

Chapter 4

Mental Health in Head and Neck Cancer



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With cancer research continuing to push the boundaries of modern science, new chemotherapeutic agents are being tested and put to use at a growing rate. Clinical treatment plans continue to be refined to capture increasing cure rates and decreasing morbidity and mortality. The quest to find the ultimate “cure for cancer” is well underway. As such, curing the cancer becomes the main goal of patients and their healthcare teams, and consideration of the mental health of patients and caregivers throughout cancer diagnosis, treatment, and survival can sometimes become overshadowed and neglected. Yet, mental health (MH) issues can present aggressively and can threaten outcomes of treatment and overall prognosis of patients. The importance of the emotional, spiritual, and psychological aspects of cancer has led to the development of the field of psycho-oncology in the past 50 years. Psycho-oncologists advocate for the consideration of individual psychological challenges, as well as cultural and linguistic challenges, in the choices of precise treatment for cancer. Many avenues of cancer care support, from adjustment and coping education to novel biobehavioral therapies, are being developed. To truly benefit from the mission of this growing multidimensional discipline and to capitalize on the advances in chemotherapy, radiation, and surgery, it becomes particularly important to conduct a thorough survey of MH in cancer and generate a solid framework to incorporate supportive intervention throughout the course of cancer.

Head and neck cancers (HNCs) are mostly epithelial malignancies of the upper aerodigestive tract and are estimated to cause roughly 380,000 deaths per year worldwide [1]. HNCs are considered one of the most traumatic and distressing types of cancer and carry some of the highest rates of mental disorders and suicide among all cancers [2–5]. The central and prominent location of disfigurement in HNC and its treatment is thought to be one of the major reasons for distress among HNC patients [4, 6, 7]. Further, debilitating changes in basic functions, such as

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C. E. Fundakowski (ed.), *Head and Neck Cancer*,

https://doi.org/10.1007/978-3-030-27881-6_4

speaking and swallowing, greatly impact the mental health and quality of life of HNC patients [8–10]. Demographic and health behavior risk factors related to HNC pathogenesis are also important considerations when considering MH outcomes. The more recent advent of HPV-positive HNC in younger patients, with better prognosis and increased post-cancer life years, represents a unique challenge in HNC mental health. While some resources exist to support MH in HNC, more research and clinical implementation must be done to create efficient individualized MH evaluation and treatment during the process of HNC and its treatment. This chapter aims to summarize the current findings and future directions of MH in HNC.

Health Behavior Risk Factors and MH in HNC

Special considerations for MH in HNC stem from the major risk factors for HNC. Tobacco use, alcohol use, and human papillomavirus (HPV) infection are all independent major risk factors for the development of head and neck cancers. These three risk factors are strongly tied to individual psychosocial behaviors, socioeconomic status, and cultural context and represent areas for study of both cause and effect of distress in HNC.

Tobacco and Alcohol Use

Tobacco and alcohol use cause HNC due to their cytotoxic and mutagenic effects on the exposed epithelia of the upper aerodigestive tract [11, 12]. Tobacco and alcohol use are nonadaptive coping mechanisms, and their use prior to diagnosis is important to consider as patients undergo the HNC diagnosis and treatment process. The highest rates of tobacco use are associated with American Indian/Alaskan, White, and African-American race, male gender, and low socioeconomic and educational status [13–15]. Personality traits such as extrovertism, neuroticism, and impulsivity have been tied to smokers, with strong evidence of comorbidity between smoking and psychiatric disorders, such as schizophrenia and depression [16]. It is estimated that more than 30% of patients with psychiatric disorders meet criteria for substance abuse or dependence, thought to develop as a reaction to stress [17]. In HNC, tobacco has been found to be a stronger risk factor for HNC than alcohol consumption [18], and studies have focused on progression of tobacco use throughout the HNC process. HNC current or recent smokers presenting for treatment have been found to face increased challenges, being more likely to be unpartnered, unemployed, and lacking insurance and adequate finances [19]. This patient population may also have fewer psychological resources, demonstrating lower religious faith and more fatalistic beliefs [19]. HNC patients presenting for treatment who are current or recent smokers will experience higher symptom burden after treatment [19]. This, along with the additional challenges

they face, can put these patients at higher risk for mental health disturbances throughout the HNC process.

Rates of continued smoking after HNC treatment have been reported to be between 29% and 56% [20–24], with the range thought to be due to variation in screening pattern and patient characteristics across studies. Chen et al. (2014) found that 21%, 21%, and 20% of HNC patients treated with radiotherapy were found to be smoking 1, 2, and 3 years posttreatment, respectively, which increased to 32%, 27%, and 25% when including only former smokers [25]. Presence of a preexisting psychiatric condition at initial cancer diagnosis, most commonly a mood disorder, significantly predicted for persistent smoking at follow-up [25]. Further, elevated rates of depression after HNC treatment place patients at increased risk for smoking [26]. Studies show that relapses are common in HNC patients and that patients are more likely to smoke if household members are also smoking, if they held fatalistic beliefs, or if they had completed treatment [27–30]. Patients are more likely to quit if they have a supportive partner, and social isolation, common in HNC, can affect tobacco use [31]. Fear of recurrence is also paradoxically associated with continued tobacco use in HNC survivors [32].

Continued tobacco use can lead to decreased survival, increased risk for recurrence and development of secondary primary tumors, increased treatment toxicity, and heightened depression and distress [33–36]. Though tobacco use is thought of as a stress-relieving mechanism, studies have found that patients who achieve abstinence experience a marked reduction in anxiety compared to those who fail to quit long-term [37]. These findings show that prioritizing control of existing mood disorders, thoroughly executing tobacco cessation programs, and promoting consistent psychological and social support should be considered to prevent adverse outcomes related to tobacco use in HNC patients.

Whites and Native Americans have the highest rates of alcohol use and, thusly, the greatest risk for alcohol use disorders compared to other ethnic groups. Once alcohol dependence occurs, Blacks and Hispanics experience higher rates than Whites of recurrent or persistent dependence, and the consequences of drinking appear to be more profound for Native Americans, Hispanics, and Blacks [38]. Unemployment is associated with heavier alcohol use and higher risk for developing alcohol use disorders [39], and male gender is correlated with higher and heavier alcohol use [40]. Alcoholism development has been associated with neuroticism features and diminished consciousness traits, and alcoholics who present with depressive disorder have more neuroticism indicators and less awareness compared to those without depression [41–43]. Increasing involvement with alcohol increases risk of depression [44], and major depressive disorder is associated with higher risk of alcohol use disorders [45–47]. In HNC, many patients have a history of heavy alcohol consumption [48], with up to half of HNC patients estimated to continue consumption of alcohol after diagnosis [49, 50]. Current problem drinkers in the HNC population have been found to have the worst depressive symptoms and overall quality of life (QOL) compared to social drinkers and nondrinkers [50].

Pinto et al. (2011) found that maintenance or resumption rate of alcohol use was lower than for smoking for HNC patients after treatment [51]. Some studies have

shown that there are no significant connections between depression and alcohol consumption or alcohol dependency in patients with head and neck tumors [52, 53], and others have shown better function and symptom scores with alcohol drinking [54]. Still, excessive alcohol consumption was found to be associated with worse QOL [55]. Further, there is still evidence of a pre-diagnosis alcohol dose-dependent increase in risk of dying and a continuous drinking post-diagnosis increase in risk of dying compared to nondrinkers in the HNC population [48]. Along with the known link between alcohol abuse and comorbid mental distress, HNC patients, particularly those with prior alcohol abuse, should be advised to abstain from alcohol. In terms of mental health outcomes in HNC patients, more investigation must be done to understand the relationship between distress and varying levels of alcohol use.

Alcohol and tobacco use exert multiplicative effects when used in conjunction [56] and have been known to act synergistically to increase risk for HNC [57]. Co-occurrence of alcohol use, tobacco use, and depressive symptoms is high in HNC patients, with one recent study showing two or more co-occurring problems in 21% of patients surveyed [58]. Other studies have shown similar findings of significant clustering of smoking, alcohol misuse, and depressive symptoms [53, 59–61]. Further, smoking cessation has been shown to improve alcohol sobriety, indicating that treatment of one recognized comorbidity can improve the others [58, 62]. The effects of concomitant smoking and alcohol use must be more clearly delineated in relation to development of depression and distress in these patients.

Human Papillomavirus (HPV) Infection

HPV is a DNA virus that invades epithelial cells, with high-risk cancer-forming strains showing propensity for increased host genome integration and evasion from host immune defenses [63]. HPV infection is associated with high-risk sexual behaviors, such as greater lifetime number of sexual and oral sex partners, that lead to greater exposure to HPV. Recent evidence shows that HPV-positive and HPV-negative oropharyngeal squamous cell carcinomas (OPSCCs) are two fundamentally distinct diseases with different mechanisms of tumorigenesis, presentation, prognosis, and response to treatment [64]. HPV-positive HNC is seen in younger patients and differs in patient education level, race, and survival rates when compared to HPV-negative HNC, tending to affect white, male, married, educated, and actively employed individuals [65]. The 8th edition of American Joint Committee on Cancer Staging Manual, enacted in January 2018, has subsequently defined separate staging systems for HPV-positive and HPV-negative OPSCC [66]. HPV positivity of OPSCCs has been found to correlate with better response treatment and favorable prognosis – leading to longer survival, with a 2-year survival of 95% and 5-year survival of 79% (as compared to HPV-negative 2-year survival of 62% and 5-year survival of 46%) [67]. As most young patients are expected to survive these cancers,

a new set of potential functional conditions, quality of life issues, and mental health considerations will be faced in subsequent life and work years.

Although research dedicated to psychosocial distress in HPV-positive HNC (HPV-HNC) patients is currently scarce, there are reasons to believe these patients are at high risk. HPV-HNCs are primarily oropharyngeal, a tumor location associated with high rates of depression [68, 69]. Patients are also more likely to undergo combined modality treatments that can produce functional defects, symptoms, and disfigurement that will affect MH. HPV-HNCs are known to be sexually transmitted, following specific behavior patterns that may place patients at high risk of distress, including young age at first sexual encounter, high number of partners, and frequency of oral sex and marijuana use [70, 71]. Studies on HPV and cervical cancer can inform some insight on effects of HPV-HNCs on the MH of these patients [69]. HPV-positive women interviewed after repeated HPV testing endorsed increased anxiety, distress, and concern about sexual relationships, as well as shock, confusion, and distress about testing HPV-positive [72, 73]. Emotions were commonly related to sexual transmission concerns, cause of virus, and anxiety about health implications. Concerns about fidelity, past relations, and spousal suspicions may also potentiate stress in a relationship that is already burdened by the strain of cancer [69, 72, 73]. Future exploration into how HPV positivity effects MH of these patients will allow for effective intervention and alleviate further burden on the patient during the HNC process.

Psychosocial Distress and Psychiatric Illness in HNC

“Psychosocial distress” is a term that is determinedly broad, defined by the National Comprehensive Cancer Network (NCCN) as an “unpleasant emotional experience of a psychological, social, and/or spiritual nature that may interfere with the ability to cope with cancer, its physical symptoms, and its treatment.” Psychosocial distress encompasses depression, anxiety, and other psychiatric illnesses and strives to also include other cognitive, behavioral, and emotional components of suffering [74]. The NCCN explains the choice of the word “distress” because it is more accepting, less stigmatizing, and less embarrassing and can be defined and measured by self-report. This term serves as the basis for a wave of inclusion and awareness in cancer care, and tools that measure distress, including the widely used Distress Thermometer (DT), are used to quantify distress as an indicator of suffering. The NCCN has thorough guidelines to follow for distress management in oncology and details an evaluation and treatment process. Using the DT scoring system and thorough clinical and social assessment, patients are stratified into two groups. A score of 4 or more on the DT denoted evidence of moderate to severe distress and warrants referral to mental health services, social work, and, if applicable, chaplaincy care. A score below 4 on the DT warrants first-line treatment by the primary oncology team and continuous evaluation for additional resources if necessary [75]. This workup is for the general cancer population, and workup is explained in broad strokes.

While the NCCN distress workup aims to cast a wide net to capture oncology patients struggling with distress, it is important to also study MH and distress in each cancer population, such as HNC. A recent study reported as high as 51% of HNC patients experienced clinically significant distress [76]. Distress can be generated throughout the HNC cancer process, beginning with diagnosis and extended past completion of primary treatment. Distress can manifest both subclinically and with clinically recognized psychiatric disorders in HNC patients facing the physical, emotional, financial, and spiritual burdens that accompany HNC and its treatment. In this section, we highlight psychiatric components of distress in patients with HNC and summarize findings to serve as a springboard for medical professionals to identify and address HNC patient distress.

Depression in HNC

Psychiatric illness is prominent in HNC as compared to other cancers, with major depressive disorder (MDD) rates as high as 15–50%. Other psychiatric disorders prevalent in HNC include anxiety, post-traumatic stress disorder, and suicide. Depression remains the most highly studied psychiatric disorder in general oncology, as well as in HNC [77, 78]. The DSM-5 diagnostic criteria for major depressive disorder (MDD) are the presence of five or more of the following depressive symptoms during the same 2-week period that represent a change from previous functioning, with one symptom being either depressed mood or loss of interest or pleasure: depressed mood, diminished interest or pleasure in activities, significant weight change without purposely making the change, sleep disturbances, psychomotor changes, fatigue/loss of energy, feelings of worthlessness/guilt, lack of concentration or indecisiveness, and recurrent thoughts of death or suicidal ideation [79]. Diagnosis and treatment of HNC have been associated with physical disfigurement, loss of function, high morbidity, and reduced quality of life, all of which can have a relationship with the causes and effects of depression and other psychiatric illness [80]. HNC patients who are clinically depressed prior to diagnosis and during the HNC process are more likely to have decreased health-related quality of life during and after treatment, prolonged hospital stays, and reduction of self-care abilities. Depressed patients are also less likely to complete treatment plans, and more likely to be more disabled by fatigue and other comorbidities, and to have continued tobacco and alcohol use [80]. Comorbid depressive illness in HNC is independently associated with a 30–40% relative survival disadvantage [78, 80].

Studies have found a multitude of risk factors have been found to correlate with increased development of depression in HNC. Of note, there have been limited studies on biological explanations for depression risks in HNC patients, with studies failing to support a role for certain genetic polymorphisms in serotonin transporter genes [4, 81]. In contrast, sociodemographic, oncologic, treatment, and other patient-related factors can be significant and reliable predictors of depression in HNC patients. Sociodemographic variables associated with higher levels of

depression include female sex, White race, Medicaid enrollment, and US Midwest residency. Oncologic predictors include T3 or T4 stage and hypopharyngeal or laryngeal HNC subsites [4]. Functional changes, particularly dysfunction with salivation and problems with eating, have also been shown to be major risk factors for depression in HNC patients [82]. More extensive treatment and tube dependence are also related to higher risk for development of depression in HNC. Chronic pain as a result of HNC treatment have been shown to lead to measurable increases in depression, anxiety, and decreases in quality of life and recreation [83]. Psychological risk factors found to most predict the development of depression in HNC include depressive symptoms, lack of emotional support and social network, avoidant style of coping, and lack of openness to discuss cancer in the family [4, 84, 85]. Further, disengagement/avoidant coping strategies (rather than engagement-focused coping strategies), such as alcohol or tobacco consumption, are common in people with HNC and are associated with poorer survival rates and higher levels of psychological distress [4, 26, 84–86]. This strategy is especially relevant to HNC patients, as cigarette smoking and alcohol use are established risk factors for HNC [87]. Self-blame at diagnosis has also been found to predict depression posttreatment for HNC [84].

Preexisting depression must also be considered in these patients, as depression has been thought to influence cancer development in a number of ways. Depression may weaken the immune system and place individuals at greater risk for disease development. Chronic stressors associated with depression may also cause a decrease in DNA repair enzymes and natural killer cells that are important in apoptosis, permitting malignant cells to grow and multiply [88–90]. Other theories include shared genes and shared behavioral risk factors between depression and cancer [4, 91, 92]. Preoperative depressive symptoms in HNC patients without preexisting psychiatric history have been shown to be high in HNC patients, and increased preoperative depressive symptoms were found to predict increased postoperative levels of depression [93]. HNC patients with moderate to severe preoperative depressive symptoms have significantly decreased postoperative functional performance status, increased narcotic use, decreased completion of adjuvant therapy, and a longer length of hospital stay [80].

Depression rates in HNC can be as high as 40% at diagnosis and have been reported to be as high as 30% 3 years after diagnosis [94, 95]. Peak symptoms of depression in HNC occur 2–3 months after diagnosis [94, 95]. Longitudinal studies have used Mullen’s “seasons of survival” concept to show that rates of depression are high in the “acute survival” stage between diagnosis to treatment, peak in the “extended survival” stage from treatment completion through recurrence surveillance period, and decrease throughout “permanent survival” greater than 5 years after treatment to varying reported levels [96]. Depression can be difficult to diagnose and treat in the cancer course [97], as depressive symptoms can mimic side effects of cancer and treatment, including sleep disturbances and lack of energy and appetite [4]. Additionally, patient-reported and reported-to-interviewer rates of depression vary widely, resulting in the large range of estimated prevalence of depression in HNC. Studies that use patient-reported measures often indicate higher

rates of depression, which may be important for clinical care teams to consider when screening patients. Screening methods for depression are numerous across all cancers, with multiple questionnaires validated for HNC, including Depression Anxiety and Stress Scale (DASS), Hospital Anxiety and Depression Scale (HADS), and Hamilton Depression Rating Scale (HDRS) [98]. Inpatient and outpatient evaluation of depression is often done concurrently with anxiety using the well-validated HADS questionnaire, a 14-item scale to be completed by the patient that generates ordinal data, with seven items measuring anxiety and seven items measuring depression over the last 7 days. The scale allots 0 (normal) to 21 (severe) per each subscale to generate a composite score of 42 for the instrument [99]. HNC health-related quality of life questionnaires often screen for mood changes as well. One example is the University of Washington – Quality of Life Head and Neck Cancer questionnaire (UW-QOL), an instrument that covers 12 domains that assess the effects of HNC and its treatment. The 12 domains include pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder function, taste, saliva, mood, and anxiety over the period of the last 7 days. The domains are scored on a scale from 0 (worst) to 100 (best) with a composite score of 1200 for the instrument [100]. Regular and thorough administration of depression screening instruments can be included in H&P assessments at visits with HNC clinicians.

Rieke (2016) recently proposed a conceptual model of the pathway to depression among HNC patients [101]. This model highlights factors influencing preexisting depression and factors influencing depression after cancer diagnosis and HNC outcomes, which are categorized into individual-level factors, environmental-level factors, and social/behavioral risk factors. These factors play a nonlinear role in the development of depression in HNC. This model proposes that depression can be both a risk factor for and result of diagnosis of HNC, a concept that points to the necessity of early and longitudinal treatment for full support of patients with HNC. Smith et al. (2017) recently proposed a clinical intervention framework for depression detection and treatment across the “seasons of survival,” tracking targets along the HNC process [97]. This framework can be reconciled with DS guidelines to inform longitudinal MH surveillance and treatment. One of the first steps of programs aimed at decreasing depression in HNC patients is the establishment of a multidisciplinary cancer committee with psychosocial representation. In the acute survival phase, patients are faced with existential distress, demoralization, and resignation to terminal prognosis. Patients may have history of psychiatric illness, negative coping styles, and concurrent substance use. All patient factors must be taken into consideration by the multidisciplinary care team to focus on prevention of depression and distress. In this phase, patients should be adequately educated about the HNC illness timeline, effects of all potential treatment modalities, the importance of tobacco and alcohol cessation, and the symptoms of depression. In some cases, prophylactic medications such as SSRIs can be considered. In the extended survival phase after treatment, patients are facing radiation treatment, advanced HNC stage, physical and functional changes, fear of recurrence, fear of disfigurement, and continued substance use. Screening becomes important in this phase of survival, for high index of clinical suspicion of incident depression. Patients

should be questioned about any psychiatric symptoms and given regular, validated screening tools. Once patients enter permanent survival, which has been defined as greater than 5 years posttreatment, studies have shown large falling off of incident depression and distress in the HNC process [97]. However, patients in this stage still experience fear of recurrence, other cancers, tube dependence, late effects of HNC treatment, and employment difficulties. In this stage, it is important to focus on treatment of depressive symptoms, by triaging symptoms to appropriately match patients with psychosocial interventions, including medications, psychotherapy, stress reduction tools, sleep hygiene education, or even psychiatric hospitalization.

Post-traumatic Stress Disorder in HNC

Cancer diagnosis and treatment are highly stressful events and can be traumatic for many patients and their partners, and preliminary evidence shows that the changes associated with HNC can make HNC patients particularly susceptible to symptoms of post-traumatic stress disorder (PTSD), a disorder of anxiety [102, 103]. Though markedly less researched than depression, PTSD is an important consideration in HNC. The DSM-5 diagnostic criteria for PTSD include exposure to traumatic event and 1-month duration of post-traumatic stress symptoms of intrusive thoughts or re-experience, avoidance/numbing, negative changes in mood and cognition, increased arousal, and functional problems [79]. A recent survey of HNC survivors and their partners has shown high levels of cancer-related post-traumatic stress symptoms (PTSS) can persist for many years after diagnosis, with 33.4% of patients reporting PTSS and 11.8% meeting PTSD criteria. Further subgroup patient-partner analysis showed 33.3% of patients and 25.7% of partners reporting PTSS, with 33.3% of patients and 25.7% of partners experiencing PTSD [6]. The relationship between coping strategies with diagnosis and development of PTSD in HNC has been of particular interest in HNC patients. Denial, substance use, behavioral disengagement, venting, self-blame, and, interestingly, use of humor at diagnosis were found to be significantly correlated with lower HRQL and higher post-traumatic stress at 6 months after diagnosis [104]. These findings have indicated the routine use of brief coping questionnaires at diagnosis for patients and indicate those identified to have ineffective coping strategies may benefit from targeted psychoeducational interventions that encourage more adaptive strategies, like problem-solving, relaxation, goal setting, communication, and development of social networks. Patients and their caregivers were also investigated to show that 19% of caregivers met PTSD caseness at 6-month follow-up, associated with caregiver perceptions of low treatment benefits, many cancer symptoms in patient, and caregiver avoidant coping techniques [105, 106]. Caregivers were defined in this case as attendance at clinic with patient who had been diagnosed recently and having a close relationship with the patient, such as spouse, family member, close friend, or formal caregiver. Posluszny et al. (2015) showed that caregivers, which included patient's spouse or significant other, experienced higher levels of PTSD caseness (28.6%) than patients

themselves (11.9%) around time of diagnosis, which was correlated more strongly to perceived threat of disease than medical variables in patients or caregivers [103]. This indicates that targeted psychoeducational interventions could also be employed in caregivers, which could lead to better physical outcomes and emotional well-being in patients. Caregiver MH in HNC will be further discussed later in this chapter.

Research in HNC Patient Stress Management and Treatments

Mental health in HNC is specific to the prior psychiatric history, coping strategies, social support, health behaviors, and individual experiences of each patient. Thusly, support and interventions for MH support in HNC should be personalized to the patient, which represents a difficult challenge to HNC clinicians. Management must also cover HNC-related psychosocial stressors like interpersonal concerns, uncertainty, interference with activities, communication, fear of recurrence, stigma concerns about distress, concerns about disease and treatment, existential stressors, financial issues, lack of information, and anticipated negative surgical consequences including appearance and body image. In this section, we highlight findings on interventions for stress management in HNC patients.

Pharmaceutical Intervention

First-line treatment for standalone MDD, anxiety, and PTSD is pharmacotherapy plus psychotherapy [107–112]. Pharmacotherapy includes antidepressants, of which selective serotonin reuptake inhibitors (SSRIs) are suggested for initial treatments due to safety and side effect concerns with other antidepressants and are considered safe for treatment of depression in all cancer patients [4]. SSRIs include citalopram, escitalopram, fluoxetine, paroxetine, and sertraline. Citalopram hydrobromide, an SSRI antidepressant, has been studied in prevention of MDD in HNC. Patients given prophylactic citalopram showed fewer depressive symptoms (17%), and fewer participants became suicidal (0 of 10) compared to a placebo group (50%; 2 of 12) after 12 weeks of the study [113]. Nondepressed patients were also given escitalopram in an RCT, which showed that prophylactic escitalopram reduced risk of developing depression by greater than 50% [114]. These findings may indicate use of prophylactic antidepressants in at-risk HNC patients, though more research must be done to determine exactly which patients would benefit most greatly from prophylactic intervention. Other newer antidepressants such as bupropion, venlafaxine, and mirtazapine are also used in cancer patients [4], though studies have not been done with these medications in HNC patients specifically. Further, there have been no studies to test additional therapies for PTSD (such as prazosin) in HNC, in which case clinicians must weigh benefits to side effect profiles, as well

as interaction with chemotherapy medications or other medications the patients are using. Side effects of SSRIs most commonly include sexual dysfunction, drowsiness, weight gain, insomnia, anxiety, and dizziness.

Cognitive Behavioral Therapy

Clinicians must be vigilant in staying up-to-date on the methods of psychologic and psychiatric interventions, as they can mobilize these therapies to create a holistic treatment approach specific to the patient. Often, psychologic therapy is in the form of cognitive behavioral therapy (CBT). Generally, CBT is a short-term, skills-focused treatment aimed at altering maladaptive emotional responses by changing the patient's thoughts, behaviors, or both [115]. CBT has been shown to be effective for a wide variety of mental health disorders, with a large number of diverse protocols that include exposure therapy and cognitive therapy. Medical and psychological interventions (MPIs) tested have included the primary medical interventions including surgery, chemotherapy, and radiation, along with a psychological package of psychoeducation, relaxation, and CBT. MPIs have been shown to reduce overall stress, as well as components of stress scale-fear, psychosomatic complaints, information deficit, and everyday life restrictions in a cohort of cancer patients that included HNC patients [116]. MPIs were also shown to create significant improvements in quality of life, on physical, role, and emotional functioning scales, and decreased fatigue, pain, insomnia, appetite loss, diarrhea, and constipation of symptoms scales in these patients [116]. Selection and efficacy of psychotherapy methods in HNC are a topic of ongoing research. Kangas et al. (2013) conducted a study comparing early intervention with cognitive behavioral therapy (CBT) or nondirective support counseling (SC) in HNC [117]. Patients received six CBT or SC sessions that ran concurrently with radiotherapy and were evaluated 1, 6, and 12 months posttreatment. While a higher proportion of CBT recipients were diagnosis-free at 1 year, both brief interventions were shown to reduce acute stress and comorbid depression, reducing PTSD, MDD, and anxiety. Krebber et al. (2016) compared stepped care (SC) to care as usual (CAU) stratified by screening with high-scoring HADS HNC patients. SC therapy was comprised of watchful waiting, guided self-help, problem-solving therapy, psychotherapy, and psychotropic medications [118]. Readministration of HADS posttreatment showed that recovery rate better in SC than CAU, and SC showed better outcomes in higher HADS than lower. Another study compared SC to CAU and measured direct nonmedical costs, productivity losses, and health-related quality of life (HR-QOL), finding that mean cumulative costs were lower and mean number of quality-adjusted life years were higher in SC programs compared to CAU [119]. This indicates that SC is highly likely to be cost-effective in HNC. CBT has also been combined with swallowing therapy (CB-EST) for dysphagia, a predictor of distress and poor QOL [120]. Preliminary results showed the CB-EST led to improvements in a swallowing questionnaire (MDADI), general QOL questionnaire (EORTC-QLQ&N35), dietary scale (PSS), and fatigue

scores (CFQ-11). However, the complex therapy showed no change in function scales or HADS scores, potentially due to small sample size.

Although HNC patients have been shown to prefer individual one-on-one therapy compared to group or bibliotherapy [121–123], group interventions, including Nucare and Face IT, have been studied and appear effective [124]. Nucare is a nurse-directed CBT that trained patients in problem-solving, relaxation techniques, cognitive coping skills, goal setting, communication, social support, and lifestyle factors [123, 125]. Face IT is another CBT-based intervention that focuses on social skills strategies, exposure to overcome social anxiety, and cognitive restructuring [126]. Another study showed that nurse counselling and after intervention (NUCAI) on depressive symptoms and HR-QOL in HNC patients improved depressive symptoms and several domains of HR-QOL compared to CAU patients [127]. Nurses involved in the study underwent a 1-day extensive training prior to the study. NUCAI was comprised of 12 months of evaluation of current mental status with HADS, discussing current problems and life domains, providing Adjustment to Fear, Threat or Expectation of Recurrence (AFTER), providing general medical assistance and advice, and referring patients to psychological aftercare. Aftercare referrals were to psychiatrist, psychologist or social worker, or rehabilitation and support programs.

In 2013, Semple et al. conducted a meta-analysis of 7 qualifying randomized controlled trials (RCTs) and quasi-RCTs using psychosocial interventions of 542 adults with HNC [128]. Limited by small number of studies, lack of power, and difficulties comparing different types of interventions and outcome measures, this meta-analysis found no significant change in levels of anxiety or depression following intervention. There was insufficient evidence to make any recommendations on psychosocial intervention in HNC. However, other large-scale meta-analyses of general cancer patients have shown that psychological interventions have large effects on depression and anxiety, recommending routine psychological intervention for cancer patients [129]. This points to the importance for further studies that recruit larger numbers of HNC patients, address methodological problems, and lend to study comparability in both measures and outcomes [130].

Survivorship Programs

Survivorship initiatives have begun to recognize the concerns and unmet needs of cancer survivors and their caregivers [124, 131]. These comprehensive initiatives address major physical, emotional, and cognitive disabilities in HNC survivors through interdisciplinary, disease-specific programs. Unmet survivorship needs have been identified in over 50% of general cancer patients [132]. Studies have found up to 68% of HNC patients had unmet survivorship needs, most frequently in the psychological domain [133, 134]. These needs included fears of cancer recurrence, future uncertainty, sadness, and concerns about family and friends [133]. Surveys of HNC survivor caregivers reported managing fears of cancer recurrence

was the most common unmet need [134, 135]. HNC-specific survivorship programs include the Princess Margaret Cancer Centre HNC Survivorship Programme, which serves as a resource for complex HNC patients [10]. The American Cancer Society has also released their guidelines for HNC survivorship care, which includes recommendations for surveillance for HNC recurrence, screening and early detection of second primary cancers, assessment and management of physical and psychosocial long-term and late effects of HNC and its treatment, and care coordination and practice implications [136].

Effect of Smoking and Alcohol Cessation Programs on Mental Health

Tobacco and alcohol use are classic risk factors for HNC. These behavioral risk factors are often causes of head and neck cancers and the effects of treatment that also lend to psychosocial distress, indicating that the role of psychosocial intervention at time of diagnosis throughout the disease trajectory is essential for compliance with treatment and healthy coping posttreatment [137]. Comorbidity of smoking, hazardous alcohol use, and presence of a major depressive episode were found to be high (21% for two or more problems) in HNC patients undergoing radiotherapy [58]. Posttreatment abstinence from smoking has been found to be associated with lower levels of depressive symptoms [138]. However, the relationship between continued risky health behaviors and mental health in HNC is not that simple. Early tobacco consumption following treatment has been found to be predictive of psychological distress at 1-year follow-up, indicating smoking itself may be partly responsible for increasing levels of anxiety and depression [139]. Yet, duration of smoking prior to quitting estimated distress, indicating that prolonged abstinence could correlate to a negative affective state [139]. Clinicians, nurses, social workers, and individual and group smoking or alcohol cessation programs are all integral in the process of quitting. One study implemented a nurse-administered smoking, alcohol, and depression treatment intervention program in HNC patients and found that smoking cessation rates significantly improved compared to care as usual. Although alcohol and depression rates improved, there were no significant outcomes on alcohol and depression at 6 months [61]. More research should be done to define the relationship between alcohol and smoking behaviors with depression.

Patient Support Groups

Patients and caregivers may find community support groups helpful with coping with disease and everyday life after treatment, particularly as social support is related to stronger self-efficacy beliefs and better subsequent health-related

outcomes [140]. Social networks have been found to enhance coping ability of patients in laryngeal and hypopharyngeal cancers [141]. Prominent HNC support groups include Support for Patients with Oral and Head and Neck Cancer (SPOHNC), which has over 125 chapters across the United States and offers frequent meetings, as well as resources and literature for patients [142]. Support groups also exist for specific patient subsets like throat cancer and laryngectomy patients, such as WebWhispers local groups. Patients can always form support groups within their own home hospitals and clinics, which should be encouraged by clinicians and clinical staff. Online support groups (OSGs) have also been created, including the Head and Neck, and Oral Cancer Support Group through CancerCare.org. Participation in these OSGs may be more suitable for patients who are impaired in speech or have altered facial appearance and feel more comfortable receiving support [143]. One survey of 199 HNC patients found that longer use of HNC-related OSGs was linked to better HR-QOL, an association that was mediated directly by depression and adjustment [143]. Patients with longer OSG use had lower levels of anxiety and depression, lower negative adjustment, higher levels of empowerment processes, and a greater belief that they are capable of performing well [143]. Patients should be offered local support group materials and encouraged to seek support to their comfort level.

Other Psychosocial Distress Management Techniques

Multiple novel distress management techniques have been investigated that may warrant further investigation. In one study, an individualized mindfulness-based stress reduction program was used for HNC patients undergoing radiotherapy, finding that tension-anxiety scores significantly decreased over the course of the study, though depression-dejection scores did not. This study also showed that post-intervention mindfulness had a significant negative relationship with both total distress and subscales of anger-hostility, confusion bewilderment, depression-dejection, and tension-anxiety [144]. Another psychosocial intervention, the Easing and Alleviating Symptoms during Treatment (EASE) program, was tested in a pilot study. EASE is a telephone-based intervention involving ongoing systematic assessment of physical, psychosocial, and functional needs, psychoeducation focused on managing treatment side effects, and coping skills training to facilitate adaptive coping and improving self-care and symptom management. EASE was shown to be acceptable, feasible, and relevant to HNC patients, with patients showing small improvements in cancer-specific distress. New rehabilitation programs have been aimed at improving dysphagia, fatigue, hearing loss, and pain and stiffness associated with HNC. These rehabilitation programs have had promising results on HR-QOL scores [145] and should be tested for effects on distress level due to correlation between functional changes and distress in HNC. A randomized trial of a skin camouflage program was performed in female survivors of HNC and found that the 3-month, 4-session program effectively improved facial disfigurement, depression, fear of

social interaction, anxiety of social interaction, and body image in the experimental group compared to the control group [146]. In another study, a tailored hatha yoga program was found to be feasible and potentially efficacious for HNC survivors [147]. Nutrition programs should also be further investigated as malnutrition is a risk factor for depression development in HNC patients [148]. All of these preliminary studies indicate that methods of mindfulness, education, and exercise should be investigated to have a range of validated distress management tools for patients.

Caregiver and Physician MH in HNC

Cancer patients often require extensive support from caregivers. These caregivers, typically friends and relatives, undergo many emotional and physical challenges and are known to experience deficits in psychological health and functioning. These deficits include emotional distress and depressive and anxious symptoms [149–151]. Rates of emotional distress in HNC caregivers were found to be 20–38%, depending on use of HADS total score or Mental Health Inventory (MHI) [152–154]. HNC caregivers have been found to have poorer psychological health compared to the general population and to HNC patients themselves [155–157]. Sherwood et al. (2007) described a conceptual framework of caregiver well-being that described caregiver psychological health outcomes as a function of both patient disease characteristics (such as stage, time since diagnosis, patient functional status, and patient needs) and caregiver personal characteristics and resources (such as sociodemographic factors and social support) [158]. Caregiver characteristics are thought to impact or moderate the association between patient disease characteristics and caregiver psychological health. In terms of patient disease characteristics, some evidence indicates that greater number of hours spent providing care was associated with poorer psychological health and that the 6-month interval following diagnosis is a time of significant emotional distress among caregivers [152–154]. Caregivers report high levels of fear of recurrence, which has been positively associated with emotional distress among caregivers at 3 and 6 months post-diagnosis [155]. Further, in studies of patient-spouse pairs, patient use of a feeding tube and lower levels of patient energy were found to correlate with higher levels of spousal emotional distress [154]. Caregivers have reported that they would like to have support groups incorporated within the standard of care for patients [159]. Caregiver personal characteristics associated with deficits in psychological health in HNC caregivers have not been well-defined in HNC. Additional research would benefit caregivers by providing distinct targets for caregiver support.

Of note, there is a lack of studies focusing on mental health status of HNC physicians. HNC physicians must manage patient distress and can experience some of the same devastating effects of the events patients must go through. Burnout, mental illness, and suicide have been found to be elevated among physicians, with surgical specialists like otolaryngologists at even higher risk for professional burnout. Burnout has been associated with worse patient outcomes and independently

predicts major medical errors. Resident physicians in otolaryngology have been surveyed about well-being, and lower quality of life correlated with more sleepiness, head/neck oncology, and postgraduate year two. Sleepiness and overall well-being improved in senior residency years. Focused interventions using this information could reduce distress associated with lower quality of life [160]. Resident wellness programs, focused on increasing meaning in the clinical work environment, have begun to be implemented at various institutions. These programs include a “time-banking” initiative at the University of Colorado that promotes resident-led patient education for meaningful patient interactions, as well as a comprehensive resident wellness program at the University of Michigan, which focuses on increasing humanization of residents and patients through resident card handouts [161].

Conclusion

Acknowledging the health behaviors that lead to HNC, as well as the highly impactful location and functional changes from the cancer and treatment, has led to increasing interest in MH in HNC. The distressing aspects of HNC affect patients, their caregivers, and their physicians alike. MH must be a priority from diagnosis through to the end of these patients’ lives. Here we have summarized the known elements of MH in HNC. We have determined that health behaviors, such as tobacco use, alcohol use, and high-risk sexual behaviors that lead to heightened HPV infection risk, play a long-lasting and complex role with distress levels in HNC. Psychiatric illness is one aspect of psychosocial distress that can more easily be studied due to existing clinical frameworks from which to begin investigation, though other elements of distress are more difficult to identify and quantify. We have highlighted advances in stress management for improving MH in these patients, most notably cognitive behavioral therapy-based interventions. This summary has led to the conclusion that the best is yet to come, with the open opportunities to define the mental health challenges in the landscape of HNC, to generate effective and validated treatments, and to pair treatments with patients and their caregivers.

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