資料6

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Nationwide retrospective survey on healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancer in Japan

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Abstract

Objective: To investigate healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancers in Japan.

Methods: A two-phase, multicenter retrospective study was conducted. First, head and neck cancer specialists completed a survey on their experience with suicide-related behaviors and institutional prevention efforts. Second, a medical record review explored associations between suicide-related behaviors and treatment factors.

Results: There were 152 respondents, of whom 82 (53.9%) had encountered suicide-related behaviors, and 69 (45.4%) had experienced patient suicides. A total of 110 cases of suicide were reported. Only 4.6% of respondents had attended lectures on preventing suicide, although 37.5% had implemented preventive measures. Overall, 27 cases were analyzed, including 18 suicides, and nine attempts. The majority of these involved men who were either smokers or drinkers. Behaviors often occurred when people were post-treatment without any recurrence. Common preceding factors were eating difficulties, speech impairment, and psychological decline.

Conclusions: Suicide risk among people with head and neck cancer extends well beyond diagnosis and remains under-addressed. Increased awareness and education among healthcare professionals, and provision of multidisciplinary support, are essential for comprehensive prevention.

Keywords: suicide; retrospective studies; Japan; head and neck neoplasms

Introduction

The psychological toll of having cancer is profound, and a diagnosis is regarded as one of the most overwhelming experiences in life [1]. Kurisu *et al.* reported that the suicide rate among people with cancer is 41.9 per 100 000 person-years [2]. This is 1.76 times higher than the general suicide rate in Japan, which is 17.6 per 100 000 person-years [3]. While the reported rates vary, several studies have consistently indicated that people with cancer are at a higher risk of suicide than the general population [4–6].

Suicide rates differ by cancer type and site, with the highest risks reported for lung, head and neck, testicular, bladder cancers, and Hodgkin lymphoma (standardized mortality ratio [SMR] > 5–10) [7]. Notably, while head and neck cancers account for only 3% of all cancer cases, people with these cancers have the second highest suicide rates of all those with cancer in the United States, following that of lung cancer [8]. This underscores the need for further investigation and intervention.

Suicide research methodologies generally fall into two categories: database-driven studies and detailed investigations of individual cases, commonly known as psychological autopsies [9, 10]. Database studies provide large-scale statistical insights and have repeatedly shown elevated suicide risks among people with cancer. By contrast, psychological autopsies involve in-depth interviews with bereaved families to reconstruct the deceased's psychological background, offering nuanced individual-level understanding. However, conducting full psychological autopsies can be ethically and emotionally challenging. Alternative hybrid approaches may therefore be more feasible in the oncology setting, but implementing these hybrid approaches remains difficult for individual researchers and requires coordinated organizational efforts to ensure feasibility and ethical integrity.

In 2022, Japan established the 'The Fourth Term Comprehensive 10-Year Strategy for Cancer Control' [11] and the 'Comprehensive Suicide Prevention Policy—Realizing a Society Without Self-Inflicted Deaths' [12], emphasizing the necessity of suicide prevention among people with cancer. It is therefore necessary to understand the suicide-related behaviors among people with head and neck cancers in Japan, a high-risk group for suicide. However, to date, no nationwide study has specifically investigated suicide among this group. This study therefore aimed to explore suicide-related behaviors among people with head and neck cancers, to contribute to the establishment of preventive measures.

Methods

This study was part of the Ministry of Health, Labor and Welfare's Cancer Control Promotion Comprehensive Research Project, 'Research on the Development of a Suicide

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Prevention Program for Cancer Patients (21EA1008).' The study was conducted in two phases. The first was a survey targeting healthcare professionals and the second was a survey based on patient data.

Survey of healthcare professionals' experiences of suicide-related behaviors among their patients

After obtaining approval from the Ethics Committee of the Japan Society for Head and Neck Cancer, a questionnaire was mailed to head and neck cancer specialists in board-certified institutions and oral and maxillofacial surgery representatives of the Japan Society for Head and Neck Cancer.

Survey items included respondents' demographic information (age, years of medical experience), and also questions about their experience of:

- Suicide-related behaviors (attempted or completed) among patients under their care;
- Suicide-related behaviors among people with cancer in institutions;
- Attending suicide-related training or lectures;
- Mental healthcare provision for healthcare staff after a patient's suicide or related incident; and
- Implementation of suicide prevention measures.

To protect personal information and minimize psychological resistance, responses were collected anonymously.

Survey of medical information of people showing suicide-related behaviors

During the survey among healthcare professionals, institutions were invited to participate in the second phase of the study. Survey forms were mailed to institutions that agreed to do so. The survey items were modified from the Head and Neck Registry of Japan [13], supported by the Japan Society for Head and Neck Cancer, to investigate the relationship between suicide-related behaviors and cancer treatment. The Charlson Comorbidity Index [14] was used to assess comorbidities. There is little literature on suicide risk factors specific to people with head and neck cancer, but previous studies have reported an association between laryngectomy and suicide [8]. We therefore collected data on post-treatment complications that significantly affect quality of life (e.g. laryngectomy, facial nerve resection, and facial bone resection). The study office for the 'Research on the Development of a Suicide Prevention Program for Cancer Patients (21EA1008)' selected and examined items related to suicide-related behaviors. Items focused on the psychological factors associated with suicide and also the direct association between cancer treatment phases and psychological impact.

Given the emotional burden and ethical constraints associated with full psychological autopsy studies, we adopted a hybrid methodology that bridges database-driven research and psychological autopsy. In addition to structured clinical data, we collected free-text narratives from attending physicians, which provided insights into the psychological states and social contexts before suicide-related behaviors. This information is often difficult to obtain through structured data alone.

Each participating institution reviewed medical records for suicide-related cases and completed the survey forms. The collected data were then consolidated and analyzed. This study was approved by the Ethics Review Committee of the National Cancer Center Hospital, and details were published on participating institutions' websites to ensure that there were opportunities to opt out.

Analysis

Descriptive statistics were calculated for the data obtained. All statistical analyses used R (The R Foundation for Statistical Computing, Vienna, Austria). Content analysis was performed on participants' free-text responses. The responses were coded by two researchers (KE and SY, both board-certified head and neck surgeons), and the number of responses was tabulated using the codes created.

Results

Survey of healthcare professionals

Overall, 152 of the 181 targeted professionals responded (84.0%). A total of 82 (53.9%) had encountered patients showing suicide-related behaviors, and 69 (45.4%) had experienced completed suicides among their patients. The total number of completed suicides reported was 108 patients (39 respondents reported one patient, 25 two, three reported three, and two reported five). Only seven professionals (4.6%) had attended suicide prevention lectures, and 46 (30.2%) reported that mental health support had been provided for staff following a suicide event. Additionally, 57 (37.5%) had implemented routine suicide prevention measures (Table 1).

Survey of patient data

Of the 78 institutions that expressed interest, 12 provided completed survey forms covering 27 patients (18 completed suicides, and nine attempts) (Table 2). Suicide-related behaviors were more common among men (21/27), those with a history of smoking (17/27), drinking (17/27), living with others (21/27), and married (19/27). Most cases involved advanced-stage cancer (stage 3–4: 20/27). There were no significant trends based on the primary tumor site; however, possibly due to the nature of the survey being conducted at board-certified institutions, nasal and paranasal sinus malignancies appeared more frequent than expected considering their general prevalence (10/27). Laryngectomy (2/27) and facial bone resection (5/27) were not predominant, but uncontrolled or recurrent tumors were frequent (17/27).

The most common phase for suicide-related behaviors was post-treatment follow-up without recurrence (11/27), followed by the first month after diagnosis (4/27) (Fig. 1, Table 3). The longest interval from diagnosis to suicide-related behavior was 134 months (Fig. 2). Most incidents occurred outside medical facilities (17/27), with hanging being the most common method (10/27). Few people had any history of mental illness or psychiatric treatment (5/27). Consultations with psychiatry or palliative medicine departments immediately prior to suicide-related behavior were relatively infrequent (psychiatry: 9/27; palliative care: 3/27). Data regarding preventive measures for suicide-related behavior implemented by healthcare providers were largely unavailable (missing in 18 of 27 cases). Family members were the most frequent first discoverers (10/27), followed by nurses (4/27) (Fig. 3). Inability to eat (7/27), and speech difficulties (7/27, of which two had a laryngectomy, and five a tracheostomy) were common preceding factors. Psychiatric instability, strongly

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Table 1. Healthcare professionals' demographic information and experience of suicidal events among their patients.

1-a: Participants' age		1-c: Suicidal events among patients under their care			1-e: Attendance at lecture on suicide		
≤29 years old	0	1. Yes (in the past)		82	1. Attended		7
30–39 years old	9	Attempted	1 patient	17	2. Did not attend		145
40–49 years old	56		2 patients	6	No answer		0
50–59 years old	65	Completed	1 patient	39	1-f: Provision of post-incident mental healthcare for staff within hospital		
60–69 years old	22		2 patients	25			
70 years and over	0		3 patients	3	1. Yes[a]		46
No answer	0		4 patients	0		a. Only staff	21
			5 patients	2		b. Department/ward-based	23
		2. No (none reported)		70		c. As an in-hospital activity	4
		No answer		0		d. Others	2
					2. Did not attend		70
					3. There was no suicide		31
					No answer		5
1-b: Years of experience		1-d: Suicidal behaviors among people in affiliated institution			1-g: Suicide prevention measures		
≤ 9 years	1	1. Yes (in the past)		93	1. Yes[a]		57
10–19 years	36	Attempted	1 patient	21		a. Personal development/staff training	19
20–29 years	57		2 patients	3		b. Intervention for high-risk individuals	29
30–39 years	57		3 patients	4		c. Improvement of facilities	13
40 years or more	1	Completed	1 patient	34		d. Others	13
No answer	0		2 patients	24	2. No		95
			3 patients	16	No answer		0
			4 patients	3			
			5 patients	2			
			6 or more	1			
		2. No (none reported)		55			
		No answer		4			

[a]Multiple answers were allowed.

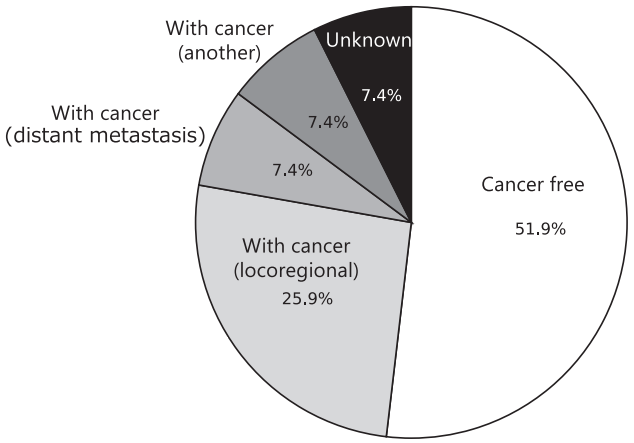


Figure 1. Oncological status at the time of the suicide-related behavior.

correlated with suicide, was noted in 13/27 cases (new onset: four, worsening: nine) (Table 4). Investigators' free-text information on suicide-related behavior is summarized in Table 5. Various backgrounds were identified that were associated with suicide-related behavior over a long period after cancer diagnosis.

Discussion

This study is the first nationwide survey of which we are aware on suicide-related behaviors among people with head and neck cancer in Japan, and it was also unique in drawing on information from both healthcare professionals and patient records. The study clarified head and neck cancer specialists' experience of suicide-related behaviors among their patients, revealing the complex realities surrounding these behaviors through specific clinical information and narrative insights.

People with head and neck cancers are a high-risk group for suicide [2, 7, 8], highlighting the need for a deeper understanding of this phenomenon among medical professionals involved in their care. The head and neck cancer registry of Japan currently does not include suicide-related data, making it difficult to ascertain the full extent of the issue. However, the high proportion of physicians in this study who had experienced suicide-related behaviors among their patients suggests that people with head and neck cancer in Japan are indeed a high-risk group. The suicide of a patient can also cause significant psychological distress among medical professionals [15, 16]. Raising awareness among healthcare professionals, and ensuring appropriate post-incident responses, is therefore crucial. This study showed that nearly half of head and neck cancer physicians had encountered suicide-related behavior in patients, but only 38% had implemented preventive strategies. This discrepancy underscores the need for increased awareness and further investigation of this issue.

Despite recognition of the importance of suicide prevention among cancer patients, countermeasures remain insufficient. One possible reason is the limited number of cases, which makes it difficult to fully understand the physiological and psychological mechanisms leading to suicide. Numerous database studies have confirmed that people with cancer are most likely to show suicide-related behaviors within the first

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Table 2. Characteristics of patients showing suicide-related behaviors.

	Category	Suicide-related behaviors (n = 27)
Age	Median (range)	66.0 (51–94)
Sex		
	Female	6 (22.2%)
	Male	21 (77.8%)
Smoking		
	Never	6 (22.2%)
	Previously	9 (33.3%)
	Current smoker	8 (29.6%)
	Unknown	4 (14.8%)
Drinking		
	Never	5 (18.5%)
	Previously	4 (14.8%)
	Occasionally	3 (11.1%)
	Daily	10 (37.0%)
	Unknown	5 (18.5%)
Comorbidity		
	Low	16 (59.3%)
	Medium	6 (22.2%)
	High	1 (3.7%)
	Very high	4 (14.8%)
History of psychiatric visits		
	None	20 (74.1%)
	Yes	5 (18.5%)
	Unknown	2 (7.4%)
Family history of suicide		
	None	9 (33.3%)
	Yes	0 (0%)
	Unknown	18 (66.7%)
Spouse		
	None	6 (22.2%)
	Yes	19 (70.4%)
	Unknown	2 (7.4%)
Cohabitant		
	None	4 (14.8%)
	Yes	21 (77.8%)
	Unknown	2 (7.4%)
Employment		
	Employed	4 (14.8%)
	Unemployed	13 (48.1%)
	Unknown	10 (37.0%)
ECOG PS[a]		
	0	19 (70.4%)
	1	8 (29.6%)
Primary site		
	Oral cavity	4 (14.8%)
	Hypopharynx	3 (11.1%)
	Oropharynx	6 (22.2%)
	Larynx	3 (11.1%)
	Nasal/paranasal sinus	10 (37.0%)
	Major salivary gland	1 (3.7%)
Clinical history		
	Initial treatment	22 (81.5%)
	Recurrence	5 (18.5%)
Stage		
	1, 2	7 (25.9%)
	3, 4	20 (74.1%)
Synchronous multiple cancers		
	None, unknown	23 (85.2%)
	Yes	4 (14.8%)
Pathology		
	Squamous cell carcinoma	23 (85.2%)
	Melanoma	1 (3.7%)
	Acinic cell carcinoma	1 (3.7%)
	Adenoid cystic carcinoma	1 (3.7%)
	Myoepithelial carcinoma	1 (3.7%)

(continued)

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Table 2. Continued.

	Category	Suicide-related behaviors (n = 27)
Laryngectomy		
	No	25 (92.6%)
	Yes	2 (7.4%)
Facial nerve paralysis		
	None	24 (88.9%)
	Yes	3 (11.1%)
Facial incision		
	No	21 (77.8%)
	Yes	6 (22.2%)
Facial bone resection		
	No	22 (81.5%)
	Yes	5 (18.5%)
Facial nerve resection		
	No/unknown	26 (96.3%)
	Yes	1 (3.7%)
Local relapse, uncontrolled		
	No	17 (63.0%)
	Yes	10 (37.0%)

[a]ECOG PS: The Eastern Cooperative Oncology Group Performance Status.

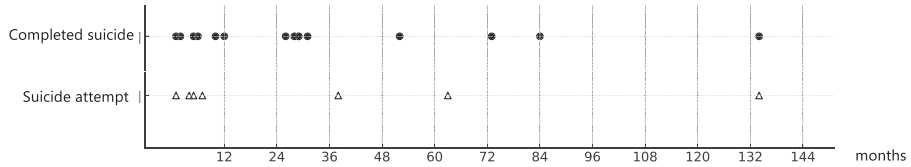


Figure 2. Interval between diagnosis and the onset of suicide-related behavior (completed suicide and suicide attempts).



Figure 3. Features of suicide-related behaviors (actual values).

Table 3. Cancer treatment status at the time of suicide-related behaviors.

Cancer treatment status	
After initial consultation, before diagnosis disclosure	0
After disease status disclosure, before treatment plan proposal	2
After treatment plan proposal, before treatment initiation	2
During initial curative treatment	2
After treatment completion, under recurrence-free follow-up	11
After recurrence explanation, before treatment resumption	3
Under curative treatment for recurrence	1
Under palliative treatment for recurrence (e.g. chemotherapy)	3
After explanation of transition to best supportive care	1
Terminal stage	1
Unknown	1

few weeks after diagnosis [17–23]. Our study confirmed that suicide-related behaviors were frequently observed during the early stages post-diagnosis, but also found that these behaviors occurred across various phases of cancer care. Notably, contrary to previous assumptions, suicide-related behaviors were actually most frequently reported among people in long-term follow-up without recurrence. This suggests that severe side effects or treatment-related sequelae unique to head and neck cancers, such as taste dysfunction and loss of voice, may contribute to suicide-related behaviors. Studies from the United States suggest that people who have had a laryngectomy are at high risk for suicide [8], but we found only two out of 27 cases involved laryngectomy. Our finding is based on a limited number of cases, but it implies that extrapolating results from one cultural context to another may be challenging. We found risk factors consistent with previous domestic studies, such as cohabitation and advanced stage cancer [24]. However, suicide-related behaviors in people with head and neck cancers were observed not only shortly after diagnosis but also over the long term, underscoring the unique risk profile of this group, and the need for a tailored assessment framework, along with further domestic data collection and analysis.

We found a diverse range of events leading up to suicide-related behaviors, making categorization challenging. In the field of psycho-oncology, efforts have been made to develop

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Table 4. Background factors immediately before suicide.

Events or warning signs just before suicide-related behaviors	
New psychiatric symptoms in patients without history	4
Worsening/unstable psychiatric symptoms	9
Worsening/unstable physical symptoms	3
Recent suicide attempt/self-harm	3
Expressed suicidal intent	1
Recently experienced a bad event: bereavement or separation/divorce from a close person.	1
Recently received a medical explanation, including bad news.	2
Gastrostomy was recently suggested.	1
Tracheostomy was recently suggested.	1
A recent death of a roommate.	0
Recent in-hospital suicide by another patient.	0
Recently quit a job or was unemployed.	1
Had been experiencing persistent insomnia.	0
Cancer treatment and physical status just before suicide-related behaviors	
No special notes.	8
Difficulty in oral intake (due to, e.g. dysphagia or passage obstruction).	3
Unable to take nutrition orally (dependent on gastrostomy or central venous nutrition).	7
Aphonia (after tracheostomy or laryngectomy).	7
Able to vocalize with a tracheal stoma (using, e.g. cannula or shunt speech).	0
Tumor exposure or necrosis.	3
Uncontrollable pain.	3
Facial changes (concern about, e.g. facial asymmetry).	3
Gait dysfunction.	0
Visual impairment, hearing impairment.	0
Bowel and bladder dysfunction.	0

structured screening approaches for suicide risk in oncology settings [25, 26]. However, there is no universally effective method to systematically identify cancer patients at high risk of suicide, and efforts are underway to develop theoretical and assessment frameworks for evaluating suicide risk in cancer patients. One such framework is the Interpersonal-Psychological Theory of Suicide (IPTS) proposed by Joiner and colleagues, based on three main factors: 'thwarted belongingness,' 'perceived burdensomeness,' and 'acquired capability for suicide' [27]. Social factors such as existential distress [28], suffering [29], and loneliness [30] have been reported to play crucial roles in suicide risk among people with cancer. Perceived burdensomeness was previously identified as a suicide risk factor in people with cancer [31–33]. The IPTS is therefore widely expected to be useful despite the current lack of evidence [34].

In our study, suicide-related behaviors occurring more than a year after diagnosis frequently included narratives such as 'multiple treatments caused severe taste dysfunction, making life unbearable' and 'patient committed suicide after transferring to a palliative care hospital because of recurrent nasal cavity and pharyngeal cancer with visible tumor exposure.' These findings suggest a strong link between long-term suffering and acquired capability for suicide. People with head and neck cancer often experience severe disease-related symptoms and treatment side effects that significantly affect their quality of life, meaning that they are likely to meet all three IPTS criteria, especially acquired capability for suicide. Future suicide prevention efforts should therefore not rely solely on single interventions (e.g. psychiatric consultation) but should instead involve multidisciplinary interventions that comprehensively address all three IPTS components in a bundled approach.

The strength of this study lies in its integration of surveys among medical professionals with a hybrid approach between database research and psychological autopsy. This allowed the rapid collection of both narrative data on suicide-related behaviors and structured tumor registry data within a single study. However, this methodology also had limitations. In particular, the number of cases analyzed was significantly smaller than in previous database studies, and the narrative data were less detailed than those obtained through full psychological autopsy. As is common in suicide research, it is difficult to directly study individuals who have exhibited suicidal behavior and our findings are based solely on information provided by physicians who agreed to participate. Recent discussions also suggest the need to re-evaluate the directional relationship between cancer and suicide. Until now, research has focused mainly on 'cancer patients who commit suicide,' but emerging evidence suggests there may be a bidirectional relationship, particularly in Arctic regions [34]. Other recent studies indicate potential genetic correlations between cancer and suicide [35], suggesting that future research on suicide prevention among people with cancer may require a fundamental paradigm shift.

In summary, our study found that approximately half of Japanese head and neck cancer specialists have encountered suicide-related behaviors among their patients. However, the establishment of preventive measures and post-incident responses remains inadequate [36] and thus it is imperative that healthcare professionals remain constantly vigilant to the possibility that any given patient may attempt suicide at any time. The risk of suicide-related behaviors among people with head and neck cancers persist over an extended period, influenced by diverse factors. Our findings suggest that healthcare providers involved in caring for people with head and neck cancers should focus on long-term comprehensive anti-suicide interventions that integrate physical, psychological, and social factors. The 'Research on the Development of a Suicide Prevention Program for Cancer Patients (21EA1008)' is still ongoing, and the findings of the

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Table 5. Investigators' free-text information on suicide-related behavior.

Interval[a]	Comments
1	History of depression, stable in recent years. Postoperative vagus nerve palsy caused swallowing difficulties. Event occurred on the night of the gastrostomy proposal.
1	Occurred on outpatient stairs after diagnosis.
1	The event occurred on postoperative day 14. The patient experienced delirium and stated, 'I had a dream that my son died, and it made me very sad.'
1	The patient attempted suicide twice after the initial diagnosis and early recurrence. He managed to escape on his own and sought help from his partner.
2	The event occurred during the initial treatment with no prior warning signs or triggers.
4	Business owner. Originally aggressive, verbally abusive to the primary doctor. Multiple arrests for speeding violations.
5	N/A*
5	Postoperative swallowing difficulties and loss of appetite. Reported suicide.
6	History of depression and stimulant abuse. An event occurred shortly after a change of primary physician.
7	Immediately after informed consent for the discontinuation of active treatment.
10	N/A*
12	Frequent throat obstruction since treatment. Insomnia.
26	Brachytherapy was performed owing to surgery refusal. Treated with S-1. Recurrence occurred after 21 months, followed by self-discontinuation. Prognostic follow-up revealed suicide.
28	N/A*
29	Under recurrence-free follow-up. Undergoing HBO[b] for mandibular osteomyelitis. The event occurred during pain management.
29	Multiple treatments caused severe taste dysfunction, making life unbearable. Expressed distress, stating, 'It is unbearably painful, I want to die.'
31	Alcohol-dependent
38	Depressed since diagnosis. History of suicide attempt. Experienced anorexia and violent behavior, leading to debilitation.
52	The patient committed suicide after transferring to a palliative care hospital because of recurrent nasal cavity and pharyngeal cancer with visible tumor exposure and nasal defect.
63	Fistula formation after TL[c] + PMMC[d] for recurrent lesions. Suicide attempt during the fistula management period.
73	Surgery performed. Underwent reoperation for mandibular necrosis postoperatively. One month later, died by jumping from a height. No prior warning signs.
84	After a long treatment history, transitioned to BSC[e]. An event occurred shortly after applying for PCU[f].
102	A very prolonged course. Stated, 'I don't want to burden my family any further.'
134	After CRT[g], a rejecting attitude due to peripheral neuropathy was observed.
134	Three days before suicide, a psychiatric consultation was conducted, and suicidal ideation was reported. After RT[h], the patient underwent tracheostomy due to glottic stenosis and was dependent on a gastrostomy tube.
N/A*	Found strangled in a staff restroom by a nurse. Lived alone and experienced recurrence, leading to despair about the future.
N/A*	Fell to death in despair after lung metastasis.

[a]Interval: time to suicide-related behavior (months). [b]HBO: hyperbaric oxygen therapy. [c]TL: total laryngectomy. [d]PMMC: pectoralis major myocutaneous flap. [e]BSC: best supportive care. [f]PCU: palliative care unit. [g]CRT: chemoradiotherapy. [h]RT: radiotherapy. *N/A: not available.

present study are expected to serve as important reference material for the future development of effective prevention strategies.

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Conflict of interest statement

The authors have no conflict of interest to disclose.

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