A Prospective Study of the Impact of Nasopharyngeal Cancer and Radiotherapy on the Psychosocial Condition of Chinese Patients

Peter W. H. Lee, BSocSc, MSocSc (ClinPsy), PhD
Tracy T. C. Kwan, BSN
Dora L. W. Kwong, FRCR
Jonathan S. T. Sham, FRCH
Edmond H. N. Pow, FRACDS
Anne S. McMillan, PhD
Gordon K. H. Au, FRCH

1 Division of Clinical Health Psychology, Department of Psychiatry, The University of Hong Kong, Hong Kong, China.
2 Department of Clinical Oncology, The University of Hong Kong, Hong Kong, China.
3 Oral Rehabilitation, Faculty of Dentistry, The University of Hong Kong, Hong Kong, China.

BACKGROUND. Radiotherapy (RT) promises optimistic results in the treatment of nasopharyngeal cancer (NPC). The objective of the current study was to map out prospectively the impact of NPC and RT on patients from diagnosis to 1 year posttreatment.

METHODS. For this study, 67 Chinese patients (46 men and 21 women) with newly diagnosed stage I or II NPC who received primary RT were recruited. Physical and psychosocial adjustments were measured by using the Rotterdam Symptom Checklist, Beck Anxiety Inventory, Beck Depression Inventory, Perceived Stress Scale, and the 36-item Short-Form Health Survey (SF-36). Semistructured clinical interviews were conducted at bimonthly intervals from pre-RT to 1 year post-RT.

RESULTS. Physical and psychosocial adjustments were poorest from pre-RT to the end of RT. Rapid improvements in all areas were noted in the first 2 months post-RT and reached a plateau at around the 6th month. At 1 year, except for physical symptoms and perceived stress, patient measures recovered to their pre-RT levels. At 1 year, patients had more physical complaints \( (P < .001) \) but less perceived stress \( (P = .002) \). The percentage of patients who expressed fear of dying dropped from 28% pre-RT to 2% at 1 year. However, patients who expressed “fear of the worst happening” increased from 51% pre-RT to 57% at 1 year.

CONCLUSIONS. Different periods in treatment of NPC imposed different psycho-social demands on patients. The current results indicated that the period from diagnosis to 2-month post-RT was a high-risk period both physically and emotionally. After treatment, most patients showed resilience despite persistent side effects of RT and successfully resumed their pretreatment level of functioning by the end of the year. Despite resuming a normal or near-normal living, patients still noted a subdued fear of recurrence. Cancer 2007;109:1344–54. © 2007 American Cancer Society.

KEYWORDS: nasopharyngeal cancer, radiotherapy, psychological response, course, psychosocial impact.
survival rates for patients with stage I and II NPC are 98% and 60%, respectively. However, the emotional toll on patients who endure treatment and who live with NPC is seldom addressed. Specifically, the psychosocial issues faced by patients as they move along a disease continuum from diagnosis through treatment to posttreatment survival have not been well documented.

Modern medicine has progressed from a disease-eradication focus to a broader emphasis on comprehensive care for the individual. Beyond achieving a high curative rate, oncologists are placing more efforts on understanding and meeting the psychosocial needs of their patients. Cancer is far more than a physical illness: The psychosocial impact of cancer and cancer treatment, because it is multifaceted and potentially long lasting, often extends into the disease-free survival period. The nature and intensity of this impact varies widely, depending on tumor sites, disease staging, nature of treatment, patients’ life circumstances, personal resources, and resilience. Even within the same individual, a different disease phase may evoke changing emotional and social distress. However, common themes and psychosocial issues have been identified at different phases during the clinical course of cancer. In 1979, Weisman proposed a model for psychosocial phasing in cancer in which he reported predictable psychosocial demands corresponding to specific clinical and therapeutic phases. Weisman’s model is useful in alerting health professionals to the presence of high-risk periods, encourages the early identification of phase-specific problems, and, thus, enhances effectiveness by offering appropriate interventions to promote patient well being.

Compared with patients who have tumors in other head and neck regions, it was noted that patients who had NPC had the greatest impairment in social and role functioning: they were ranked second poorest in terms of global quality of life at diagnosis, and they had the most severe RT-induced symptoms. The physical side effects of RT have been well documented. Some symptoms may disappear soon after therapy, whereas others, such as swallowing dysfunction and hyposalivation, may persist long afterward. Delayed neuroendocrine and neuropsychological dysfunctions after RT also have been reported.

The psychosocial well being of NPC survivors has been less well studied, although a high prevalence of psychological morbidity and poorer health-related quality of life compared with normal controls has been demonstrated. Because of its lower incidence in Caucasian populations, few studies have been conducted solely on NPC in the Western world. Most studies conducted on Western cohorts have focused on patients with other head and neck cancers and only infrequently have included patients with NPC. Results from the few studies that have been conducted in patients with NPC have been limited by a cross-sectional focus, small patient numbers, varied lengths of patient follow-up after diagnosis, and brief posttreatment follow-up periods. Although NPC may be classified as 1 type of head and neck cancer, its clinical presentation, treatment of choice, prognosis, and potential side effects can differ dramatically.

The objective of this study was to overcome previous limitations and attain an in-depth understanding of the psychosocial well being of patients with NPC. The specific objectives of the study were as follows: 1) to provide comprehensive and prospective documentation of the psychosocial impact of NPC and RT on patients from diagnosis to 1 year post-treatment; 2) to identify high-stress periods associated with treatment-related events and the clinical course of the illness; and 3) based on observations and findings, to highlight potential areas of psychosocial interventions with clinical relevance for better patient care.

**MATERIALS AND METHODS**

**Patients**
Ethnic southern (Hong Kong) Chinese with newly diagnosed stage I or II (T1/T2, N0/N1, M0 disease according to the 1997 American Joint Committee on Cancer staging system) NPC were recruited to participate in the prospective assessment from January 2001 to August 2004 through the Department of Clinical Oncology at Queen Mary Hospital. The patients who were included in this study were treated with RT alone, either conventional RT or intensity-modulated RT (IMRT). Because both IMRT and conventional RT commonly are employed for treatment of NPC, patients who received both RT techniques were included in this study to provide a complete picture of patients on treatment for early-stage NPC. Although long-term differences in side-effect profiles of the 2 forms of RT have been reported previously, we expected that short-term changes and differences would be less prominent.

**RT**
IMRT was performed using the Corvus system (version 3.0; Nomos Corporation, Sewickley, PA). The patient was immobilized with mold, and a planning
Computed tomography (CT) scan was obtained for the localization of targets and organs at risk. The gross tumor volume (GTV) included the nasopharynx and any tumor extension outside the nasopharynx. Enlarged cervical lymph nodes were contoured as separate target (GTVn). The clinical target volume (CTV) covered the potential sites of tumor infiltration, including the skull base and the parapharyngeal and retropharyngeal spaces, and included at least a 1-cm margin around the GTV. The planning target volume (PTV) was obtained with an additional 2-mm margin to the CTV. The upper cervical lymphatics (level II and upper level V) also were included in the PTV. The prescribed dose to the GTV and the GTVn was from 68 grays (Gy) to 72 Gy in 34 fractions over 7 weeks. The prescribed dose to the PTV was from 66 Gy to 68 Gy. The lower neck was treated by a separate anterior cervical field with from 60 Gy to 66 Gy.

**Conventional RT**

Treatment started with 2 large, lateral, opposing faciocervical fields to irradiate the nasopharynx and upper neck en bloc to 40 Gy. The lower neck was irradiated with an anterior cervical field to 40 Gy. After 40 Gy, a 3-field technique (with 1 anterior and 2 lateral opposing facial fields) was used to treat the nasopharynx, avoiding further irradiation of the spinal cord. The nasopharynx received another 28 Gy. The neck received another 26 Gy from a separate anterior cervical field. The total dose was 68 Gy to the nasopharynx and 66 Gy to the neck in 2-Gy daily fractions. An additional parapharyngeal boost dose (10 Gy) was given in a posterior oblique field if there was initial parapharyngeal extension of disease at diagnosis.

**Measures**

**Measures of demography and disease staging**

Demographic data on patients’ age, sex, marital status, education, occupation and medical information regarding disease stage, treatment type, and dosage were recorded.

**Measures of physical condition**

Routine nasopharyngoscopy and biopsies were performed at 6 weeks and 8 weeks after the completion of RT for assessment of disease remission. Patients in disease remission were followed routinely every 2 to 3 months during the first year.

**The Rotterdam Symptom Checklist**

The Rotterdam Symptom Checklist (RSCL) was used to measure the symptoms experienced in the past week as reported by the patients. In this checklist, the severity of each item is assigned a score from 1 (not at all) to 4 (very much), and a higher score indicates greater distress. The RSCL was designed originally as a flexible checklist and allows for modification of the symptom list to include relevant symptoms of specific patient groups. Good reliability and validity have been demonstrated. For the purpose of this study, modifications of the original RSCL were made by adding physical symptoms specific to NPC and RT. The RSCL psychological subscale was not used to avoid redundancy, because we assessed psychological functioning comprehensively by using other measures. The final checklist consisted of 34 items and was used to measure and compare the changing physical complaints of patients over the 1-year course of their illness. Although it has not been validated for use in the local context, the RSCL is considered to have appropriate content validity, because patients were able to respond readily and identify with the symptom list. However, potential unreliability in the use of the RSCL cannot be ruled out.

**Measures of psychosocial condition**

The Beck Anxiety Inventory (BAI), the Beck Depression Inventory (BDI-II), the Perceived Stress Scale (PSS-10), and the 36-item short form Health Survey (SF-36) also were used to assess patients’ emotional and psychosocial functioning. During the assessment sessions with patients, extensive narratives also were gathered, because each patient was provided with ample time to report their afflictions, adjustments, and difficulties in facing cancer.

**The BAI and BDI-II**

The BAI measures the symptoms of anxiety, whereas the BDI-II detects and measures the intensity of depression. Both scales have good reliability and validity and have been used widely in the local setting. Higher scores indicate more severe anxiety or depression.

**PSS-10.** The PSS was designed to measure the degree of stress experienced by patients over the previous 1-month period. The scale’s reliability and validity have been documented. The PSS-10 consists of 10 items, and each item is scored from 0 (never) to 4 (always). Higher scores indicate more intense stress.

**SF-36.** The SF-36 is a commonly used and locally well validated general health measure. The domains measured in this study included Role-Physical (RP), which measures the effect of physical problems on daily activities; Role-Emotional (RE), which
measures the effect of emotional problems on daily activities; Social Functioning (SF), which measures the effect of physical or emotional problems on social activities; and Bodily Pain (BP), which measures the severity of physical discomfort and the resulting limitations in activities. A higher score for RP, RE, or SF indicates fewer limitations on activities. Conversely, lower BP scores indicate more bodily discomfort.

**Procedures**

Patients who met the inclusion criteria were recruited, and written consent was obtained for their participation in the study. Assessments were carried out by face-to-face clinical interviews that were conducted by a trained interviewer with nursing qualifications. The interviewer was blind to the disease staging and treatment mode of the patients. Telephone interviews were used on a few occasions when the patients were unable to come to the clinic. To monitor the patients’ psychosocial functioning prospectively, they were interviewed according to the following schedule: after diagnosis and before the commencement of RT (pretreatment); at the completion of RT; and at 2 months, 4 months, 6 months, 8 months, 10 months, and 12 months after the completion of RT. Each patient was assessed 8 times prospectively during the first year after diagnosis. The study was given full approval by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster prior to its commencement.

**Statistical Analysis**

Standard descriptive statistics were used to analyze the sample characteristics, total scores, and selected item scores for each measure. Change over time was examined by plotting the mean score for each variable versus time. Multiple and pair-wise comparisons of mean levels of individual measures across time were conducted by using a general linear model repeated-measures model (Bonferroni tests applied). Paired and independent mean comparisons were conducted to test for differences between time points and between RT groups, respectively. McNemar tests were used to compare physical and psychological symptoms at the pretreatment stage versus the post-treatment stage. $P$ values $\leq .05$ were considered statistically significant. All statistical calculations were carried out using the Statistical Package for the Social Sciences (SPSS) version 14.0 (SPSS Inc., Chicago, IL).

### RESULTS

Seventy-three patients were recruited. Four patients developed persistent disease and received secondary treatment, and 2 patients developed recurrent disease within 12 months after RT. Because those 6 patients were expected to have different psychosocial stresses compared with the other patients, they were excluded from the data analysis. The characteristics of the remaining patients are summarized in Table 1. The ratio of men to women was 2.2:1, and the median age was 47 years, which approximated that published by the Hong Kong Cancer Registry in 2003.\(^2\)

The successful follow-up rate at different time points ranged from 93% to 100%. Noncompliance was because of personal reasons that resulted in the participants’ unavailability for assessment at a particular time point. Most patients returned for subsequent interviews. At the 12-month follow-up, 1 patient withdrew from the study because of personal reasons.

The side-effects profile and psychosocial adjustments noted in the different follow-up assessments were compared between patients who received IMRT...
and patients who received conventional RT. No significant differences between the 2 groups were noted on any measures at pretreatment and subsequent follow-up assessments.

Overall Picture: From Pretreatment to 1 Year After RT

The changes in physical and psychosocial mean scores for the patients over the 1-year course of their illness are shown as graphic presentations (Fig. 1A–H). Scores of within-patient comparisons over time are shown in Table 2. The most difficult period was noted from the time of diagnosis to the end of treatment, during which all measures of patient adjustment were at their worst. A rapid improvement in functioning was noted 2 months after RT as the acute side effects of RT subsided. Significant improvement continued in the physical and social domains up to 6 months after RT. Anxiety, stress, and RE levels remained stable after the 6-month assessment. All other measures remained consistent during the second half of the year.

Differences in Patients’ Physical and Psychosocial Condition Between Pretreatment and the Subsequent Course of Illness

Pretreatment mean scores were compared with the scores obtained at the 2-month, 4-month, 8-month, and 12-month follow-up assessments. The results are shown in Table 3. At all posttreatment assessments, physical symptom scores were worse \((P < .001)\), whereas perceived stress scores were better \((P < .001\) or \(P = .002\)) compared with pretreatment scores. No significant difference was observed for depression or social functioning in any comparison. At 1 year after RT, most scores approximated the pretreatment scores except for physical symptoms and perceived stress.

Physical Complaints and Anxiety at Pretreatment Versus at 1 Year

The most frequent physical and anxiety complaints are listed in Table 4 and Figure 2, respectively. The presence of nasoaural symptoms, which constituted the main diagnostic symptoms of NPC, and frequently reported anxiety complaints were recoded into dichotomous (yes or no) variables and were analyzed with the McNemar test. Compared with the pretreatment level, there was a significant increase at 1 year in the proportion of patients who complained of increased nasal discharge (chi-square statistic, 11.115; \(P = .001\)). Other nasoaural symptoms showed no difference before and after RT. Regarding anxiety items, there was a significant reduction in patients reporting fear of dying \((P < .001)\), feeling nervous \((P = .045)\), or feeling scared \((P = .001)\) at 1 year compared to pretreatment levels. However, the proportion of patients who had a “fear of the worst happening” showed no significant difference \((P = .584)\) between pretreatment and 1 year. Analyses of the patient narratives showed that, among the patients who had this fear of the worst happening, 95% stated that it was related to an ominous fear of cancer recurrence or having to go through irradiation again.

DISCUSSION

To our knowledge, the current study is the first study to document prospectively the physical and psychosocial impact of NPC and RT on patients from pretreatment to 1-year posttreatment.

Acute Stresses and Distress

Our findings generally were consistent with the conceptions proposed by Weisman.\(^6\) Similar to Phase I in Weisman’s model, which is described as the existential plight phase, the psychosocial adjustment of patients from diagnosis through RT to the second month after treatment was the most unstable and chaotic, as demonstrated by the roller-coaster pattern of the mean plot of scores that reflect psychosocial and physical functioning (Fig. 1A-H). At the pretreatment assessment, physical discomfort was minimal. In contrast, anxiety and stress levels were highest at that point. These results are similar to those reported by most other studies on the topic.\(^{14,23}\) Although the sources of anxiety were multiple and differed across individuals, fears related to disease and outcome were common, as reflected in the high prevalence of patients expressing “fear of the worst happening,” “nervousness,” and “fear of dying.” In line with Weisman and Worden’s observation, life-and-death concerns were most prominent in this early phase.\(^{24}\) Impending RT was another prominent uncertainty factor. Patients expressed grave concerns about the toxic-

---

**FIGURE 1.** Mean score plots of individual measures across different time points. The bars represent \(\pm 2 \times\) standard error. (A) The Rotterdam Symptom Checklist-Physical Symptom scale (rt indicates radiotherapy). (B) The Beck Anxiety Inventory. (C) The Beck Depression Inventory. (D) The Perceived Stress Scale. (E) The 36-item Short Form Health Survey (SF-36) Bodily Pain scale. (F) The SF-36 Role-Physical scale. (G) The SF-36 Role-Emotional scale. (H) The SF-36 Social Functioning scale.
FIGURE 1.
ity of radiation, potential unbearable discomforts, and prolonged side effects. Some patients were worried about not having the stamina to survive treatment. Many were apprehensive with an intense sense of foreboding and anticipated being strung with a tight mold covering the head and neck region, immobilized, and confined alone in a small place for the 7 weeks of treatment. One patient complained of sensations of suffocation every time the head mold was put on and was referred for psychological treatment.

RT was highly stress provoking. Physical distress and depressed mood reached their peak at the end of RT (Fig. 1A,C), with significant fatigue and compromised major role functions (Fig. 1F-H). The patients' normal routines were disrupted. Their daily life activities were confined to the hospital (for treatment) and home (for rest). There was little time, interest, or physical strength left for other activities. Similar patterns of adjustment were reported in another study.25

Adjusting to the End of Treatment

When treatment ends, however, the patients' sense of security and protection from cancer may be threatened. In 1979, Holland noted that separation anxiety contributed to high anxiety when treatment was completed.26 Some patients reported that treatment distress was construed as a sign of attack and barricade against cancer. A patient's wife ironically became extremely fretful about the reemergence of cancer when her husband's physical discomfort rapidly resolved after RT. Pains and distress, especially those arising from treatment, apparently served as a security factor. Not having definitive information about what is normal or what to expect after treatment served to maintain the patients' sense of uncertainty and premonition, which probably accounts for why there was no decrease in the number of patients reporting "fear of the worst happening," even after successful treatment.

TABLE 2
Repeated-measures Analyses of Variance: Mean Comparisons of Individual Measures Over Time From Pretreatment to 1 Year Post-treatment

<table>
<thead>
<tr>
<th>Measures</th>
<th>Pretreatment vs End of RT</th>
<th>End of RT vs 2 months</th>
<th>2 months vs 4 months</th>
<th>4 months vs 6 months</th>
<th>6 months vs 8 months</th>
<th>8 months vs 10 months</th>
<th>10 months vs 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical symptom</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>.026</td>
<td>.006</td>
<td>NS</td>
<td>.017</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Anxiety</td>
<td>NS</td>
<td>.004</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Perceived stress</td>
<td>NS</td>
<td>&lt;.001</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Depression</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>.026</td>
<td>NS</td>
<td>NS</td>
<td>.001</td>
<td>NS</td>
</tr>
<tr>
<td>Role-physical</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>.012</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Role-emotional</td>
<td>.002</td>
<td>&lt;.001</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Social functioning</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>.012</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>.023</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

RT indicates radiotherapy; NS, not significant.

TABLE 3
Paired Comparisons of Mean Scores for Individual Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>2 months vs Pretreatment</th>
<th>4 months vs Pretreatment</th>
<th>8 months vs Pretreatment</th>
<th>1 year vs Pretreatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical symptom</td>
<td>-9.19&lt;.001</td>
<td>-7.41&lt;.001</td>
<td>-5.26&lt;.001</td>
<td>-5.82&lt;.001</td>
</tr>
<tr>
<td>Anxiety</td>
<td>+2.96.007</td>
<td>+3.00.016</td>
<td>+2.78 NS</td>
<td>+2.4 NS</td>
</tr>
<tr>
<td>Perceived stress</td>
<td>+5.87&lt;.001</td>
<td>+5.48&lt;.001</td>
<td>+4.83 .002</td>
<td>+4.52 .002</td>
</tr>
<tr>
<td>Depression</td>
<td>-0.41 NS</td>
<td>+0.89 NS</td>
<td>+2.28 NS</td>
<td>+0.33 NS</td>
</tr>
<tr>
<td>Role-physical</td>
<td>-27.78&lt;.001</td>
<td>-15.28 NS</td>
<td>-4.17 NS</td>
<td>-4.17 NS</td>
</tr>
<tr>
<td>Role-emotional</td>
<td>+16.05 NS</td>
<td>+18.52 .044</td>
<td>+22.22 .001</td>
<td>+16.67 NS</td>
</tr>
<tr>
<td>Social functioning</td>
<td>-14.58 NS</td>
<td>0 NS</td>
<td>+12.27 NS</td>
<td>+3.94 NS</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>-25.67&lt;.001</td>
<td>-17.87 .001</td>
<td>-11.07 NS</td>
<td>-3.11 NS</td>
</tr>
</tbody>
</table>

MD indicates mean difference; ±, improvement; −, deterioration compared with pretreatment score; NS, nonsignificant.
Mixed sentiments were noted, because, notwithstanding their residual anxiety, treatment completion indeed was a relief and a triumph, and fear of dying and nervousness were reduced. The hope for a cure was elevated, although mixed sentiments and uncertainties persisted. Cancer seemed to lurk just under-
neath conscious awareness as patients underwent 2 routine biopsy tests in the first 2 months after completing primary RT. Patients with positive findings were called back by telephone for early follow-up within 2 weeks of the biopsy. Thus, an unspoken dread and fear of failing the tests and having to be irradiated again was noted in the patient narratives. Many patients characterized the waiting period as one of severe tension, because they jumped on the tone of any incoming phone calls. Two months after RT, the battle was still not over.

Adjustment at 2 to 4 Months

Beyond 2 months after the completion of RT, patients progressed into an accommodation and mitigation phase similar to that noted by Weisman.6 Anxiety and stress levels were reduced significantly (Fig. 1B,D), probably prompted by reduced physical distress and a gradual return of physical strength. A recuperation period followed as those who worked previously remained on sick leave. Many patients reported that family members were extra caring and tolerant. A brief period of respite ensued as stresses from treatment, work, and family abated to allow for rest and recuperation and for gradually becoming more engaged in their social environment after a long period of home confinement.

By 4 months, all biopsy results became available, and most patients were expected to report relief having an officially certified cancer-free status. However, contrary to expectation, anxiety did not remit. The percentage of patients expressing fear of the worst happening at 4 months was comparable to pretreatment levels. In fact, even at 1 year, 57% of patients expressed the same fear, a proportion that surpassed the pretreatment level (Fig. 2). The mean anxiety score at 1 year was not significantly lower than the peak level at pretreatment (Table 3). Our findings are consistent with previous results, in that >50% of patients had persistent anxiety related to fear of recurrence and had a somber mood that portrayed a gloomy view of their future.27,28 It appears that persistent, subthreshold psychological morbidity is common and is associated with the patients’ perceptions of their vulnerability to recurrence or a second cancer.29 Many perceived NPC as a time bomb. One patient claimed that NPC was always inside him and that he could do nothing but wait for it to explode again. Specific to NPC, there were physical factors that seemed to have aggravated the patients’ fear of recurrence. For many patients, nasoaural symptoms prompted their initial medical contact. Thus, many patients expected their initial symptoms to disappear with treatment success. Unfortunately, our findings indicate that nasoaural symptoms are common and persistent after treatment. In some patients, new nasoaural symptoms appeared after RT (Table 4). Patients complained that it was almost impossible to distinguish side effects of RT from signs of recurrence. Many cancer researchers have commented on how the fear of recurrence may be triggered and maintained by persistent physical distress: especially by distress similar to that caused by the active cancer.30,31 Similar observations have been made in breast cancer survivors, who indicated that their fear of recurrence was triggered by physical signs on their breasts, such as a change in color or swelling, that reminded them of the initial cancer.32 Our patients with NPC who had gone through RT faced the same kind of problem, which that made complacency unlikely.

Adjustment 6 Months After the Completion of Treatment

Stabilization and gradual improvement was noted from the second half of the year onward. This period was marked with relative quietness with the unspoken goal of normalization and reestablishment of a nonillness routine. Despite their residual jittery alertness toward any signs of recurrence, the patients’ physical functioning continued to improve to near the pretreatment level (Fig. 1F). Active mastery and coping, despite residual physical symptoms (like dry mouth and difficulty swallowing), were commonly adopted. Over time, many patients had accepted and come to terms with these symptoms to strive for a normal or near-normal life.

Although the subdued fear of recurrence was still present, less perceived stress was reported compared with the pretreatment phase (Fig. 1D). Many patients reported a change in attitude toward life after treatment. Being diagnosed with NPC and surviving RT constituted major life events and achievements. The reflection on life goals, roles, and attachments were part of an adjustment process that reflected the patient’s efforts to make sense of the tremendous changes precipitated by such major events.33 Confronted with vulnerability and the fleeting nature of their life, some patients indicated that they had learned to value health and interpersonal relationships over success and earthly fortunes. Many patients also regarded life stresses as prompting the onset of their illness and believed that undue stress and worries could lead to a recurrence. Thus, a more relaxed and easy-going attitude toward adversity was cultivated actively.
Implications for Management
The findings of the current study have several implications for oncology professionals who work with NPC patients before and after curative RT. Different clinical phases of NPC brought about different psychosocial impact on the patients. The period from diagnosis to 2 months after treatment is a high-risk period for psychological and emotional harm. Patients were most anxious at the pretreatment period, harboring intense uncertainties, dread, and bewilderment. The health care provider’s active listening and sensitivity is crucial in helping to uncover patients’ hidden fears. The implication for good clinical practice is to provide patients with desired information on the procedure and anticipated physical changes to aid in alleviating treatment-related fears. A routinely provided question-and-answer session, together with an orientation tour for familiarization of the RT clinic and staff, have been suggested to enhance patients’ emotional well being and confidence during the most trying period.\textsuperscript{26} Throughout RT, prophylactic measures, like mouth care and pain relief, may be provided proactively. Routine monitoring of the patients’ psychological status during the acute phase may help to ensure the prompt referral of patients who are in need of mental health care. After treatment, the road to recovery remains long and arduous. Reassurances and professional information on the side effects of radiation, signs of recurrence, and ways to discern the difference are useful in reducing patients’ fear of recurrence while maintaining a healthy level of vigilance. Patient support groups, which allow for sharing of experiences and coping methods, also may be encouraged. Although these recommendations follow logically from the findings of our study, there remains a lack of evidence that they will be helpful. Further prospective, controlled clinical trials for fine tuning and evaluation of the efficacy of these recommendations are warranted.

There were several limitations to the current study. The patients studied included only those with stage I and II NPC who successfully completed primary radiotherapy and survived through the first year without further complications or recurrence. Our findings did not cover patients who developed recurrent or more advance-stage disease. A separate and well-designed study to assess coping and resilience will be required to generate effective and well-informed help strategies. Among our patients, some received conventional radiotherapy, whereas others received IMRT. In this report, we have described the patients’ early psychological response to treatment and have not analyzed separately the impact of the different modes of radiotherapy. Finally, we have presented data on our patients only up to 1 year post-treatment. Previous studies have indicated that physical and psychological morbidity may surface or persist years after cancer treatment.\textsuperscript{34,35} A longer follow-up monitoring of our patients’ psychosocial and physical well being is in progress.

REFERENCES
14. Ma LC. Psychosocial stresses and adjustment of nasopharyngeal carcinoma patients in Hong Kong: a panel study. *Cancer Pract.* 1996;4:258–266.
18. de Haes JC, van Knippenberg FC, Neijt JP. Measuring psychological and physical distress in cancer patients: