Counseling Is Effective for Smoking Cessation in Head and Neck Cancer Patients—A Systematic Review and Meta-Analysis

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Purpose: The purpose of this systematic review was to describe the efficacy of smoking cessation counseling and the resulting quit rate in patients with head and neck cancer.

Materials and Methods: A systematic literature search was conducted in the PubMed, Embase, and Cochrane databases. Predictor variables were smoking cessation counseling and smoking cessation interventions. The outcome was smoking cessation. Data collection and quality assessment were performed independently by 2 of the authors. Selected publications were assessed for potential risk of bias, and the level of evidence was evaluated using National Health and Medical Research Council guidelines. Review Manager 5.3 was used to conduct the meta-analysis.

Results: Eight studies involving 1,239 patients were included (3 randomized controlled trials, 3 cohorts, and 2 case series). Smoking cessation was achieved considerably more often in patients who received smoking cessation counseling compared with those who received usual care.

Conclusions: This review shows that counseling supplemented with nicotine replacement therapy increases the possibility for smoking cessation in patients with head and neck cancer.

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The worldwide incidence of head and neck cancer is more than 550,000 cases a year. More men than women are affected, with a ratio of 2:1 to 4:1.[1] Lifetime cigarette smokers have a 5- to 25-fold greater risk of head and neck cancer than the general population.[2] Cancers collectively known as head and neck cancers are anatomically located in the oral cavity, pharynx, larynx, paranasal sinuses, nasal cavity, and salivary glands.

Smoking is the primary etiologic agent in head and neck cancer,[3,4] followed by alcohol consumption and human papillomavirus infection. Tobacco contains nicotine, which is a highly addictive but not carcinogenic substance.[5] Thus, nicotine can be used in a wide range of substitute treatments to help patients overcome the addictive component in tobacco smoke during smoking cessation therapies.

The benefits of smoking cessation on patient health are well established in the oncology setting.[6,7] Continued smoking after a diagnosis of head and neck cancer decreases the efficacy of treatment[6,8,9] and increases the risk of recurrence and the development of a second primary tumor.[7,10-13] Continued smoking also probably has an influence on survival time and mortality, although this has not been proved.[6,14,15]

During the past 20 years, there has been a steady accumulation of research on the efficacy of different

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methods of intervention for smoking cessation, such as nicotine replacement therapy (NRT), physician- and nurse-based counseling, and antidepressant use, typically with varenicline or bupropion. The 5A's (ask, advise, assess, assist, and arrange) is one of the models for physician-based smoking cessation treatment.[16]

The purpose of this study was to summarize the data on the efficacy of smoking cessation interventions and quit rate in patients with head and neck cancer. The authors hypothesized that smoking cessation counseling in addition to other smoking cessation interventions, such as NRT and antidepressant use, might be more efficient than NRT and antidepressants alone. The specific aim of the study was to compare the smoking cessation rate (quit rate) in studies with different smoking cessation interventions with or without counseling and thereby estimate the effect of counseling on smoking cessation in patients with head and neck cancer.

Materials and Methods

STUDY DESIGN AND SAMPLE

To address the research purpose, the authors designed and implemented a systematic review and meta-analysis. The authors independently searched for eligible studies using the PubMed, Embase, and Medline databases for all studies published until November 25, 2014. The selection was limited to articles published within the past 15 years. To be included in the study sample, studies had to include a patient population with a head and neck cancer diagnosis or with precancerous lesions. The studies had to include an intervention for smoking cessation. Studies were excluded if written in a language other than English. Studies with no intervention for smoking cessation or with a population other than head and neck cancer also were excluded.

STUDY VARIABLES

Smoking cessation interventions using some form of counseling were included as the primary predictor variable, and smoking cessation was included as an outcome.

DATA COLLECTION METHODS

The present meta-analysis was conducted in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.[17] The terms used for the search were *smoking cessation, head and neck neoplasms,* and *mouth neoplasms.* No attempts were made to identify unpublished studies.

DATA ANALYSIS

After the database search, all titles and abstracts were read, and potentially useful articles were selected for further inspection. Full-text articles were retrieved and analyzed independently by 2 authors in accord with the inclusion criteria. Prespecified data were obtained from all selected articles and included the following parameters: first author of the study, year of publication, location of the study, number of participants, interventions, age range, study design, study period, and outcomes measured. The quit rate was calculated by dividing the number of patients who successfully stopped smoking by the total number of participants in the intervention group. The quit rate in the control group was calculated the same way.

Cochrane Review Manager (RevMan 5.3, The Cochrane Collaboration, Oxford, UK) was used to analyze and graphically display the meta-analysis data. Relative risk (RR) with 95% confidence interval (CI) for treatment outcome was calculated. The heterogeneity for each study was assessed using the I^2 test. A forest plot was constructed to illustrate the effect size of the studies.

QUALITY ASSESSMENT

The Cochrane Collaborations Risk of Bias Tool[18] was used to evaluate randomized controlled trials. For the cohort studies, the user's guide for an article about prognosis was used[19]; and for case series, the Norwegian Sjekkliste for pasientserier was used.[20] The level of evidence was assessed using the National Health and Medical Research Council additional levels of evidence and grades for recommendations for developers of guidelines.[21]

Results

STUDY DATA

The literature search resulted in 232 unique articles. From these articles, 19 were selected as potentially relevant studies based on their titles and abstracts. One additional study was identified from the reference list in 1 article.[22] The full texts of all 20 articles were assessed, and 8 were rejected based on the inclusion and exclusion criteria. The reasons for exclusion were no intervention[23-31] or wrong outcome.[32-35] For details regarding identification and selection of articles, see the flowchart in Figure 1. Eight published studies were analyzed, including 3 randomized controlled trials,[22,36,37] 3 cohort studies,[38-40] and 2 case series,[41,42] with a level of evidence of II, III-2, and IV, respectively[21] (Table 1).