

Psychological factors and patient delay in patients with head and neck cancer[☆]

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Abstract

There is a rising incidence of patients presenting with advanced cancer in the head and neck region. Late presentation may be due to a delay in seeking medical attention, which is sometimes surprisingly long. The aim of the present prospective study was to investigate the association between patient delay and the psychological factors of optimism, health hardiness, overall defensive functioning, coping styles and psychological distress in 277 patients with cancer of the head and neck. Significant correlations were found between patient delay and the psychological factors. Twenty-six percent of the patients waited more than three months before seeking medical attention and they reported less optimism ($P = 0.0001$), less health hardiness ($P = 0.008$), less active coping ($P = 0.019$) and less seeking support as a coping style ($P = 0.017$) than patients presenting within three months. Excessive drinkers (5+ alcoholic drinks/day) tended to show more delay than patients who did not drink or were moderate drinkers (0–2 drinks/day) or moderate-heavy drinkers (3–4 drinks/day). Together, the psychological factors could explain 25% of the variance of patient delay in excessive drinkers compared with 21% and 6% in moderate-heavy drinkers and non-drinkers to moderate drinkers, respectively. These results suggest that psychological factors affect health-care seeking behaviour. Health education aimed at the risk group of excessive drinkers should take psychological factors into account that influence their health behaviour.

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1. Introduction

During the last 20 years, there has been a rising incidence in the number of patients presenting with advanced cancer in the head and neck region in the Netherlands [1], and this has also been seen worldwide [2,3]. Late presentation may be due to a delay in seeking medical attention, although results regarding the effect of patient delay on tumour stage are contradictory [4–6]. Studies showed that 25–30% of patients waited longer than three months before seeking medical care [6,7].

Patients presenting with cancer in an advanced stage need extensive treatment, which may worsen their quality of life and survival after therapy [8]. Therefore, in order to prevent late presentations, it is important to identify the factors associated with this delay.

A delay in seeking care could partly be explained by tumour-related factors such as the site of the tumour and the type of symptom experienced by the patients. In addition, socio-demographic variables, such as socio-economic class were found to influence patient delay [9,10]. Psychological characteristics are seldom taken into account to explain patient delay in patients with head and neck cancer and such factors will be the focus of this study.

The assessment of psychological factors in relation to delay might be particularly relevant in patients with head and neck cancer because of their health behaviour.

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Patients with head and neck cancer are often heavy to excessive drinkers and smokers. The personalities of subjects using excessive amounts of alcohol are characterised by a tendency to deny or repress unpleasant events, indifference, depression and a tendency to act passively [11]. This may result in a failure to consult a medical professional as soon as suspicious symptoms occur and delay in seeking care until it is in an advanced stage.

Past studies in which the relationship between psychological factors and the delay in seeking care for cancer symptoms have been investigated have mostly involved breast cancer patients. Relationships between denial and delay were found in some studies, but were not confirmed in others [12–14]. More recent studies found significant relationships between optimism and patient delay [15] and active coping and patient delay [16]. Patients who were optimistic or had an active coping style showed less delay in seeking care for their cancer symptoms. A study which examined the relationship between the psychological factors of health locus of control, hopefulness, repression-sensitisation and anxiety and patient delay found no significant associations [17].

The aim of the present study was to examine patient delay in relation to the psychological factors of optimism, coping style, overall defensive functioning, psychological distress and health hardiness, which have been proven to be related to health behaviour [18–20].

2. Patients and methods

2.1. Patients

From 2000 until 2002, 427 consecutive patients with squamous cell carcinoma of the pharynx, larynx or oral cavity diagnosed at the University Medical Center Utrecht were eligible for study inclusion. Patients with a previous malignancy in the head and neck region, cognitive impairments or a poor understanding of Dutch were excluded. Three hundred and six patients (72%) agreed to participate. The main reasons for refusal to participate were poor physical or mental condition (30%), lack of motivation (29%) or too much burden (22%). Six patients (5%) who agreed to participate died before the interview took place. The non-participants did not differ from the participants regarding gender, age, tumour localisation or tumour size.

2.2. Procedure

Participants filled in a questionnaire on psychological measures a few weeks after they were diagnosed, but before receiving treatment. Most patients spent 30–60 min on completing the questionnaire. They were

interviewed about the period of the discovery of the first symptoms until the moment they sought medical attention by one of the investigators just before surgery or at the start of radiotherapy. To verify the course of events in the care-seeking process, a questionnaire was sent to the general practitioner (GP) or dentist who was initially consulted and to a significant other, which was (in most cases) the partner of the patient or a family member (response rates 94.1% and 76.2%, respectively).

2.3. Measures

Patient delay was defined as the time from the first awareness of symptoms to the first medical consultation. The data provided by the patient were used primarily. In cases in which the total patient delay reported by the significant other was more than 1 month longer than that reported by the patient and if the significant other indicated that the patient postponed seeking medical care for a specific reason, such as fear or denial, the data provided by the significant other was used instead. The date of the first medical contact for cancer-related symptoms was established by the GP or dentist. Patient delay was divided into less and more than three months delay in accordance with previous literature [21].

Optimism was measured by the Dutch version of the *Life Orientation Test* (LOT) [22,23], which consists of 8 items and measures generalised optimistic expectancies about outcomes in life. The optimism score is the sum of the 8 items which are rated on a scale ranging from *strongly disagree* (0) to *strongly agree* (4). Higher scores indicate more optimism.

A Dutch version of the *Defense Style Questionnaire* (DSQ-42) [24,25] was used to measure overall defensive functioning. The DSQ measures 21 defence mechanisms, each mechanism measured by two items that are rated on a scale from *strongly disagree* (0) to *strongly agree* (8) and which can be ordered along several defence levels. The adaptive level consists of mature defences (e.g. humour, anticipation), while the levels of distortion and denial consist of immature defences (e.g. idealisation, denial and projection). An overall defensive functioning score was computed which indicates that the higher the score, the more mature defence mechanisms the patient adopts relative to immature ones.

The Dutch version of the *Health Hardiness Inventory* (HHI) [26,27] (Dr. K.A. Wallston, Vanderbilt University, Nashville) was used to measure health hardiness. This 35-item scale consists of belief statements that measure the extent to which individuals are committed to, and involved in, health-related activities, perceive health as controllable and approach potential health stressors as an opportunity for personal growth. Items are rated on a five-point Likert scale ranging from

strongly disagree (1) to *strongly agree* (5). An overall score was used which indicates that the higher the score, the greater the health hardiness.

Coping styles were measured by a short version of the *Utrecht Coping List* consisting of 17 items (UCL) [28]. Coping style is defined as the use of similar behaviours across stressful situations [29]. Five coping styles are distinguished: Active coping (5 items), Seeking support (5 items), Avoidance coping (3 items), Palliative coping (2 items) and Religious coping (2 items). Items are formulated as coping behaviours (e.g. *When facing a problem, I ask someone to help me*) rated on a four-point Likert scale ranging from *seldom or never* (1) to *quite often* (4). Scale scores are the sums of the individual items. Higher scores indicate that the specific coping style is more often adopted.

A Dutch version of the 14-item *Hospital Anxiety and Depression Scale* (HADS) [30,31] was used to measure anxious and depressive symptoms. We used a total sum score of the HADS which can be interpreted as a uni-dimensional measure of psychological distress [32]. Higher scores indicate more psychological distress. A score above the cut-off score of 19 is an indication for a major depressive disorder.

The patient's *age, gender, level of education and living situation* were recorded during the interview. The level of education was recorded as low, middle and high. With regard to living situation, patients were divided into those living alone and those living with a partner or one or more family members.

Smoking and drinking habits were elicited during the interview. Patients were asked if they smoked or drank before diagnosis and, if so, how many cigarettes they smoked or glasses of alcoholic beverages they drank daily. If patients had stopped smoking or drinking, the moment of quitting was recorded as well as the former cigarette and alcohol intake. Patients were divided into three groups according to their drinking habits [33]: non-drinkers to moderate drinkers (0–2 drinks daily, which includes patients who never drank, or stopped drinking); moderate-heavy drinkers (3–4 drinks daily); and excessive drinkers (5+ daily).

Data on disease characteristics, such as tumour localisation and tumour size, were retrieved from medical records. The tumours were registered according to the International Classification of Diseases for Oncology (ICD-O) and the TNM classification [34].

2.4. Statistics

We used the Statistical Package for Social Sciences (SPSS; Windows 10.0 software) for the statistical analyses. χ^2 Tests and *t* tests were used to compare the patients with less than three months delay and more than three months delay on sociodemographics and psychological factors.

Pearson correlations were computed for all psychological factors and patient delay. Patients with different drinking habits were compared regarding the psychological factors and patient delay by means of univariate variance analysis (ONEWAY). Pearson correlations were computed between the psychological factors and patient delay for groups with different drinking habits. Multiple regression analyses were used to examine the contribution of the psychological factors in explaining patient delay.

Delay in number of days was used. The positively skewed delay time data were transformed with a logarithmic function to normalise the distribution for statistical analysis. Missing data were imputed using a data augmentation procedure [35].

3. Results

3.1. Patients

The data of 15 participants were excluded from the analyses: 8 patients were asymptomatic and their symptoms of head and neck cancer were first detected by a health professional and 7 patients were symptomatic, but did not seek help for their symptoms. In those cases, the health professional alerted them to their symptoms. Another 14 patients did not fill in the questionnaires measuring the psychological constructs and were therefore excluded from the analyses. This left 277 patients.

Sixty-nine percent of the patients were male and 62% were under the age of 65 years (Table 1). Fifty nine percent of the patients were smokers and 83% drank alcohol before diagnosis. One third (33%) of the patients presented with a large tumour (T3 or T4). Approximately one in four patients (26%) waited more than 3 months before seeking medical advice. Of the sociodemographic characteristics, only age and living situation were associated with patient delay ($\chi^2 = 7.09$; $P = 0.008$ and $\chi^2 = 5.12$; $P = 0.024$, respectively). A greater patient delay was found in patients aged over sixty-five years and those living alone. Gender and education were not related to patient delay.

3.2. Psychological factors and patient delay

Mean scores and intercorrelations of the psychological measures and patient delay for the total group are presented in Table 2. Patient delay was, although moderate, negatively related to optimism, health hardiness and overall defensive functioning, and positively related to avoidance coping.

Patients who postponed seeking medical advice for more than three months differed from those who did not with regard to optimism, health hardiness, active coping and seeking support as a coping style (Table 3). Patients

Table 1
Characteristics of study population ($n = 277$)

	<i>n</i>	(%)
Gender		
Male	191	(69)
Female	86	(31)
Age group (years)		
<65	171	(62)
≥65	106	(38)
Living situation		
Living alone	62	(22)
Living with partner or family	215	(78)
Education ^a		
Low	132	(48)
Middle	91	(33)
High	50	(18)
Smoking		
Never	31	(11)
Stopped	82	(30)
0–20 cigarettes	60	(22)
>20 cigarettes	104	(38)
Drinking		
0–2 drinks daily	162	(59)
3–4 drinks daily	48	(17)
>4 drinks daily	67	(24)
Tumour localisation		
Larynx	106	(38)
Throat	49	(18)
Mouth	122	(44)
Tumour size		
T1	95	(34)
T2	90	(33)
T3	33	(12)
T4	59	(21)
Patient delay		
<3 months	205	(74)
>3 months	72	(26)

^a Some data are missing.

who postponed their first medical consultation were less optimistic, reported less health hardiness and made less use of active coping and seeking support as a coping style. There was a trend for patients with lower overall defensive functioning scores to show more patient delay.

3.3. Drinking habits, patient delay and psychological factors

There was a trend ($P = 0.064$) for excessive drinkers (5+ daily) to show more patient delay than non-drinkers to moderate drinkers (0–2 daily) or moderate-heavy drinkers (3–4 daily) (Table 4). The mean patient delay for excessive drinkers was 115 days (median 57 days), compared with 83 days (median 36 days) and 83 days (median 33 days) for non-drinkers to moderate drinkers and moderate-heavy drinkers, respectively.

Excessive drinkers showed more psychological distress than moderate-heavy drinkers. Among the excessive drinkers, 27% had an indication for a major depressive disorder compared with 8% among the moderate-heavy drinkers. Excessive drinkers with an advanced tumour did not differ from those with an early tumour with regard to psychological distress. Non-drinkers to moderate drinkers reported more health hardiness and religious coping than the patients who drank three or more drinks daily.

For non-drinkers to moderate drinkers, no significant correlations were found between patient delay and the psychological factors. There was a trend for health hardiness to be related to patient delay ($r = -0.14$, $P = 0.071$). For the moderate-heavy drinkers, avoidance coping was positively related to patient delay ($r = 0.38$, $P = 0.008$). Optimism ($r = -0.43$, $P = 0.0001$) was negatively related to patient delay in the excessive drinking group. There was a trend for overall defensive functioning and religious coping to be associated with patient delay in this latter group ($r = -0.21$, $P = 0.091$; $r = 0.23$, $P = 0.06$, respectively).

3.4. Explaining patient delay with psychological factors

Multiple regression analyses were conducted to examine how much variance in patient delay could be explained by the psychological factors (Table 5). In the total group of patients, the psychological factors could explain 6.2% of the patient delay ($F = 1.97$, $P = 0.044$). The most important explaining variables were optimism and psychological distress. In the case of patients who drank no or moderate levels of alcohol, the psychological factors also explained 6.2% of the patient delay. In this patient group, psychological distress best explained the patient delay. The regression model was not significant. Psychological factors, especially avoidance coping, explained a greater variance in patient delay in the group of moderate-heavy drinkers, although the regression model was still not significant ($R^2 = 20.8\%$; $P = 0.379$). The psychological factors significantly explained patient delay in the excessive drinking group ($R^2 = 25.3\%$; $P = 0.040$), with optimism and religious coping as the most important variables. Comparable results were obtained when controlled for age, gender, living situation and education.

If smoking behaviour was taken into account, as an additional health risk behaviour, and analyses were carried out among those patients who drank and smoked before diagnosis, an even greater variance of patient delay could be explained. In the group of patients who drank 3–4 drinks a day in combination with smoking ($n = 33$) 44% of the variance of patient delay could be explained by the psychological factors. For patients who drank five or more drinks a day in com-

Table 2
Mean scores and Pearson intercorrelations among the study variables

	<i>N</i>	<i>M</i>	<i>SD</i>	Possible range	1	2	3	4	5	6	7	8	9
1. Delay	277	90.75	158.57	1–1436									
2. Optimism	264	21.07	5.35	0–32	–0.15*								
3. Health hardiness	251	2.17	0.25	0–3	–0.15*	0.29**							
4. Overall defensive functioning	241	4.17	0.50	0–8	–0.13*	0.37**	0.35**						
5. Active coping	265	13.25	3.00	5–20	–0.07	0.25**	0.25**	0.31**					
6. Seeking support	266	10.65	3.20	5–20	–0.08	0.07	0.22**	0.13*	0.27**				
7. Avoidance coping	266	5.73	1.74	3–12	0.16*	–0.32**	–0.25**	–0.33**	–0.08	–0.06			
8. Palliative coping	268	4.94	1.34	2–8	0.03	0.16**	0.20**	0.11*	0.26**	0.19**	0.14*		
9. Religious coping	253	3.50	1.60	2–8	0.06	–0.19**	–0.10	–0.07	–0.08	0.10	0.23**	0.05	
10. Psychological distress (HADS score)	258	13.10	7.77	0–42	0.03	–0.54**	–0.33**	–0.44**	–0.25**	0.05	0.34**	–0.06	0.11

Note: *N* indicates the number of patients who completed the questionnaire; *M*, mean; HADS, Hospital Anxiety and Depression Scale; *SD*, standard deviation.

* $P < 0.05$.

** $P < 0.01$.

Table 3
Mean score comparisons of psychological variables for patients with and without delay

	Patient delay		<i>t</i> value
	<3 months <i>n</i> = 205	>3 months <i>n</i> = 72	
Optimism	21.74	19.08	3.75***
Health hardiness	2.19	2.10	2.67**
Overall defensive functioning	4.18	4.05	1.89†
Active coping	13.48	12.51	2.37*
Seeking support	10.88	9.83	2.40*
Avoidance coping	5.64	6.00	–1.42
Palliative coping	4.90	4.93	–0.18
Religious coping	3.41	3.75	–1.53
Psychological distress (HADS score)	12.36	13.86	–1.38

† $P < 0.10$.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

bination with smoking ($n = 53$), the psychological factors accounted for 25% of the variance of patient delay. In the case of moderate heavy and excessive drinkers who maintained their drinking and smoking habits after diagnosis ($n = 45$), the explained variance of patient delay increased to 39%.

4. Discussion

Patient delay is often observed among patients presenting with symptoms of head and neck cancer. Tumour-related and sociodemographic variables can only partly explain patient delay, yet few studies have considered psychological factors as a reason for the delay. Therefore, our study sought to examine the relationships between psychological factors and delay in seeking medical advice after discovery of symptoms related to cancer in the head and neck.

Table 4
Mean scores of patient delay and psychological factors for groups with different drinking habits

	0–2 drinks/day <i>N</i> = 162	3–4 drinks/day <i>N</i> = 48	5+ drinks/day <i>N</i> = 67	<i>F</i> value
Patient delay (days)	83	83	115	3.10†
Optimism	21.20	22.02	19.98	2.25
Health hardiness	2.20	2.08	2.13	4.65**
Overall defensive functioning	4.16	4.14	4.13	0.08
Active coping	13.00	13.27	13.75	1.48
Seeking support	10.64	10.50	10.60	0.04
Avoidance coping	5.84	5.33	5.84	1.69
Palliative coping	4.92	4.79	4.96	0.22
Religious coping	3.80	3.06	3.09	7.13***
Psychological distress (HADS score)	12.61	10.69	14.57	3.44*

† $P < 0.10$.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

Table 5

Separate multiple regression analyses to explain patient delay for the total group and for groups with different drinking habits

	Total group (<i>n</i> = 277)		0–2 drinks/day (<i>n</i> = 162)		3–4 drinks/day (<i>n</i> = 48)		5+ drinks/day (<i>n</i> = 67)	
	β	<i>P</i> value	β	<i>P</i> value	β	<i>P</i> value	β	<i>P</i> value
Optimism	–0.14	0.055	–0.04	0.732	0.01	0.972	–0.55	0.004
Health hardiness	–0.10	0.141	–0.15	0.117	–0.18	0.287	0.06	0.667
Overall defensive functioning	–0.07	0.356	–0.09	0.346	0.09	0.594	–0.01	0.950
Active coping	–0.02	0.770	–0.03	0.766	–0.17	0.314	–0.01	0.923
Seeking support	–0.04	0.572	–0.04	0.671	–0.03	0.887	–0.02	0.897
Avoidance coping	0.10	0.151	0.06	0.504	0.40	0.020	–0.11	0.501
Palliative coping	0.06	0.320	0.10	0.262	0.01	0.960	–0.03	0.846
Religious coping	0.01	0.866	0.01	0.892	0.02	0.888	0.22	0.084
Psychological distress	–0.14	0.070	–0.19	0.064	0.09	0.620	–0.17	0.309
Regression model								
Multiple <i>R</i>	0.25		0.25		0.46		0.50	
Explained variance (<i>R</i> ²)	6.2%		6.2%		20.8%		25.3%	
<i>F</i> value	1.97	0.044	1.21	0.351	1.11	0.379	2.14	0.040

Values are standardised regression coefficients (β) with significance of *t*, except for the Regression model where rows represent *R* and *R*², and *F* values and significance of *F* is displayed.

The psychological measures of this study were inter-related in the expected direction, which is an indication of the validity of the measures. Coping style, overall defensive functioning, optimism and health hardiness were shown to be related to patient delay in seeking care. The way people cope with a symptom is very important for the decision as to whether or not to seek professional medical consultation. Promptness in care-seeking can be seen as an active, problem-solving coping strategy [15]. Indeed, patient delay was associated with avoidance coping and patients who postponed their medical consultation for more than three months made less use of an active coping style or of seeking support as a coping style. This is in agreement with the literature as Facione *et al.* [16] found those women with an active coping style were less inclined to delay seeking care for a breast symptom.

Defence, which can be seen as a specific form of coping [36], was measured by an overall defensive functioning score. It was found that patients who adopt more immature defences relative to mature defences, showed more patient delay. Denial and other forms of defensiveness are likely to occur when an individual has no means of immediately reducing the threat [37]. Denial is frequently presumed to be responsible for patient delay, especially in the case of unusually long delays [38].

Optimism was associated with less patient delay in seeking care. Likewise, Lauver and Tak [15] found that, among patients confronted with a breast symptom, optimism was related to prompt care-seeking. Optimism has been associated with a greater use of active coping, while pessimism has been shown to be related to avoidance [39]. In addition, optimism has been related to a greater attention to health threats [40].

The present study found a negative relationship between patient delay and health hardiness. Thus, patients

who were involved in health issues and believed they have control over their health showed less delay. As far as we are aware, the relationship between health hardiness and patient delay has never been directly examined. A related construct, health locus of control, was found not to be related to patient delay in seeking care for breast symptoms, although the sample size was small [17]. Health hardiness has been found to be related to other health behaviours as well. Hardy individuals were found to adapt better to chronic illness [41] and engage more in health promoting activities such as exercising, dieting and non-consumption of alcohol and cigarettes [42].

Patients who drank 5 or more drinks daily tended to show more patient delay than patients who drank less or nothing at all, a finding not confirmed in other studies [43,44]. Excessive drinkers also showed significantly more psychological distress before treatment. Alcohol intake has been proven to be associated with anxious and depressive symptoms [45]. Patients who drank 0–2 drinks daily showed more health hardiness and reported more religious coping than moderate heavy drinkers (3+ drinks daily), which possibly reflects a difference in lifestyles and values.

Although the psychological measures were only partially capable of explaining patient delay in patients who drank nothing, light, or moderately, they were more important in explaining patient delay in patients drinking more than three drinks a day. This was especially true for excessive drinkers, in which a quarter of the variance in patient delay could be explained by the psychological variables. Further multiple regression analyses showed that in the case of non-drinkers to moderate drinkers, patient delay was associated with the type of symptom experienced, knowledge of cancer and discussing the symptoms with others (data not shown).

By contrast, these same factors could hardly explain delay among excessive drinkers. Thus it seems that, among excessive drinkers, psychological characteristics like coping style and general outcome expectancies are indicative for the reaction to a head and neck symptom, regardless of the medical and social situation.

It should be borne in mind that the associations between the psychological factors and patient delay found for the total group were, although significant, small. However, it is meaningful that very general psychological self report measures could explain a specific behavioural measure like a delay in seeking care to such a large degree in a specific group of patients, namely excessive drinkers. When a second health risk behaviour, cigarette smoking, was taken into account, explained variances increased even further, especially in the case of those who continued drinking and smoking after diagnosis.

Other psychological factors that might explain patient delay are guilt or fear about medical judgement. Especially in heavy drinkers these might be important factors in the process of seeking medical care [46]. In addition, these factors could lead to under-reporting of the amount of alcohol consumption, which must be borne in mind when interpreting the findings of this study. Beyond psychological factors, social factors might play a role in the care-seeking process. As we have seen, patients who were living with a partner or family showed less delay, possibly because discussing the symptoms leads to patients seeking care earlier.

A threat to the reliability of the findings of this study concerns the time at which the measurements were taken. The questionnaires were completed after cancer was diagnosed, at a time at which the patients may have been in a state of emotional turmoil. Although most of the psychological variables in this study are assumed to be stable over time, it is not possible to exclude reactions to recent events (such as the diagnosis of a major life-threatening disease like cancer) as an explanation for the current reported behaviour.

The results of this study show that patient delay is a serious problem among patients with head and neck cancer, especially among excessive drinkers. The psychological characteristics of these patients seem to influence patient delay. Although the risk group of excessive drinkers is a hard group to reach, health education directed at them should not focus solely on symptoms, but also on outcome expectancies and on supplying information about adaptive coping strategies.

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