneously provided, and patients were assisted in reducing or avoiding inappropriate and costly tests, cancer treatments, and hospitalizations. Avoiding patients limited by economic and financial constraints results in a lower desire for thorough treatment. Third, it enables the care team to provide appropriate symptomatic care and psychosocial support, thereby improving patients' QoL and satisfaction during treatment.

Table 4

Evolution of EORTC QLQ-C30 single symptom and interference severity item scores for early head and neck cancer patients over time

	Standard					EPC				
	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]
Functional scales										
QL2	50 (33.3-83.3)	58.3 (50-66.7)	66.7 (50-83.3)	66.7 (54.2-91.7)	0.268	50 (50-66.7)	66.7 (50-83.3)	66.7 (50-83.3)	83.3 (66.7-83.3)	0.028
PF2	93.3 (80-93.3)	96.7 (86.7-100)	100 (93.3-100)	100 (96.7-100)	0.061	100 (93.3-100)	100 (93.3-100)	100 (93.3-100)	100 (93.3-100)	0.806
RF2	100 (33.3-100)	100 (100-100)	100 (100-100)	100 (100-100)	0.139	100 (100-100)	100 (100-100)	100 (100-100)	100 (100-100)	0.546
EF	75 (66.7-100)	100 (66.7-100)	100 (91.7-100)	100 (79.2-100)	0.236	100 (75-100)	100 (83.3-100)	100 (83.3-100)	100 (100-100)	0.154
CF	83.3 (66.7-100)	100 (66.7-100)	100 (83.3-100)	100 (83.3-100)	0.937	100 (100-100)	100 (83.3-100)	100 (100-100)	100 (100-100)	0.871
SF	66.7 (66.7-100)	100 (66.7-100)	100 (83.3-100)	100 (75-100)	0.121	100 (66.7-100)	83.3 (66.7-100)	100 (100-100)	100 (100-100)	0.01
Symptom scales										
FA	22.2 (11.1-55.6)	5.6 (0-44.4)	11.1 (0-33.3)	11.1 (0-16.7)	0.053	0 (0-0)	11.1 (0-33.3)	0 (0-11.1)	0 (0-11.1)	0.268
NV	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.012
PA	33.3 (0-33.3)	8.3 (0-33.3)	0 (0-16.7)	0 (0-16.7)	0.035	16.7 (0-16.7)	16.7 (0-16.7)	0 (0-0)	0 (0-0)	0.016
DY	0 (0-33.3)	0 (0-33.3)	0 (0-33.3)	0 (0-16.7)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.488
SL	33.3 (0-66.7)	0 (0-66.7)	0 (0-33.3)	0 (0-33.3)	0.246	0 (0-0)	0 (0-33.3)	0 (0-0)	0 (0-0)	0.512
AP	0 (0-33.3)	0 (0-33.3)	0 (0-0)	0 (0-0)	0.624	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.161
CO	0 (0-33.3)	0 (0-0)	0 (0-0)	0 (0-0)	0.3	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.644
DI	0 (0-33.3)	0 (0-0)	0 (0-0)	0 (0-0)	0.212	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.083
FI	0 (0-66.7)	0 (0-33.3)	0 (0-0)	0 (0-0)	0.919	0 (0-33.3)	0 (0-0)	0 (0-0)	0 (0-0)	0.075

AP = appetite loss; CF = cognitive functioning; CO = constipation; DI = diarrhea; DY = dyspnea; EF = emotional functioning; EORTC QLQ-C30 = European Organization for Research and Treatment of Core Quality of Life; EPC = early palliative care; FA = fatigue; FI = financial difficulties; NV = nausea and vomiting; PA = pain; PF2 = physical functioning; QL2 = Global health status/QoL; RF2 = role functioning; SF = social functioning; SL = insomnia.

[a]Friedman test.

Table 5

Evolution of EORTC QLQ-C30 single symptom and interference severity item scores for advanced head and neck cancer patients over time

	Standard					EPC				
	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]	T0 median (Q1-Q3)	T1 median (Q1-Q3)	T2 median (Q1-Q3)	T3 median (Q1-Q3)	*p*[a]
Functional scales										
QL2	66.7 (50-66.7)	50 (33.3-66.7)	33.3 (33.3-50)	100 (66.7-100)	0.088	50 (33.3-66.7)	54.2 (50-66.7)	66.7 (50-83.3)	66.7 (50-83.3)	<0.001
PF2	93.3 (93.3-100)	83.3 (73.3-100)	80 (60-80)	93.3 (86.7-93.3)	0.116	93.3 (86.7-100)	93.3 (73.3-100)	93.3 (73.3-100)	93.3 (80-100)	0.241
RF2	100 (100-100)	100 (50-100)	66.7 (33.3-100)	100 (100-100)	0.392	100 (83.3-100)	100 (66.7-100)	100 (83.3-100)	100 (100-100)	0.310
EF	91.7 (83.3-100)	91.7 (66.7-100)	75 (75-100)	100 (100-100)	0.663	83.3 (75-100)	100 (75-100)	100 (66.7-100)	100 (100-100)	0.006
CF	100 (100-100)	91.7 (83.3-100)	100 (83.3-100)	100 (100-100)	0.572	100 (100-100)	100 (83.3-100)	83.3 (83.3-100)	100 (100-100)	0.005
SF	66.7 (66.7-100)	91.7 (66.7-100)	83.3 (66.7-100)	100 (100-100)	0.883	100 (66.7-100)	100 (66.7-100)	100 (66.7-100)	100 (100-100)	0.144
Symptom scales										
FA	22.2 (0-33.3)	27.8 (0-55.6)	44.4 (33.3-44.4)	0 (0-0)	0.172	11.1 (0-33.3)	22.2 (11.1-44.4)	22.2 (11.1-33.3)	0 (0-11.1)	<0.001
NV	0 (0-0)	0 (0-0)	16.7 (0-33.3)	0 (0-0)	0.181	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.207
PA	16.7 (0-33.3)	0 (0-50)	33.3 (16.7-50)	25 (0-33.3)	0.288	16.7 (0-33.3)	16.7 (0-41.7)	16.7 (0-33.3)	16.7 (0-25)	0.520
DY	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.658
SL	0 (0-33.3)	0 (0-66.7)	66.7 (33.3-66.7)	0 (0-0)	0.274	0 (0-33.3)	0 (0-33.3)	0 (0-33.3)	0 (0-0)	0.033
AP	0 (0-0)	0 (0-66.7)	33.3 (33.3-66.7)	0 (0-0)	0.055	0 (0-0)	0 (0-33.3)	0 (0-33.3)	0 (0-0)	0.018
CO	0 (0-0)	0 (0-33.3)	33.3 (0-33.3)	0 (0-0)	0.284	0 (0-0)	0 (0-0)	0 (0-33.3)	0 (0-0)	0.098
DI	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.392	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0.027
FI	0 (0-0)	0 (0-33.3)	0 (0-0)	33.3 (0-33.3)	0.337	16.7 (0-66.7)	0 (0-33.3)	0 (0-33.3)	0 (0-0)	0.013

AP = appetite loss; CF = cognitive functioning; CO = constipation; DI = diarrhea; DY = dyspnea; EF = emotional functioning; EORTC QLQ-C30 = European Organization for Research and Treatment of Core Quality of Life; EPC = early palliative care; FA = fatigue; FI = financial difficulties; NV = nausea and vomiting; PA = pain; PF2 = physical functioning; QL2 = Global health status/QoL; RF2 = role functioning; SF = social functioning; SL = insomnia.

[a]Friedman test.

This study has its limitations. First, being a single-center study, the generalizability of its results is limited. Second, participants choose willing to have EPC rather than randomly allocated. Third, small numbers especially were in the "standard" treatment group. Fourth, the differences in characteristics between the two groups and the implications this may have, that

Table 6

Evolution of EORTC QLQ-H&N35 single symptom and interference severity item scores for advanced head and neck cancer patients over time

	T0			T1			T2			T3		
	Standard median (Q1-Q3)	EPC median (Q1-Q3)	*p*	Standard median (Q1-Q3)	EPC median (Q1-Q3)	*p*	Standard median (Q1-Q3)	EPC median (Q1-Q3)	*p*	Standard median (Q1-Q3)	EPC median (Q1-Q3)	*p*
hnPA	8.3 (0-25)	8.3 (0-25)	0.870	4.2 (0-16.7)	8.3 (0-25)	0.508	16.7 (8.3-33.3)	8.3 (0-33.3)	0.608	0 (0-0)	0 (0-0)	0.301
hnSW	16.7 (8.3-25)	0 (0-25)	0.162	4.2 (0-75)	20.8 (0-62.5)	0.774	25 (16.7-50)	33.3 (0-58.3)	0.985	0 (0-0)	0 (0-25)	0.281
hnTE	0 (0-0)	0 (0-0)	0.971	0 (0-33.3)	0 (0-0)	0.149	0 (0-0)	0 (0-0)	0.323	0 (0-0)	0 (0-0)	0.462
hnOM	33.3 (0-66.7)	0 (0-33.3)	0.012	33.3 (0-66.7)	0 (0-16.7)	0.057	33.3 (0-66.7)	0 (0-33.3)	0.271	0 (0-100)	0 (0-33.3)	0.633
hnDR	0 (0-66.7)	0 (0-33.3)	0.671	16.7 (0-66.7)	33.3 (0-66.7)	0.609	33.3 (33.3-33.3)	33.3 (0-66.7)	0.816	33.3 (0-66.7)	33.3 (0-83.3)	0.471
hnSS	0 (0-33.3)	0 (0-33.3)	0.158	0 (0-66.7)	0 (0-33.3)	0.850	33.3 (33.3-66.7)	33.3 (0-66.7)	0.316	0 (0-33.3)	0 (0-33.3)	0.774
hnSE	0 (0-0)	0 (0-0)	0.830	0 (0-16.7)	0 (0-16.7)	0.628	16.7 (0-33.3)	16.7 (0-33.3)	1.000	0 (0-0)	0 (0-33.3)	0.669
hnCO	0 (0-0)	0 (0-33.3)	0.045	0 (0-33.3)	0 (0-33.3)	0.965	0 (0-0)	0 (0-33.3)	0.200	0 (0-0)	0 (0-0)	0.347
hnFI	0 (0-33.3)	0 (0-33.3)	0.613	16.7 (0-33.3)	0 (0-0)	0.137	0 (0-33.3)	0 (0-33.3)	0.910	0 (0-0)	0 (0-0)	0.631
hnSP	0 (0-0)	0 (0-11.1)	0.617	5.6 (0-66.7)	0 (0-27.8)	0.507	0 (0-22.2)	11.1 (0-44.4)	0.533	0 (0-0)	0 (0-27.8)	0.104
hnSO	25 (8.3-25)	8.3 (0-33.3)	0.463	0 (0-33.3)	16.7 (0-50)	0.167	41.7 (16.7-50)	16.7 (0-50)	0.793	0 (0-66.7)	16.7 (0-50)	0.723
hnSC	0 (0-13.3)	0 (0-0)	0.327	6.7 (0-46.7)	0 (0-10)	0.085	13.3 (0-13.3)	0 (0-20)	0.500	0 (0-6.7)	0 (0-13.3)	0.799
hnSX	0 (0-0)	0 (0-0)	0.303	0 (0-16.7)	0 (0-0)	0.232	0 (0-50)	0 (0-33.3)	0.493	0 (0-0)	0 (0-0)	0.400
hnPK	100 (0-100)	100 (0-100)	0.692	100 (0-100)	100 (0-100)	0.893	100 (100-100)	100 (0-100)	0.499	0 (0-0)	0 (0-0)	0.299
hnNU	100 (100-100)	0 (0-100)	0.067	100 (100-100)	100 (100-100)	0.2038	100 (100-100)	100 (100-100)	0.321	100 (100-100)	100 (0-100)	0.050
hnFE	0 (0-0)	0 (0-0)	0.745	0 (0-100)	0 (0-100)	0.331	0 (0-100)	0 (0-100)	0.897	0 (0-0)	0 (0-0)	0.462
hnWL	100 (0-100)	100 (0-100)	0.920	0 (0-100)	100 (0-100)	0.212	100 (100-100)	0 (0-100)	0.065	0 (0-0)	0 (0-0)	0.598
hnWG	0 (0-0)	0 (0-0)	0.877	0 (0-0)	0 (0-100)	0.258	0 (0-0)	0 (0-100)	0.183	0 (0-100)	0 (0-100)	0.7897

CO = coughing; DR = dry mouth; European Organization for Research and Treatment of Core Quality of Life and Head and Neck 35; EPC = early palliative care; FE = feeding tube; FI = felt ill; NU = nutritional supplements; OM = opening the mouth; PA = pain; PK = pain killer; SC = social contact; SE = senses; SO = social eating; SP = speech; SS = sticky saliva; SW = swallowing; SX = sexuality; TE = teeth; WG = weight gain; WL = weight loss.

is, different prognostic outcomes by different types of HNCs. Fifth, the dissonance between patients and family caregivers regarding information needs and decision-making is an additional complexity. Finally, it was unable to exclude a crossover effect because full blinding of the patients, clinicians, and assessors was not possible. Perhaps suggesting other methodologies that could help overcome this would be useful, for example, a cluster randomized design.

Overall, EPC can provide important support and improve the QoL of patients with early or advanced-stage HNC. Further research is needed to investigate the specific needs of such patients and their families, who should talk to their healthcare providers about incorporating palliative care into their treatment plans.

ACKNOWLEDGMENTS

This study was supported by a research grant from Ditmanson Medical Foundation Chia-Yi Christian Hospital (R109-33).

We are grateful to the Ditmanson Medical Foundation, Cancer Center, and Cancer Registry Data Bank of Chia-Yi Christian Hospital for providing administrative and technical support. We are also grateful to the head and neck cancer multidisciplinary teams (viz, Oral and Maxillofacial Surgery: Hwan-Chung Lin, Chun-Liang Tung, Wei-Ting Lin, Cho-Ming Ho; Otolaryngology: Shih-Hao Wang, Yu-Sung, Chang; Hemato-Oncology: Ming-Yang Lee, Yu-Ting, Lee, Yin-Che Lu, Chin-Ho Kuo, Wei-Yu Wang; Radiation Therapy and Oncology: Chih-Chia Chang, Yu-Hua Tseng; Case manager: Yi-Chun Fang and Mei-Tsui Chen).

APPENDIX A. SUPPLEMENTARY DATA

Supplementary data related to this article can be found at http://links.lww.com/JCMA/A255.

REFERENCES

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;68:394–424.
2. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer statistics, 2021. *CA Cancer J Clin* 2021;71:7–33.
3. Health Promotion Administration Ministry of Health and Welfare Taiwan. Cancer registry annual report, 2020 Taiwan. Available at https://www.hpa.gov.tw/File/Attach/16434/File_21196.pdf. Accessed June 8, 2023.
4. Chow LQM. Head and neck cancer. *N Engl J Med* 2020;382:60–72.
5. Pinkas W, Jankowski M, Wierzba W. Awareness of head and neck cancers: a 2021 nationwide cross-sectional survey in Poland. *J Clin Med* 2022;11:538.
6. Health Promotion Administration, Ministry of Health and Welfare Taiwan. Cancer registry annual report, 2021 Taiwan. Available at https://www.hpa.gov.tw/File/Attach/17639/File_23506.pdf. Accessed March 18, 2024.
7. Cocks H, Ah-See K, Capel M, Taylor T. Palliative and supportive care in head and neck cancer: United Kingdom national multidisciplinary guidelines. *J Laryngol Otol* 2016;130:S198–207.
8. Zebralla V, Muller J, Wald T, Boehm A, Wichmann G, Berger T, et al. Obtaining patient-reported outcomes electronically with "OncoFunction" in head and neck cancer patients during aftercare. *Front Oncol* 2020;10:549915.
9. Osman H, Shrestha S, Temin S, Ali ZV, Cleary JF. Palliative care in the global setting: ASCO resource-stratified practice guideline summary. *J Oncol Pract* 2018;14:431–6.
10. Dans M, Kutner JS, Agarwal R, Baker JN, Bauman JR, Beck AC, et al. NCCN guidelines® insights: palliative care, version 2.2021. *J Natl Compr Canc Netw* 2021;19:780–8.
11. Cherny NI, Catane R, Kosmidis P; ESMO Taskforce on Supportive and Palliative Care. ESMO takes a stand on supportive and palliative care. *Ann Oncol* 2003;14:1335–7.
12. Ferrell BR, Temel JS, Temin S, Alesi ER Balboni TA, Basch EM, et al. Integration of palliative care into standard oncology care: American society of clinical oncology clinical practice guideline update. *J Clin Oncol* 2017;35:96–112.
13. National Comprehensive Cancer Network. Guidelines for supportive care palliative care version 2.2023. Available at https://www.nccn.org/

login?ReturnURL=https://www.nccn.org/professionals/physician_gls/pdf/palliative.pdf. Accessed June 5, 2023.
14. Bakitas M, Lyons KD, Hegel MT, Balan S, Brokaw FC, Seville J, et al. Effects of a palliative care intervention on clinical outcomes in patients with advanced cancer: the Project ENABLE II randomized controlled trial. *JAMA* 2009;302:741–9.
15. Temel JS, Greer JA, El-Jawahri A, Pirl WF, Park ER, Jackson VA, et al. Effects of early integrated palliative care in patients with lung and GI cancer: a randomized clinical trial. *J Clin Oncol* 2017;35:834–41.
16. Haun MW, Estel S, Rucker G, Friederich HC, Villalobos M, Thomas M, et al. Early palliative care for adults with advanced cancer. *Cochrane Database Syst Rev* 2017;6:CD011129.
17. Vanbutsele G, Pardon K, Van Belle S, Surmont V, De Laat M, Colman R, et al. Effect of early and systematic integration of palliative care in patients with advanced cancer: a randomised controlled trial. *Lancet Oncol* 2018;19:394–404.
18. Zimmermann C, Swami N, Krzyzanowska M, Hannon B, Leighl N, Oza A, et al. Early palliative care for patients with advanced cancer: a cluster-randomised controlled trial. *Lancet* 2014;383:1721–30.
19. Gaertner J, Siemens W, Meerpohl JJ, Antes G, Meffert C, Xander C, et al. Effect of specialist palliative care services on quality of life in adults with advanced incurable illness in hospital, hospice, or community settings: systematic review and meta-analysis. *BMJ* 2017;357:j2925.
20. Kavalieratos D, Corbelli J, Zhang D, Dionne-Odom JN, Ernecoff NC, Hanmer J, et al. Association between palliative care and patient and caregiver outcomes: a systematic review and meta-analysis. *JAMA* 2016;316:2104–14.
21. Bakitas MA, Tosteson TD, Li Z, Lyons KD, Hull JG, Li Z, et al. Early versus delayed initiation of concurrent palliative oncology care: patient outcomes in the ENABLE III randomized controlled trial. *J Clin Oncol* 2015;33:1438–45.
22. El-Jawahri A, Greer JA, Pirl WF, Park ER, Jackson VA, Back AL, et al. Effects of early integrated palliative care on caregivers of patients with lung and gastrointestinal cancer: a randomized clinical trial. *Oncologist* 2017;22:1528–34.
23. Maltoni M, Scarpi E, Dall'Agata M, Zagonel V, Bertè R, Ferrari D, et al; Early Palliative Care Italian Study Group (EPCISG). Systematic versus on-demand early palliative care: results from a multicentre, randomised clinical trial. *Eur J Cancer* 2016;65:61–8.
24. Sullivan DR, Chan B, Lapidus JA, Ganzini L, Hansen L, Carney PA, et al. Association of early palliative care use with survival and place of death among patients with advanced lung cancer receiving care in the veterans health administration. *JAMA Oncol* 2019;5:1702–9.
25. Cain CL, Surbone A, Elk R, Kagawa-Singer M. Culture and palliative care: preferences, communication, meaning, and mutual decision making. *J Pain Symptom Manage* 2018;55:1408–19.
26. Johnson KS. Racial and ethnic disparities in palliative care. *J Palliat Med* 2013;16:1329–34.
27. Mayeda DP, Ward KT. Methods for overcoming barriers in palliative care for ethnic/racial minorities: a systematic review. *Palliat Support Care* 2019;17:697–706.
28. Lin CC, Chang AP, Cleeland CS, Mendoza TR, Wang XS; Taiwanese version of the M. D. Anderson symptom inventory: symptom assessment in cancer patients. *J Pain Symptom Manage* 2007;33:180–8.
29. Wang GL, Hsu SH, Feng AC, Chiu CY, Shen JF, Lin YJ, et al. The HADS and the DT for screening psychosocial distress of cancer patients in Taiwan. *Psychooncology* 2011;20:639–46.
30. Holland JC, Jacobsen PB, Riba MB; NCCN Fever and Neutropenia Practice Guidelines Panel. NCCN: distress management. *Cancer Control* 2001;8:88–93.
31. Cheng JX, Liu BL, Zhang X, Zhang YQ, Lin W, Wang R, et al. The validation of the standard Chinese version of the European organization for research and treatment of cancer quality of life core questionnaire 30 (EORTC QLQ-C30) in pre-operative patients with brain tumor in China. *BMC Med Res Methodol* 2011;11:56.
32. Scott NW, Fayers P, Aaronson N, Bjordal K, de Graeff A, Groenvold M, et al. This manual is based upon data contributed by members of the EORTC groups, and by other users of the QLQ-C30. Available at https://www.eortc.org/app/uploads/sites/2/2018/02/reference_values_manual2008.pdf. Accessed June 28, 2021.
33. Osoba D, Rodrigues G, Myles J, Zee B, Pater J. Interpreting the significance of changes in health-related quality-of-life scores. *J Clin Oncol* 1998;16:139–44.
34. Chie WC, Yang CH, Hsu C, Yang PC. Quality of life of lung cancer patients: validation of the Taiwan Chinese version of the EORTC QLQ-C30 and QLQ-LC13. *Qual Life Res* 2004;13:257–62.
35. Bjordal K, Hammerlid E, Ahlner-Elmqvist M, de Graeff A, Boysen M, Evensen JF, et al. Quality of life in head and neck cancer patients: validation of the European organization for research and treatment of cancer quality of life questionnaire-H&N35. *J Clin Oncol* 1999;17:1008–19.
36. Callahan C. Facial disfigurement and sense of self in head and neck cancer. *Soc Work Health Care* 2004;40:73–87.
37. Schenker Y, Arnold RM, Bauman JE, Heron DE, Johnson JT. An enhanced role for palliative care in the multidisciplinary approach to high-risk head and neck cancer. *Cancer* 2016;122:340–3.
38. Lokker ME, Offerman MP, van der Velden LA, de Boer MF, Pruyn JFA, Teunissen SCCM. Symptoms of patients with incurable head and neck cancer: prevalence and impact on daily functioning. *Head Neck* 2013;35:868–76.
39. Johnson DE, Burtness B, Leemans CR, Lui VWY, Bauman JE, Grandis JR. Head and neck squamous cell carcinoma. *Nat Rev Dis Primers* 2020;6:92.
40. Mali SB, Pradeep GL. Head neck cancer care-communication and decision making regarding palliative care. *Oral Oncology Reports* 2023;6:100033.
41. Weeks JC, Catalano PJ, Cronin A, Finkelman MD, Mack JW, Keating NL, et al. Patients' expectations about effects of chemotherapy for advanced cancer. *N Engl J Med* 2012;367:1616–25.
42. Patil V, Joshi A, Noronha V, Deodhar J, Bhattacharjee A, Dhumal S, et al. Expectations and preferences for palliative chemotherapy in head and neck cancers patients. *Oral Oncol* 2016;63:10–5.
43. Smith TJ, Temin S, Alesi ER, Abernethy AP, Balboni TA, Basch EM, et al. American Society of Clinical Oncology provisional clinical opinion: the integration of palliative care into standard oncology care. *J Clin Oncol* 2012;30:880–7.
44. Patil VM, Singhai P, Noronha V, Bhattacharjee A, Deodhar J, Salins N, et al. Effect of early palliative care on quality of life of advanced head and neck cancer patients: a phase III trial. *J Natl Cancer Inst* 2021;113:1228–37.