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ORIGINAL ARTICLE

Mental healthcare utilization among head and neck cancer patients: A longitudinal cohort study

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Abstract

Objective: To investigate utilization of mental healthcare among head and neck cancer (HNC) patients from diagnosis to 2 years after treatment, in relation to psychological symptoms, mental disorders, need for mental healthcare, and sociodemographic, clinical and personal factors.

Methods: Netherlands Quality of life and Biomedical Cohort study data as measured before treatment, at 3 and 6 months, and at 1 and 2 years after treatment was used (n = 610). Data on mental healthcare utilization (iMCQ), psychological symptoms (Hospital Anxiety and Depression Scale, Cancer Worry Scale), mental disorders (CIDI interview), need for mental healthcare (Supportive Care Needs Survey Short-Form 34, either as continuous outcome indicating the level of need or dichotomized into unmet need (yes/no)) and several sociodemographic, clinical and personal factors were collected. Factors associated with mental healthcare utilization were investigated using generalized estimating equations ($p < 0.05$).

Results: Of all HNC patients, 5%–9% used mental healthcare per timepoint. This was 4%–14% in patients with mild-severe psychological symptoms, 4%–17% in patients with severe psychological symptoms, 15%–35% in patients with a mental disorder and 5%–16% in patients with an unmet need for mental healthcare. Among all patients, higher symptoms of anxiety, a higher need for mental healthcare, lower

age, higher disease stage, lower self-efficacy and higher social support seeking were significantly associated with mental healthcare utilization.

Conclusion: Mental health care utilization among HNC patients is limited, and is related to psychological symptoms, need for mental healthcare, and sociodemographic, clinical and personal factors.

KEYWORDS
anxiety, depression, fear of cancer recurrence, head and neck cancer, mental healthcare use, psychological care, psychological symptoms, supportive care needs

1 | INTRODUCTION

Head and neck cancer (HNC) patients often experience symptoms of anxiety, symptoms of depression or fear of cancer recurrence, and some are diagnosed with a mental disorder.[1–4] Mental healthcare, for example, treatment by a psychologist, can improve these psychological symptoms.[5,6] Although referral to mental healthcare is recommended in case of psychological symptoms or disorders,[7] usage among HNC patients is limited.[8,9] A study among HNC patients with psychological distress showed that 18% used mental healthcare.[9] Another study showed that 39% of HNC patients had an unmet need for mental healthcare, indicating they did not receive (sufficient) mental healthcare.[10] At the same time there are also patients who use mental healthcare but do not experience a need for mental healthcare or experience psychological symptoms.[11]

Few studies investigated reasons for this potential discrepancy in mental healthcare utilization. In a study of Tondorf et al. among cancer patients with psychosocial distress 33% had the intention to use mental healthcare, whereas 35% had no intention and 32% were ambivalent to use mental healthcare.[11] Although all patients with psychological distress were given information about the available mental healthcare, which was free and available on short notice, only 30% of the patients with distress used mental healthcare within the next 4 months. This usage rate is lower than previous intervention studies which showed that 60%–65% of cancer patients and HNC patients with psychological symptoms accept participation in mental healthcare interventions.[6,12,13] Reasons reported for not accepting mental healthcare were a preference to manage symptoms themselves, already receiving support from family/friends, perceiving mental healthcare as unhelpful or qualifying their mental healthcare problems as not severe enough.[11,14,15] Furthermore, two studies among cancer patients with mixed cancer diagnoses showed that sociodemographic factors, such as younger age,[15,16] female gender,[16] and personal factors (e.g. attitude)[16] are associated with higher acceptance/utilization of mental healthcare. Clinical factors do not seem to be independently associated with mental healthcare utilization.[16] In a previous study among HNC patients, age, gender and clinical factors were all not significantly associated with mental healthcare utilization.[9]

More insight into mental healthcare utilization among HNC patients and groups of HNC patients who are currently not reached is needed to better align mental healthcare to the needs of HNC patients. This study aims to investigate i) mental healthcare utilization from diagnosis up to 2 years after treatment among HNC patients in general and among those with psychological symptoms, a psychological disorder or an unmet need for mental healthcare, and ii) mental healthcare utilization in relation to psychological symptoms and disorders, the need for mental healthcare, and sociodemographic, clinical and personal factors.

2 | METHODS

2.1 | Study design and population

Data of the Netherlands Quality of life and Biomedical Cohort study (NET-QUBIC) was used; a longitudinal cohort study among 739 HNC patients.[17] Patients completed patient-reported outcome measures at baseline (before treatment), at 3 and 6 months, and at 1, 2, 3, 4 and 5 years after treatment. In addition, fieldwork assessments (interview and objective tests) and collection of biobank materials take place at baseline, 3 and 6 months, and 1, 2 and 5 years after treatment. Previous NET-QUBIC publications provided detailed insight into the study design, representativeness of the cohort, study retention, supportive care needs and healthcare utilization.[17–21]

Patients were included (2014–2018) from university medical centers and general hospitals throughout the Netherlands. Inclusion criteria were newly-diagnosed HNC (oral cavity, oropharynx, hypopharynx, larynx, unknown primary; all stages); age >18 years; treatment with curative intent; all treatment modalities; able to write, read, and speak Dutch. Patients were excluded in case they were diagnosed with lymphoma, skin malignancies or thyroid cancer; were unable to understand the questions or test instructions; or had severe psychiatric co-morbidities (i.e. schizophrenia, Korsakoff's syndrome, severe dementia). All patients signed informed consent. Medical ethical approval was provided by the Medical Ethical Committee of VUmc (2013.301 [A2018.307]-NL45051.029.13). For this specific study patients were included in case they had complete data on psychological symptoms, need for and use of mental healthcare utilization on at least one timepoint from baseline to 2 years after treatment.

2.2 | Study measures

Mental healthcare utilization was measured using the Institute of Medical Technology Assessment (iMTA) medical consumption

questionnaire (iMCQ).[22] The iMTA questionnaire contains questions on visits to a psychologist, psychotherapist or psychiatrist in a hospital, mental healthcare practice, private practice or practice for addiction care in the last 3 months. Per timepoint, patients were coded as mental healthcare users (yes/no).

Presence of psychological symptoms was measured using the Hospital Anxiety and Depression Scale (HADS) and Cancer Worry Scale (CWS). The HADS measures symptoms of anxiety (HADS-A) and depression (HADS-D) in the last week (range 0–21).[23] The CWS measures fear of cancer recurrence in the last month (range 8–32).[24] Higher scores on the HADS and CWS indicate a higher level of psychological symptoms. Per timepoint, patients were coded as having mild-severe psychological symptoms (HADS-A >7, HADS-D >7 or CWS >11[24,25]) and having severe psychological symptoms (HADS-A >10, HADS-D >10 or CWS >13[24,25]).

Presence of a mental disorder (DSM-IV criteria) was measured using the WHO-Composite International Diagnostic Interview version 2.1 (CIDI)[26] at baseline, 1 and 2 years after treatment. Patients with a major depressive disorder, generalized anxiety disorder, social phobia, panic disorder or agoraphobia in the past 6 months were coded as having a mental disorder.

To measure the need for mental healthcare, the Supportive Care Needs Survey Short-Form 34[27,28] 10-item domain on needs related to psychological functioning was used.[27] Each item measures mental healthcare needs in the past month and can be answered on a 5-point scale, namely: '1 = no need, not applicable' for issues that were no problem; '2 = no need, satisfied' for issues on which a patient needed support but the support was satisfactory; and '3 = unmet need, low'; '4 = unmet need, moderate'; and '5 = unmet need, high', for issues on which a patients had a low, moderate or high need for additional care. A patient was coded as having an unmet need in case he/she reported low, moderate or high unmet needs on ≥1 items of the psychological functioning domain (used to describe the prevalence of mental healthcare utilization). In addition, a total needs score was calculated and converted to a standardized 0–100 score, with a higher score indicating higher mental healthcare needs (used in all other statistical analyses).

Social support was assessed with the Social Support List—Interactions.[29] A higher score (range 0–36) indicates better social support. Self-efficacy was assessed using the Generalised Self-Efficacy scale.[30] A higher score (range 0–40) indicates better self-efficacy. Personality was measured with the Neuroticism-Extraversion-Openness Five Factor Inventory (NEO-FFI).[31] A higher score (range 12–60) indicates a higher level of neuroticism, extraversion, agreeableness, conscientiousness or openness to experience. Coping behavior was assessed using the Utrecht Coping List.[32] A higher score indicates more active coping, palliative coping, avoidance coping, seeking support, passive coping, expression of emotions, and comforting thoughts. Education and living situation were measured using study-specific questionnaires. All other sociodemographic and clinical information (Table 1) was collected from medical files.

2.3 | Statistical analyses

Descriptive statistics, independent *t*-tests and chi-square tests were used to describe the study population. To investigate factors associated with mental healthcare utilization generalized estimating equations (GEE) analysis were used to account for the repeated measures. Measurement and each potential associated factor were used as independent variables and mental healthcare utilization (yes/no) as outcome measure. The GEE analysis was conducted in three populations: (a) all patients using all available timepoints, (b) patients who experienced mild-severe psychological symptoms using only those timepoints on which a patient experienced mild-severe symptoms and (c) patients who experienced severe psychological symptoms using only those timepoints on which a patient experienced severe symptoms. No separate analyses were performed among patients with a mental disorder due to the limited prevalence of mental disorders (<10 patients with a disorder used mental healthcare at each timepoint). A multivariable GEE model was built using a forward selection procedure (p-value <0.05). Factors investigated in relation to mental healthcare utilization were psychological symptoms (anxiety, depression, fear of cancer recurrence), need for mental healthcare (continue as 0–100 score), socio-demographic (gender, age, education, living situation), clinical (tumor location, disease stage, treatment, performance status, comorbidity), and personal factors (social support, self-efficacy, personality, coping). Psychological symptoms, need for mental healthcare, social support and self-efficacy were assessed at each timepoint, whereas personality, coping, and sociodemographic and clinical factors were assessed at baseline and considered constant. All analyses were performed using the IBM Statistical package for the Social Science version 28 (IBM Corp.).

3 | RESULTS

In total 610 of the 739 (83%) NET-QUBIC patients had complete data on psychological symptoms, needs and healthcare utilization and were included in this study (Appendix A). Patient characteristics are provided in Table 1.

3.1 | Mental healthcare utilization

Of all HNC patients, 5% received mental healthcare at baseline, 9% at 3 and 6 months and 1 year follow-up and 5% at 2 years follow-up (Table 2). Mental healthcare use was 4%–14% in patients with mild-severe psychological symptoms, 4%–17% in patients with severe psychological symptoms, 15%–35% in patients with a mental disorder and 5%–16% in patients with an unmet need for mental healthcare. Among patients with an unmet need for mental healthcare (i.e. an unmet need or a need for additional care), 5%–16% received mental healthcare during that same time period. Figure 1 illustrates,

TABLE 1 Baseline characteristics.

	Included HNC patients ($n = 610$) *N* (%)	Not included HNC patients ($n = 129$) *N* (%)	*p*-value
Mean age ± SD	63.5 ± 9.5	62.1 ± 10.7	0.16
Sex			0.91
Men	454 (74%)	95 (74%)	
Women	156 (26%)	34 (26%)	
Education level			**0.012**
Low	231 (41%)	48 (57%)	
Middle	151 (27%)	20 (24%)	
High	182 (32%)	16 (19%)	
Living situation			**<0.001**
Alone	127 (22%)	37 (44%)	
Together	438 (78%)	47 (56%)	
Tumor location			0.39
Oral cavity	171 (28%)	28 (22%)	
Oropharynx	214 (35%)	48 (37%)	
Hypopharynx	40 (7%)	12 (9%)	
Larynx	166 (27%)	39 (30%)	
Unknown primary	19 (3%)	2 (2%)	
HPV-status (oropharynx cancer only)			**0.029**
Positive	112 (60%)	18 (42%)	
Negative	74 (40%)	25 (58%)	
Clinical disease stage			**0.033**
0/I	146 (24%)	17 (13%)	
II	111 (18%)	21 (16%)	
III	100 (16%)	27 (21%)	
IV	253 (41%)	64 (50%)	
Type of treatment			0.42
Single treatment	329 (54%)	64 (50%)	
Surgery	131 (21%)	21 (17%)	
Radiotherapy	198 (32%)	43 (34%)	
Combination treatment	281 (46%)	64 (50%)	
Chemoradiotherapy	169 (28%)	46 (36%)	
Surgery and radiotherapy	92 (15%)	14 (11%)	
Surgery and chemoradiotherapy	19 (3%)	4 (3%)	
Other combination treatment	1 (0%)	0 (0%)	
WHO performance			**<0.001**
Able to carry out normal activity	429 (70%)	78 (60%)	
Restricted in physically strenuous activity	156 (26%)	35 (27%)	
Ambulatory, capable of limited self-care or completely disabled	25 (4%)	16 (12%)	

TABLE 1 (Continued)

	Included HNC patients ($n = 610$) *N* (%)	Not included HNC patients ($n = 129$) *N* (%)	*p*-value
Comorbidity			**0.005**
None	182 (31%)	22 (19%)	
Mild	222 (38%)	42 (36%)	
Moderate	117 (20%)	38 (32%)	
Severe	60 (10%)	16 (14%)	

Note: *P*-values that were found to be significant are printed in bold.

TABLE 2 Overview of patients that use mental healthcare per timepoint.

	Mental healthcare utilization									
	Baseline		3 months		6 months		1 year		2 years	
	N	Users (%)	*N*	Users (%)	*N*	Users (%)	*N*	Users (%)	*N*	Users (%)
All patients	517	24 (5%)	494	42 (9%)	432	37 (9%)	390	34 (9%)	355	16 (5%)
Patients with mild-severe psychological symptoms	345	14 (4%)	304	35 (12%)	248	28 (11%)	200	27 (14%)	164	11 (7%)
Patients with severe psychological symptoms	248	10 (4%)	196	28 (14%)	157	23 (15%)	128	22 (17%)	97	7 (7%)
Patients with a mental disorder[a]	20	3 (15%)	NA	NA	NA	NA	26	9 (35%)	17	4 (24%)
Patients with an unmet need for mental healthcare	311	17 (5%)	237	30 (13%)	159	22 (14%)	134	22 (16%)	109	10 (9%)

[a]Only 414 of the 517 HNC patients at baseline also completed the CIDI interview at baseline. At 1 and 2 years after treatment this was 352 of 390 and 315 of 355 HNC patients.

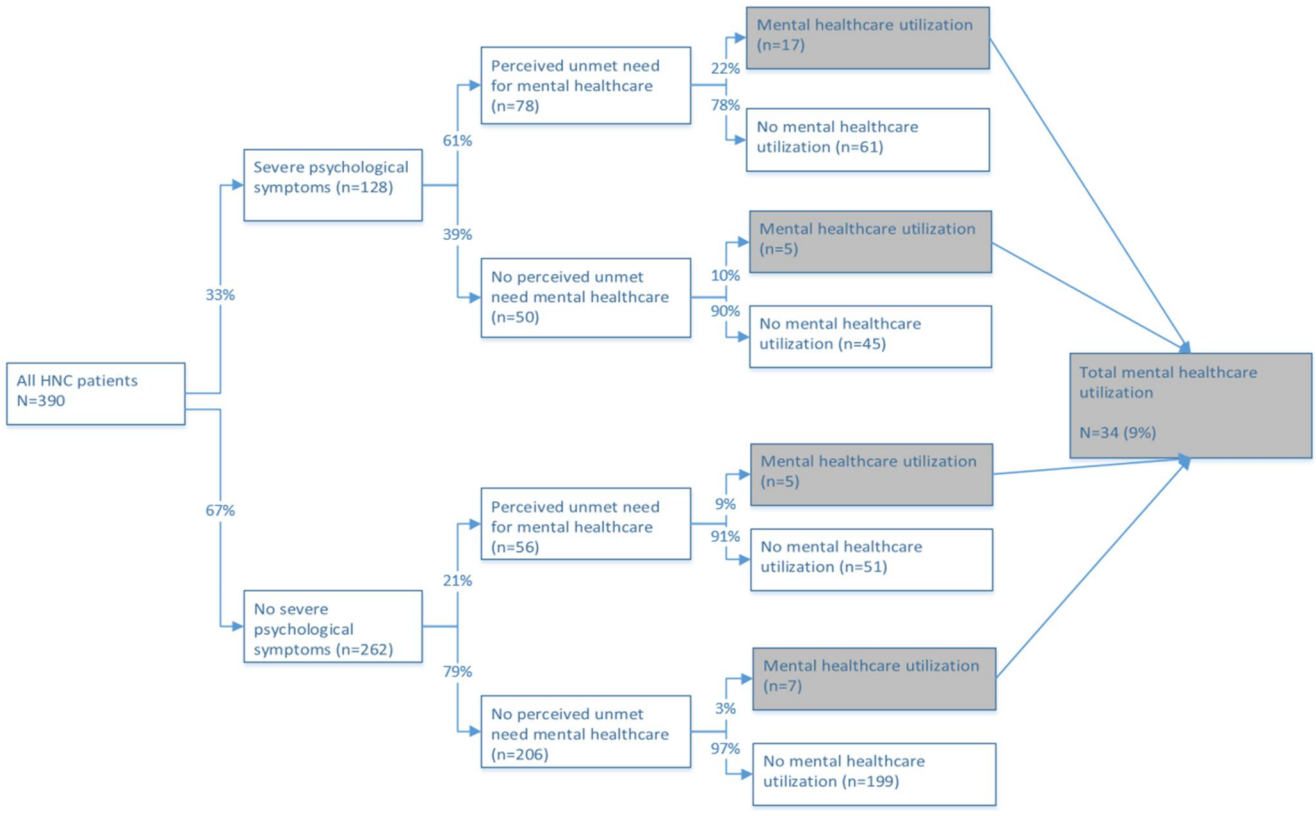

FIGURE 1 Mental healthcare utilization 1 year after treatment in relation to severe psychological problems and unmet need for mental healthcare.

as an example, the discrepancy between use of mental healthcare, presence of severe psychological symptoms and unmet need for mental healthcare at 1 year after treatment. It shows that 33% (128/390 patients) of all HNC patients had severe psychological symptoms 1 year after treatment, of which 61% (78/128) reported an unmet need for mental healthcare. Among patients with severe symptoms and an unmet need for mental healthcare, 22% (17/78) used mental healthcare. Among patients without severe psychological symptoms and no unmet need for mental healthcare 3% (7/206) used mental healthcare.

3.2 | Factors associated with mental healthcare utilization

Among all HNC patients using all available timepoints ($n = 610$, 2385 measurements), a higher level of symptoms of anxiety, a higher need for mental healthcare, lower age, higher disease stage, lower self-efficacy and higher level of seeking social support were associated with using mental healthcare (Table 3). When focusing on those timepoints on which HNC patients experienced mild-severe psychological symptoms ($n = 499$ patients, 1296 measurements), a higher level of symptoms of anxiety, a higher need for mental healthcare, a lower age, lower self-efficacy and higher level of seeking social support were associated with using mental healthcare. When focusing on only those timepoints on which patients experienced severe psychological symptoms ($n = 379$, 847 measurements), a higher level of symptoms of anxiety, a higher need for mental healthcare, a lower age, living together, lower self-efficacy and higher level of seeking social support were associated.

4 | DISCUSSION

This study investigated mental healthcare utilization among HNC patients in relation to psychological symptoms, mental disorders, the need for mental healthcare, and sociodemographic, clinical and personal factors. The study showed that 5%–9% of all HNC patients used mental healthcare per timepoint. This usage rate was somewhat higher when focusing on patients with mild-severe psychological symptoms, patients with severe psychological symptoms, patients with a mental disorder or patients with an unmet need for mental healthcare only. Higher symptoms of anxiety, a higher need, lower age, living together, higher disease stage, lower self-efficacy and higher level of seeking social support were associated with mental healthcare utilization among all HNC patients and/or HNC patients with mild-severe or severe psychological symptoms.

Our finding that 5%–9% of HNC patients used mental healthcare is higher than the 1%–2% found in Dutch HNC patients treated with a total laryngectomy (median of 6 years after surgery),[8] but lower than the usage rate of 16% among German hospitalized HNC patients or 19% among European HNC patients.[33] Mental healthcare utilization among HNC patients is lower compared to patients with cancer at other sites.[15,33] The differences in usage rates between HNC populations might be due to differences in timing (we did not measure mental healthcare utilization during treatment in contrast to Weis et al.[15]), cultural or policy differences and the used definition of mental healthcare. Focusing on patients with mild-severe psychological symptoms only, our usage rate of 4%–14% is lower than the usage rate of 18% found in a study of Krebber et al.[9] among Dutch HNC patients with psychological symptoms. An explanation for this difference may be that we included fear of cancer recurrence in our definition and that we limited mental healthcare utilization to visits to a psychologist, psychotherapist or psychiatrist, whereas Krebber et al.[9] also took psychotropic medication into account.

Interpretation of the finding that most patients with psychological symptoms/disorders do not use mental healthcare may depend on the group of HNC patients who do not use mental healthcare. In our study, need for mental healthcare was significantly associated with its actual use, however, still 39% of patients with severe psychological symptoms 1 year after treatment did not express an unmet need for mental healthcare. As outlined by Bickel et al.[34] not all patients recognize their psychological symptoms and needs, and consequently, may not be aware of the potential benefit of mental healthcare for their well-being. On the other hand, some patients may already benefit from watchful waiting. Previous research has shown that almost a third of HNC patients with psychological symptoms recover spontaneously.[35] Also, Dekker et al.[36] previously made a distinction between adaptive and maladaptive emotions. They stated that psychological symptoms may be adaptive, as they may help patients adapt to the changed circumstances (e.g. facilitating adherence to demanding medical treatment). Nevertheless, it is striking that in our study even among those patients with a mental disorder only up to a third of patients use mental healthcare. Further research is needed how we can improve availability of care for those patients who may benefit from it.

Findings regarding factors associated with mental healthcare utilization in our study were robust. Except for the association between mental healthcare utilization and disease stage and living situation, factors associated with mental healthcare utilization were comparable to those found among subgroups with mild-severe or severe psychological symptoms. The finding that increased levels of symptoms of anxiety, higher need for mental healthcare, lower age, and higher level of seeking social support are associated with increased mental healthcare use is in line with previous research.[5,9,11,15,19,37] The association between higher disease stage and mental healthcare utilization among HNC patients was unexpected, as previous research among Dutch HNC patients showed no such association.[9] An explanation may be that HNC patients with a higher disease stage are likely to have more medical contacts within the hospital (e.g. head and neck surgeon, medical oncologist, radiation oncologist, speech and language therapist or dietician) and are, therefore, more likely to be informed on or referred to mental healthcare.

TABLE 3 Factors associated with mental health care utilization among all head and neck cancer (HNC) patients, HNC patients with mild-severe psychological symptoms and HNC patients with severe psychological symptoms.

	All HNC patients (n = 610, 2385 measurements)				HNC patients with mild-severe psychological symptoms (n = 499, 1296 measurements)				HNC patients with severe psychological symptoms (n = 379, 847 measurements)			
	Univariate		Multivariate		Univariate		Multivariate		Univariate		Multivariate	
	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value
Psychological symptoms and needs												
HADS												
Depression	1.20 [1.13–1.27]	<0.001			1.17 [1.09–1.25]	<0.001			1.15 [1.07–1.24]	<0.001		
Anxiety	1.24 [1.18–1.30]	<0.001	1.13 [1.05–1.21]	<0.001	1.25 [1.17–1.33]	<0.001	1.15 [1.06–1.24]	<0.001	1.25 [1.17–1.34]	<0.001	1.15 [1.05–1.25]	0.002
Total	1.12 [1.09–1.16]	<0.001			1.12 [1.09–1.17]	<0.001			1.12 [1.08–1.17]	<0.001		
CWS	1.15 [1.11–1.20]	<0.001			1.15 [1.09–1.21]	<0.001			1.16 [1.10–1.23]	<0.001		
SCNS-SF34 psychological/mental healthcare needs (0–100 score)	1.03 [1.02–1.04]	<0.001	1.01 [1.00–1.02]	0.025	1.03 [1.02–1.04]	<0.001	1.01 [1.003–1.03]	0.011	1.03 [1.02–1.04]	<0.001	1.02 [1.007–4.56]	0.022
Socio-demographic												
Gender Men = ref		0.015				0.032				0.02		
Women	1.77 [1.12–2.82]				1.77 [1.05–3.00]				2.02 [1.12–3.65]			
Age	0.95 [0.93–0.97]	<0.001	0.95 [0.93–0.97]	<0.001	0.95 [0.92–0.97]	<0.001	0.95 [0.92–0.97]	<0.001	0.94 [0.91–0.97]	<0.001	0.93 [0.90–0.96]	<0.001
Education level Low = ref		0.81				0.29				0.48		
Middle	0.99 [0.53–1.85]				1.35 [0.63–2.91]				1.40 [0.57–3.49]			
High	1.18 [0.69–2.00]				1.68 [0.88–3.21]				1.58 [0.75–3.34]			
Living situation Alone = ref		0.10				0.18				0.048		0.048
Living together	0.63 [0.37–1.10]				0.64 [0.33–1.23]				0.49 [0.24–0.99]		2.14 [1.01–4.56]	
Clinical												
Tumor location Oral cavity = ref		0.08				0.30				0.23		
Oropharynx	0.62 [0.35–1.08]				0.71 [0.38–1.32]				0.61 [0.30–1.26]			
Hypopharynx	1.74 [0.77–3.94]				1.79 [0.65–4.92]				2.09 [0.74–5.90]			
Larynx	0.66 [0.35–1.23]				0.58 [0.26–1.28]				0.68 [0.28–1.70]			
Unknown primary	1.16 [0.44–3.04]				0.96 [0.32–2.86]				0.97 [0.32–2.93]			

(Continues)

TABLE 3 (Continued)

	All HNC patients (n = 610, 2385 measurements)				HNC patients with mild-severe psychological symptoms (n = 499, 1296 measurements)				HNC patients with severe psychological symptoms (n = 379, 847 measurements)			
	Univariate		Multivariate		Univariate		Multivariate		Univariate		Multivariate	
	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value
Disease stage 0/I = ref		0.008		0.002		0.009				0.09		
II	2.36 [1.17–4.74]		2.54 [1.29–5.02]		1.94 [0.82–4.59]				2.07 [0.78–5.49]			
III	3.14 [1.57–6.27]		2.44 [1.28–4.65]		3.64 [1.67–7.91]				2.97 [1.20–7.35]			
IV	1.63 [0.89–3.00]		1.09 [0.60–1.98]		1.65 [0.80–3.43]				1.43 [0.61–3.35]			
Treatment Single = ref		0.55				0.29				0.81		
Combination treatment	1.15 [0.73–1.79]				1.33 [0.78–2.24]				1.07 [0.59–1.94]			
Performance score Normal = ref		0.43				0.74				0.61		
Restricted in activity	0.79 [0.28–2.23]				1.03 [0.58–1.83]				0.98 [0.51–1.86]			
Ambulatory	1.33 [0.81–2.18]				0.64 [0.19–2.13]				0.48 [0.11–2.04]			
Comorbidity None = ref		0.14				0.41				0.57		
Mild	1.45 [0.83–2.54]				1.47 [0.78–2.77]				1.34 [0.64–2.78]			
Moderate	0.75 [0.35–1.61]				0.82 [0.34–1.96]				0.89 [0.35–2.29]			
Severe	1.77 [0.77–4.08]				1.43 [0.50–4.09]				1.84 [0.61–5.52]			
Personal												
Social support	0.99 [0.96–1.02]	0.61			0.99 [0.96–1.03]	0.64			1.00 [0.96–1.04]	1.00		
Self-efficacy	0.92 [0.89–0.95]	<0.001	0.94 [0.90–0.97]	<0.001	0.93 [0.89–0.96]	<0.001	0.93 [0.88–0.98]	0.005	0.94 [0.90–0.99]	0.011	0.91 [0.85–0.97]	0.004
Personality												
Neuroticism	1.08 [1.05–1.12]	<0.001			1.06 [1.01–1.10]	0.012			1.04 [0.99–1.09]	0.12		
Extraversion	1.01 [0.98–1.05]	0.50			1.02 [0.98–1.07]	0.32			1.04 [0.99–1.09]	0.12		
Openness	1.06 [1.02–1.10]	0.006			1.06 [1.02–1.11]	0.008			1.04 [0.99–1.09]	0.11		
Agreeableness	0.99 [0.94–1.04]	0.70			1.01 [0.95–1.07]	0.79			1.01 [0.94–1.08]	0.87		
Conscientiousness	0.98 [0.94–1.02]	0.24			0.98 [0.93–1.03]	0.47			0.99 [0.93–1.05]	0.73		
Coping style												
Active tackling	1.00 [0.94–1.07]	0.93			1.01 [0.94–1.09]	0.80			1.02 [0.93–1.12]	0.65		

TABLE 3 (Continued)

	All HNC patients (n = 610, 2385 measurements)				HNC patients with mild-severe psychological symptoms (n = 499, 1296 measurements)				HNC patients with severe psychological symptoms (n = 379, 847 measurements)			
	Univariate		Multivariate		Univariate		Multivariate		Univariate		Multivariate	
	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value
Palliative reacting	1.09 [1.02–1.16]	0.011			1.05 [0.96–1.14]	0.31			1.07 [0.97–1.17]	0.20		
Avoiding	1.06 [0.99–1.13]	0.11			1.02 [0.94–1.10]	0.71			1.01 [0.92–1.10]	0.86		
Seeking social support	1.13 [1.06–1.20]	<0.001	1.09 [1.02–1.16]	0.007	1.11 [1.04–1.19]	0.001	1.08 [1.01–1.16]	0.034	1.14 [1.05–1.22]	<0.001	1.15 [1.05–1.26]	0.003
Passive reacting	1.26 [1.18–1.35]	<0.001			1.21 [1.10–1.32]	<0.001			1.18 [1.06–1.32]	0.002		
Expression of emotions	1.20 [1.05–1.38]	0.01			1.18 [1.00–1.38]	0.045			1.08 [0.90–1.29]	0.40		
Reassuring thoughts	1.13 [1.03–1.23]	0.007			1.10 [0.98–1.23]	0.097			1.14 [1.00–1.30]	0.05		

4.1 | Clinical implications

Some HNC patients currently do not use mental healthcare, despite experiencing psychological problems, a mental disorder and/or a need for psychological care. This study provides insight into the characteristics of these group of patients, which may facilitate tailoring of the provision of information and mental healthcare. Mental healthcare can also be tailored based on format of delivery (e.g. face to face or web-based applications).

4.2 | Study limitations

A limitation is that visits to low-intensive mental health care provided by an oncology nurse, the general practice, self-management tools or web-based applications were not taken into account, whereas these last two treatment formats may be especially of interest for patients with a speech impairment after treatment. If patients did have access to these types of care, this may explain the limited utilization of specialized mental healthcare in this study. Another limitation is that we did not have data on the cause of psychological symptoms and that mental disorders may have been pre-existing and not related to HNC or its treatment. Finally, a potential limitation is that mental healthcare utilization was measured using a recall period of 3 months, consequently we do not have insight into mental healthcare utilization during treatment or in between long-term follow-up measurements. This is also the reason why we focused on the association between presence of psychological symptoms, need and utilization of mental healthcare at the same timepoint instead of prospective analyses.

5 | CONCLUSIONS

Mental health care utilization was low among HNC patients in the first 2 years after diagnosis and treatment, and there is a discrepancy between HNC patients who use and may benefit from mental healthcare. Psychological symptoms, need for mental healthcare, and sociodemographic (age), clinical (tumor stage) and personal factors (living situation, self-efficacy and seeking social support) were significantly associated with mental healthcare utilization among HNC patients.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

Data and materials are described on the NET-QUBIC project website (www.kubusproject.nl). The collection and integration of large amounts of personal, biological, genetic and diagnostic information precludes open access to the NET-QUBIC research data. On the website it is described how the data are made available for the research community.

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APPENDIX A: Flow diagram