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## Knowledge of diagnostic and risk factors in oral cancer: Results from a large-scale survey among non-dental healthcare providers in Northern Germany

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## ABSTRACT

**Introduction:** A survey was conducted to assess the level of knowledge on oral cancer among different medical fields, in particular about diagnostic items and risk factors.

**Material and methods:** A self-administered questionnaire was mailed to physicians from various fields, such as otorhinolaryngology, general practice, internal medicine, and dermatology.

**Results:** 388 of the 2,952 questionnaires were returned (13.1%), subdivided into otorhinolaryngology ( $n = 33$ ), internal medicine ( $n = 135$ ), dermatology ( $n = 28$ ), and general practice ( $n = 192$ ). The average knowledge of risk factors was similar in the specialisations, ranging from 68% for internal medicine to 76% for otorhinolaryngology and 77% for dermatology. The three main risk factors: tobacco (93%–100%), alcohol (79%–100%), and prior oral cancer lesions (91%–100%) were the most commonly known. Regarding the diagnostic items, the average percentage of correct answers ranged from 69% for internal and general medicine to 77% for dermatologists. Continuous courses of education and the year of graduation were the only two variables that significantly related to a better level of knowledge of risk factors and diagnostic items.

**Conclusions:** The average knowledge among the different medical fields was satisfying. These results demonstrated a robust base for all healthcare providers to continue working together to improve the early detection of oral cancer.

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### 1. Introduction

Oral cancer is an ongoing public health problem in Germany. More than 13,000 people were newly diagnosed with oral or pharyngeal cancer recently and in the same period more than 4,800 died as a result of these tumours. Since 2000, a slight increasing trend in incidence rates of 10,000 to 13,000 new cases has been observed. Compared with all diagnosed tumours with a total of

460,000 cases per year, oral cancer takes 5th place (3.9%) for men and 15th place (1.6%) for women in Germany. The majority of all cases have been diagnosed in the age group 60 years and older. The 5-year survival rate of about 50% for both sexes is comparatively low compared to colon cancer or cancer of the stomach, because the majority of cases continue to be diagnosed at advanced stages (Robert Koch-Institut, 2012; Bianchi et al., 2009). Such late stage diagnosis is followed by very invasive surgical treatment and often results in visible and functional defects and consequently influences quality of life (Canto et al., 2002a; Mignogna et al., 2004; Becker et al., 2012). The likelihood of survival could be increased if more cases were diagnosed earlier and, consequently, therapy

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could start even earlier (Reichert, 2001; Sankaranarayanan et al., 2005; Patton et al., 2004; Mourouzis et al., 2009).

In order to increase public awareness especially for oral cancer by means of a preventative campaign, it is advisable to develop a target programme for the public and to involve the healthcare providers which could be confronted with the early detection of oral cancer during their daily work. (Maybury et al., 2012). In Germany, in addition to dentistry, otorhinolaryngology, internal medicine, dermatology and general medicine play this key role as the first contact for the public in case of possible questions and for early detection. They should, therefore, be included right from the beginning of the campaign's development, so that they feel as if they are a part of the programme. This would require an evaluation of knowledge by means of a survey, so as to increase awareness and develop target educational programmes for the various specialisations. This evaluation would include assessments of risk factors, signs, and symptoms as well as the early detection of the tumour through a structured routine examination of the oral cavity (Lissowska et al., 2003; Sanchez et al., 2003).

In Germany, a wide range of educational courses is available to physicians after graduation, but physicians are still not obligated to participate in continual courses of education on the prevention and early detection of oral cancer. However, several studies observed insufficient knowledge of the risk factors and diagnostic procedures within medical fields (Applebaum et al., 2009; Canto et al., 2002a; Carter and Ogden, 2007; Reed et al., 2010).

In the autumn of 2007 a project team in Northern Germany started evaluating the scientific basics with the aim of developing a public awareness campaign in the State of Schleswig–Holstein. One of the first steps was to involve the dentists of the state. After evaluating the survey, the project team came to the conclusion that an assessment of potentially relevant medical fields, using the same survey, should be proposed (Fig. 1).

As part of an ongoing state-wide project, this study aimed to evaluate the knowledge of physicians regarding diagnostic items and risk factors in oral cancer. For methodological reasons, and for comparisons with previously successful studies, the study followed a previously used form. Consequently, these studies overlap, which is necessary for methodological reasons.

## 2. Material and methods

### 2.1. Target group and survey procedure

In the autumn of 2009, the project team announced the mailing of the survey in the monthly journal of the Medical Association of the State of Schleswig–Holstein. After the announcement, the survey was mailed to all medical practitioners who in their daily work are likely to be confronted with patients showing symptoms of oral cancer: Otorhinolaryngology ( $n = 148$ ), general practice ( $n = 1,323$ ), internal medicine with/without continual education for general medical care ( $n = 1,311$ ) and dermatology ( $n = 170$ ). Thus, the survey, including a business reply envelope, was mailed by the

state's Medical Association to a total of  $n = 2,952$  physicians. In Germany, physicians are obligatory members of the association of their domicile; therefore, the Medical Association knows the precise number of licenced physicians at any given time and took responsibility for the mailing. All physicians involved in the survey received two reminders after three and six weeks, respectively, as was the case in previous studies. This procedure followed the same one used previously (Hertrampf et al., 2010).

The project was approved by the Ethics Committee of the University of Kiel, Germany (AZ: A 113/06).

### 2.2. Questionnaire

The original questionnaire was developed by Yellowitz et al. (Yellowitz et al., 1998; Yellowitz and Goodman, 1995) and translated into German following a standardised translation methodology (Hertrampf et al., 2009).

The questionnaire consisted of 41 items that tapped into diagnostic procedures about signs, symptoms of and risk factors for oral cancer, as well as the socio-demographic data of the respondents. Response formats included one or two correct answers for the diagnostic items in case of multiple-choice questions and “yes”, “no”, and “do not know” formats for risk factors. Regarding the questionnaire, a stylistic adaptation of the term ‘dental’ into ‘medical’ was carried out on the questionnaire.

### 2.3. Statistical analyses

The statistical analyses made use of descriptive statistics (counts, percentages, and means) and the results were presented as tables. Scores for knowledge of the diagnostic items and risk factors were calculated for each respondent by summing up the number of correct replies. These scores were presented as histograms with an inserted bell curve in order to check for normal distribution. In addition, means, standard deviations, and ranges were reported.

ANOVAs and Scheffé were calculated to analyse the relations between the various medical fields. In order to analyse the relationships between various demographics or professional variables and the knowledge scores, ANOVAs and Spearman's tests were conducted where appropriate. All analyses were run using SPSS software (SPSSinc, Illinois, USA).

## 3. Results

### 3.1. The study sample

410 of the 2,952 questionnaires were returned. Twenty-two questionnaires were excluded because information about the medical specialisations was missing. Thus, 388 out of 2,952 (response rate 13%) were analysed, the sample consisting of the specialisations of otorhinolaryngology ( $n = 33$ , 22%), internal medicine ( $n = 135$ , 10%), dermatology ( $n = 28$ , 16%), and general medicine ( $n = 192$ , 15%).

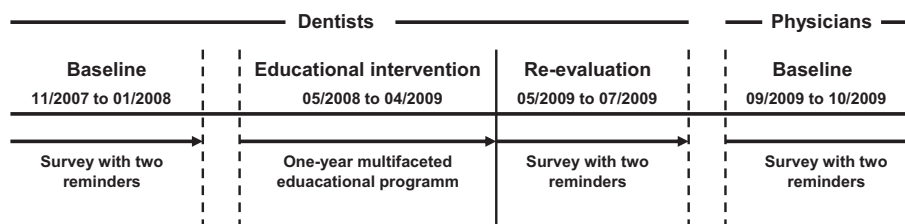


Fig. 1. Study design for the state-wide project with regard to healthcare providers.

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