

# Evaluation of head and neck cancer education at European dental schools

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## Abstract

**Aim:** In Europe, approximately 150.000 patients are diagnosed with head and neck cancer annually. Dentists play an important role in prevention and detection at an early stage when survival rates are best. This study aims to evaluate content of head and neck cancer education curricula of European dental schools.

**Materials and Methods:** A questionnaire, comprising 20 questions about content of curricula and teaching methods, was distributed to the deans of all 234 members of the Association for Dental Education in Europe.

**Results:** The response rate was 24%. All dental schools included head and neck cancer screening practices in their curricula, two-thirds had their students perform this screening on all patients routinely and education was mostly divided over various courses (65%). A variation in content of education in screening practices and counselling patients about various risk factors was reported. Alcohol and tobacco use were included in most curricula as risk factors for head and neck cancer (98%), gastro-oesophageal reflux was less frequently included (41%). The human papillomavirus (HPV) as a risk factor for oropharyngeal cancer was included in 94% of curricula and 87% also contained education about strategies to discuss prevention of HPV-related cancer. No association was found between curricula containing strategies about discussing HPV-related cancer and inclusion of the HPV vaccine in national immunisation programmes.

**Conclusion:** Head and neck cancer teaching programmes show a considerable variation across European dental schools. Development of a unified teaching programme suitable for all European dental schools seems warranted.

## KEYWORDS

dental education, human papilloma virus (HPV), oral cancer, teaching methodology

## 1 | INTRODUCTION

The incidence of head and neck cancer in Europe is high; in 2020 an estimated 151,000 patients will be diagnosed, and 60,000 of these patients will be death within 5 years. Although survival rates are rising, more than half of patients are diagnosed at a late stage and already have regional or metastatic disease which reduces their chance of survival.<sup>1-3</sup> Early diagnosis and timely start of treatment is crucial for further improving success of treatment.

Oral cavity and laryngeal cancers are the most common head and neck cancers. Oral lesions and conditions associated with an increased risk for cancer include leukoplakia, erythroplakia, palatal lesions in reverse smokers, submucous fibrosis, actinic keratosis and lichen planus. Also several genetic diseases may predispose for cancer.<sup>4</sup>

Overall numbers of oral cavity and laryngeal cancers are rising marginally, but due to the human papillomavirus (HPV) the incidence of oropharyngeal cancer is increasing gradually.<sup>5,6</sup> Lifestyle is considered an important factor in developing head and neck cancer. Well-recognised risk factors are the use of tobacco, alcohol and betel. Approximately, one in four oral cancers is related to use of tobacco, and 7–19% is attributable to use of alcohol.<sup>7</sup> Recent research shows that HPV infection is also an important risk factor, which is acquired through sexual contact.<sup>8</sup> Due to the human papillomavirus, there is a shift in characteristics of patients diagnosed with oropharyngeal carcinoma. They used to be older men, who have a history of alcohol and tobacco use. Although OSCC is still dominated by older individuals, there is nowadays a trend that they are younger men, without these traditional risk factors or other health problems, but they have the risk factor of having multiple lifetime sex partners.<sup>9,10</sup>

Persistent infection with high-risk types HPV 16 and 18 is an important risk factor for development of cancer at various anatomic sites as the cervix, anus, penis and oropharynx.<sup>11</sup> Therefore a vaccine is included in all European national immunisation programmes for teenage girls, several programmes include boys as well.<sup>12</sup> Due to misconceptions and lack of information, vaccine uptake dropped dramatically in some European countries the last few years.<sup>13</sup> Therefore, it remains important trying to prevent HPV infections. Healthcare providers, including dentists, can play a role in this prevention by educating patients about the role of HPV in the development of tumours.

Europeans visit a dentist on a regular basis. Of the European patients, 57% visited a dentist less than one year ago, and only 9% of the Europeans last visited the dentist five or more years ago.<sup>14</sup> Therefore, dentists and allied staff have the opportunity to identify oral neoplasms at an early stage than other healthcare workers. This important role of dentists is reflected in the profile of competences for European Dentists, prepared by the General Assembly of the Association for Dental Education in Europe, to harmonise curricula of dental schools throughout Europe. According to competences 4.13 and 6.59, a dentist should be competent to recognise neoplasms and refer patients when needed.<sup>15</sup> However, recent research shows dentists and dental students have deficits in knowledge about risk

factors for head and neck cancer, lack confidence about discussing HPV prevention with their patients and performing a screening for head and neck cancer.<sup>16-20</sup> This suggests that head and neck cancer education of dental curricula may not be sufficient to fully prepare dentists for the above-mentioned competences. Therefore, the aim of this study was to compare content of head and neck cancer education programmes at European dental schools, which might help to improve their curricula.

## 2 | MATERIALS AND METHODS

This study used a cross-sectional descriptive survey research design and was approved by the internal Ethical Review Board of the Academic Centre of Dentistry Amsterdam. The study population consisted of all 234 members of the Association for Dental Education in Europe (ADEE). Membership consists primarily of dental schools in Europe, except for a few in the Middle East. The survey instrument was a 20-item questionnaire and contained questions about background information on each dental school and their curricula, teaching methods used, clinical screening practices and theoretical education about head and neck cancer (Appendix 1). The items 13 up to 16 were developed by an oral-maxillofacial surgeon specialised in oncology, on the basis of previous publications.<sup>21,22</sup>

In March 2018, a letter was sent to all deans of the 234 ADEE registered dental schools, requesting to invite the appropriate faculty member to fill out the questionnaire. A reminder was sent in July. The questionnaire could be returned by ordinary mail, e-mail or online via Formdesk. When dental schools returned multiple questionnaires instead of one, only the online questionnaire was included. If dental schools returned multiple questionnaires completed by different faculty members, they were merged into one based on mean outcomes. Data analysis was performed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA) using chi-square and Fishers' exact tests to explore associations between several subgroups and the independent variables. P values <0.05 were considered statistically significant.

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## 3 | RESULTS

One of the 234 dental schools could not be invited because of insufficient address information. Fifty-five of the remaining 233 dental schools responded to the survey, resulting in a response rate of 24% (Table 1). Fourteen questionnaires were returned by ordinary mail, 10 by e-mail and 31 were completed online. One dental school was excluded because it only offered a postgraduate dental programme. Dental schools were equally divided over Europe and two were located in Lebanon (Table 1). Half of the schools (52%) had more than 100 enrolled students for the academic year

TABLE 1 Number responding dental schools per geographical location and country

	Northern Europe (n)	Eastern Europe (n)	Southern Europe (n)	Western Europe (n)	Middle East (n)	Total
	Finland (2)	Bulgaria (1)	Albania (1)	Belgium (2)	Lebanon (2)	
	Ireland (1)	Czech Republic (1)	Italy (4)	France (4)		
	Lithuania (1)	Hungary (2)	Portugal (2)	Germany (7)		
	Norway (2)	Poland (3)	Serbia (1)	Netherlands (2)		
	United Kingdom (7) <sup>a</sup>	Romania (2)	Slovenia (1)	Switzerland (2)		
		Ukraine (1)	Spain (1)			
			Turkey (3)			
n	13	10	13	17	2	55 <sup>a</sup>

<sup>a</sup>One of the 55 dental schools is excluded because it only provides postgraduate education.

TABLE 2 Potentially (pre)cancerous lesions included in the curricula of European dental schools, stratified according to their geographical location<sup>a</sup>

Potentially (pre)cancerous lesions	Positive response (%) n=54	Northern Europe (%) n=12	Eastern Europe (%) n=10	Southern Europe (%) n=13	Western Europe (%) n=17	p-value X <sup>2</sup>
Epithelial discolorations	96	100	90	92	100	0.44
Irregular textural changes in the epithelium	89	100	80	92	82	0.38
Swellings and bumps in the epithelium	85	100	90	85	77	0.32
Ulcerations	98	100	90	100	100	0.23
Asymmetry in the face	83	100	70	85	77	0.25
Swollen glands or lymph nodes	96	100	90	100	94	0.53
Irregularities in the skin of the head and neck	73	83	80	77	59	0.43
Other <sup>b</sup>	13	17	30	8	0	0.11

<sup>a</sup>The two dental schools in Lebanon were not included in the comparison of the dental schools based on geographical location.

<sup>b</sup>"Other," that is specified as white lesions, orbital tumours, leukoplakia, erosive lichen planus, modified fluorescence in Velscope evaluation.

2017–2018 and most curricula required 5 years (69%). Differences were reported in approach of head and neck cancer education. Only one-third of curricula (35%) had a specific course covering head and neck cancer education. At larger dental schools, the head and neck cancer education was significantly more often divided over various courses ( $X^2(1, N=49) = 4.4, p=0.035$ ). In two-third (65%) of curricula students performed an examination for head and neck cancer routinely on all patients. In the remaining curricula, students were trained to perform an examination in all high-risk patients or when the clinician decides it is necessary for a specific patient. Patients were examined mostly during all visits (32%) or during the initial visit (30%). All curricula taught students to recognise lesions that are suspicious for oral cancer, but irregularities in the skin of the head and neck were only included in 73% of curricula (Table 2). Variation was also reported in examination practices of other regions of the head and neck. Clinical intra- and extraoral examination for head and neck cancer included the oral

cavity in all curricula, but palpating the tonsils and thyroid gland was only included in one-third (Table 3, Table 4).

Variation was reported in content about risk assessment (Table 5, Table 6). Almost all curricula taught students to counsel patients about tobacco and alcohol use as risk factors. Sexual practices were recognised as a risk factor by 69%, but only 37% of the dental schools taught students to discuss this topic with their patients. Most dental schools did not identify male patients older than 40 years old and oesophageal reflux as risk factors.

Most curricula included specific education about HPV as a risk factor for oropharyngeal cancer (94%) and counselling patients about prevention of HPV-related cancer (87%). In 2018, when the survey was conducted, only 35 of the 55 responding dental schools were located in a country that included an HPV vaccine in the national immunisation programme. No association was found between availability of the HPV vaccine in 2018 and education about HPV (Fisher's exact test (1, N=54) = 0.702,  $p=0.506$ ).

**TABLE 3** Topics of intraoral examination included in the curriculum of European dental schools, stratified according to their geographical location<sup>a</sup>

Intraoral examination	Positive response (%) n=54	Northern Europe (%) n=12	Eastern Europe (%) n=10	Southern Europe (%) n=13	Western Europe (%) n=17	p-value $\chi^2$
Visually assess the oral cavity	100	100	100	100	100	-
Visually assess the lateral borders of the tongue	100	100	100	100	100	-
Visually assess the base of the tongue	93	92	100	92	88	0.74
Visually assess the alveolar mucosa	100	100	100	100	100	-
Visually assess the hard palate	100	100	100	100	100	-
Visually assess the soft palate	100	100	100	100	100	-
Visually assess the oropharynx	89	100	90	92	77	0.24
Palpate the tongue	89	83	100	92	82	0.49
Palpate the palate	78	75	90	85	65	0.42
Palpate the floor of the mouth	89	83	90	92	88	0.91
Palpate the buccal and vestibule mucosa	83	75	90	92	77	0.54
Palpate the tonsils and the tonsillar pillars	32	33	20	54	24	0.26
Other	7	25	10	0	0	0.05

<sup>a</sup>The two dental schools in Lebanon were not included in the comparison of the dental schools based on geographical location.

<sup>b</sup>"Other," that is specified as lip mucosa, visually assess the ventral part of the tongue.

## 4 | DISCUSSION

This study shows a variation in content of head and neck cancer education at European dental schools. As our questionnaire primarily explored symptoms and examinations related to oral squamous cell carcinomas, our study primarily describes the variation in teaching about this type of cancer.

Several risk factors for head and neck cancer have been identified and some are greater threats than others. Alcohol and tobacco use are the strongest risk factors and are potentially modifiable by lifestyle changes. Other modifiable risk factors are HPV infection and nutrition. Almost all dental schools reported identification of alcohol and tobacco use and trained their students in counselling skills to motivate patients to change their lifestyle. Prevention of HPV infection can be achieved by use of the HPV vaccine or change in sexual behaviour. The majority of dental schools taught their students about HPV as a risk factor for oropharyngeal cancer and strategies for prevention. These strategies are educating patients about risks of HPV transmission, instructing about changes

in sexual behaviour and encourage patients to participate in HPV vaccination programmes. Remarkably, only one-third of the curricula addressed sexual behaviour counselling. Former research has shown dental students and dentists feel discomfort in having sexual health-related discussions with patients and dental curricula do not include sufficient training on this topic.<sup>16,23</sup> Due to HPV, the risk profile for head and neck cancer changed, younger rather than older men are at risk of HPV-associated oropharyngeal squamous cell carcinoma. However, most dental schools did not indicate male patients from 40 years old being at risk for head and neck cancer. Therefore, most curricula do not seem to be adapting fully to changing risk profiles in the population and provide their students with sufficient competences to play a role in prevention of HPV-related oropharyngeal cancer.

Our questionnaire did not include all potential symptoms of oral cancer. For example, the symptoms pain, paraesthesia, anaesthesia or loss of motor function were not included. However, oral potentially malignant disorders and early cancers usually cause no symptoms whilst mostly extensive malignant disease is likely to

**TABLE 4** Topics of extraoral examination included in the curricula of European dental schools, stratified according to their geographical location<sup>a</sup>

Extraoral examination	Positive response (%) n=54	Northern Europe (%) n=12	Eastern Europe (%) n=10	Southern Europe (%) n=13	Western Europe (%) n=17	p-value $\chi^2$
Visually assess the lips	98	100	100	100	94	0.55
Visually assess the eyes	59	58	80	69	35	0.10
Visually assess the facial skin	89	92	100	100	71	0.04
Visually assess the facial symmetry	91	92	90	92	88	0.98
Visually assess the posture or gait	54	42	50	69	29	0.18
Palpate the (cervical) lymph nodes	94	100	100	92	88	0.47
Palpate the temporomandibular joint	83	92	90	77	82	0.72
Palpate the musculature	76	75	90	77	71	0.71
Palpate the submandibular gland	85	75	100	85	82	0.43
Palpate the parotid gland	82	67	100	85	77	0.24
Palpate the thyroid gland	30	42	30	31	18	0.57

<sup>a</sup>The two dental schools in Lebanon were not included in the comparison of the dental schools based on geographical location.

**TABLE 5** Risk factors for oral cancer that students are taught to assess in patients, included in the curricula of European dental schools, stratified according to their geographical location<sup>a</sup>

Risk factors	Positive response (%) n=54	Northern Europe (%) n=12	Eastern Europe (%) n=10	Southern Europe (%) n=13	Western Europe (%) n=17	p-value $\chi^2$
Tobacco use	98	92	100	100	100	0.33
Alcohol use	98	92	100	100	100	0.33
Sexual practices	69	42	70	85	77	0.11
Nutrition/diet	74	83	70	77	65	0.71
Previous head and neck cancer	91	92	80	100	88	0.43
Familial occurrence of head and neck cancer	72	75	100	77	53	0.06
(Male) patients over 40 years old	30	33	10	46	29	0.32
Prolonged sun exposure/solar radiation	82	75	80	85	82	0.94
Gastro-oesophageal reflux	41	50	40	62	12	0.03
Oral conditions (eg leukoplakia)	100	100	100	100	100	-
Other	11	33	10	8	0	0.05

<sup>a</sup>The two dental schools in Lebanon were not included in the comparison of the dental schools based on geographical location.

<sup>b</sup>"Other," that is specified as any previous malignancies, immunosuppression, lichen planus, radiotherapy in head or neck region, betelnut/qaan, any lesion that after ten days of causal treatment does not modify its appearance.

cause severe pain and/or motor abnormalities, which often results in detection in a late stage when chances of survival are less.<sup>21</sup> Therefore, it is important for clinicians to be aware of *all* potential signs and symptoms and refer patients accordingly.<sup>15</sup> One-third of the curricula did not have their students examine patients for head and neck cancer routinely. A possible explanation is that European

dental schools focus on self-reported information about general health, obtained by a written medical history, to identify high-risk patients who need a subsequent examination of the mouth and neck for cancer. Such an approach is a matter of debate. Two randomised clinical trials evaluated the effect of oral cancer screening and demonstrated that periodic oral examination has the potential

**TABLE 6** Risk factors students are taught to counsel patients, included in the curricula of European dental schools, stratified according to their geographical location<sup>a</sup>

Risk factors	Positive response (%) n=54	Northern Europe (%) n=12	Eastern Europe (%) n=10	Southern Europe (%) n=13	Western Europe (%) n=17	p-value $\chi^2$
Tobacco use	98	100	100	92	100	0.38
Alcohol use	85	83	90	77	88	0.80
Sexual practices	37	25	50	46	29	0.50
Nutrition/diet	57	75	90	46	35	0.02
Previous head and neck cancer	65	50	90	54	71	0.18
Familial occurrence of head and neck cancer	57	42	90	69	41	0.04
(Male) patients over 40 years old	20	25	20	23	12	0.80
Prolonged sun exposure/solar radiation	70	75	90	69	53	0.23
Gastro-oesophageal reflux	30	42	30	39	6	0.12
Oral conditions (eg leukoplakia)	85	83	90	85	82	0.96
Other	7	25	0	8	0	0.63

<sup>a</sup>The two dental schools in Lebanon were not included in the comparison of the dental schools based on geographical location.

to reduce mortality from oral cancer in high-risk individuals, like smokers and elderly.<sup>24,25</sup> However, it has also been suggested that oral cancer screening should be part of the regular dental examination for all patients.<sup>26</sup>

Methods of examination (visualisation and palpation) taught were not consistent across curricula, but several did not include the base of the tongue. One dental school replied they did not include this part because it is not possible to visualise the base of the tongue. To visually examine as much of the tongue as possible, it is advised to use gaze to grasp the tongue and withdraw the tongue as far as possible.<sup>27</sup>

Gaps in theoretical knowledge and lack of confidence in performing an examination for head and neck cancer have been reported in former research amongst dental students in the Netherlands in 2017.<sup>16</sup> Dental students in the Netherlands suggested including more clinical training in their curricula and suggested implementation of clear clinical guidelines for examination.

Variation in content of dental curricula in Europe has been showed for other topics, for example on local anaesthesia education.<sup>28</sup> These variations are reported despite the availability of a profile of competences for graduating European dentists by the General Assembly of the Association of Dental Education in Europe (ADEE). This can be explained by the fact that most competences have not been described in great detail.<sup>15</sup> Another explanation for the variation in head and neck cancer education could be the fact that the content of clinical practice guidelines for oral cancer is not uniform in European countries. The quality of these guidelines is 'moderate' and they are in need for improvement on methodological aspects and applicability.<sup>29</sup> Adding the use of a high-quality clinical guideline in the profile of competences of the ADEE may lead to more uniformity in European dental curricula and optimisation of clinical practice.

This study has several limitations. First, the limited number of people involved in the design of the questionnaire, and the sources used by them. Therefore, for follow-up studies, it seems recommendable to consult an international panel of experts about the optimal items of the survey. The relatively low response rate of 24% could be explained by the fact that the questionnaire was written in English and this is not the native language of most European countries. This could also have caused uncertainties, misinterpretations or misunderstanding of the questions. Moreover, results may be biased because respondents may be more interested in teaching of head and neck cancer and have more content on this topic in their curricula.

Further research should explore more details about the content of the curricula, for example on teaching in communication skills. More detailed information on the content of the curricula could be obtained through online meetings, site visits to European dental schools and discussion with local focus groups. To improve education in head and neck cancer, it might be useful to investigate opinions of dental students too.

## 5 | CONCLUSION

Head and neck cancer education at European dental schools is common, but variation is reported in theoretical content and methods of examination. Examination techniques taught in dental curricula need to be more thorough because detecting oral potential malignant disorders and malignant disease at an early stage improves survival rates for patients. Most European dental schools taught their students skills to counsel patients about traditional risk factors as alcohol and tobacco use, but most curricula did not seem to be adapting

fully to the changing risk profiles in the population. Development of a unified teaching programme suitable for all European dental schools seems urgent. Implementation will be facilitated when this programme can be delivered remotely. Subsequently, further research could assess the impact of this teaching programme upon patient care.

#### AUTHOR CONTRIBUTION STATEMENT

MRP contributed to the study design, interpreted data, wrote the article and approved the final version for submission. HSB conceived the project, contributed to the study design, analysed and interpreted data, critically revised the article and approved the final version for submission. LF contributed to the study design, collected data and approved the final version for submission. JGdV critically revised the article and approved the final version for submission. DHJJ conceived the project, contributed to the study design, analysed and interpreted data, critically revised the manuscript and approved the final version for submission.

#### CONFLICT OF INTEREST STATEMENT

Marcella R. Poelman has no conflict of interest, Henk S. Brand has no conflict of interest, Laura Foppen has no conflict of interest, Jan G.A.M. de Visscher has no conflict of interest, Derk H. Jan Jager has no conflict of interest.

#### ETHICS STATEMENT

The study was performed in accordance with the ethical principles of the Declaration of Helsinki, and was approved by the internal Ethical Review Board of the Academic Centre of Dentistry Amsterdam.

#### DISCLOSURE STATEMENT

All authors have nothing to disclose.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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## APPENDIX 1

### Questionnaire

#### Survey Questionnaire—An Oral Cancer Assessment of Dentistry Courses in Europe (4 pages)

- 1 What is the name of your dental school? \_\_\_\_\_  
\_\_\_\_\_
- 2 Where is your dental school located? \_\_\_\_\_  
\_\_\_\_\_
- 3 What is your title/position in the dental school? \_\_\_\_\_  
\_\_\_\_\_
- 4 How many students are enrolled in your programme for the 2017-2018 academic year? \_\_\_\_\_  
\_\_\_\_\_
- 5 Of the last five years what is your average number of students graduating per year? \_\_\_\_\_
- 6 What is the duration of the dentistry course?  
a. 4 years  
b. 5 years  
c. 6 years  
d. Other (please specify) \_\_\_\_\_  
\_\_\_\_\_
- 7 Does your programme have a specific, required curriculum component or components covering head and neck cancer or is head and neck cancer something which is covered at teachers' discretion as part of other courses' content?  
a. Specific, required curricular component  
b. Learned as part of various courses  
c. No specific curriculum or content covering head and neck cancer
- 8 In the clinic, do students perform head and neck cancer examinations on all patients?  
a. Yes (go to question 9)  
b. No (go to question 8a)

- 8a Which of the following patients receive head and neck cancer examinations routinely?  
a. All patients  
b. All adults starting at age \_\_\_\_\_  
c. All high risk patients  
d. It is left to the clinician's discretion  
e. No patients  
f. Other (please specify) \_\_\_\_\_  
\_\_\_\_\_
- 9 During which of the following visits are head and neck cancer examinations performed?  
a. Initial visit  
b. Recall visits  
c. Prophylaxis visits  
d. Annually  
e. All visits  
f. Never  
g. Other (please specify) \_\_\_\_\_  
\_\_\_\_\_
- 10 Do students in your programme perform head and neck cancer examinations in community settings as well as in the clinic?  
a. Yes  
b. No
- 11 On average, how many patients does a student in your programme see in clinic annually? \_\_\_\_\_  
\_\_\_\_\_
- 12 By the time your students graduate from your programme, approximately how many head and neck cancer examinations will they have performed on average? \_\_\_\_\_  
\_\_\_\_\_
- 13 Are your students taught to recognise potentially cancerous or precancerous lesions in the head and neck region?  
a. Yes (go to 13a)  
b. No (go to 14)
- 13a Which of the following will your graduates recognise as potentially cancerous or precancerous lesions? Mark all that apply.  
a. Epithelial discolorations  
b. Irregular textural changes in the epithelium  
c. Swellings and bumps in the epithelium  
d. Ulcerations  
e. Asymmetry in the face  
f. Swollen glands or lymph nodes  
g. Irregularities in the skin of the head and neck  
h. Other (please specify) \_\_\_\_\_  
\_\_\_\_\_
- 14 Which of the following are your students taught to do as part of the **intraoral** examination for potential head and neck cancers? Mark all that apply.  
a. Visually assess the oral cavity  
b. Visually assess the lateral borders of the tongue  
c. Visually assess the base of the tongue  
d. Visually assess the alveolar mucosa  
e. Visually assess the hard palate



- f. Visually assess the soft palate
- g. Visually assess the oropharynx
- h. Palpate the tongue
- i. Palpate the palate
- j. Palpate the floor of the mouth
- k. Palpate the buccal and vestibule mucosa
- l. Palpate the tonsils and the tonsillar pillars
- m. Other (please specify) \_\_\_\_\_

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15 Which of the following are your students taught to do as part of the **extraoral** examination for potential head and neck cancers?

Mark all that apply.

- a. Visually assess the lips
- b. Visually assess the eyes
- c. Visually assess the facial skin
- d. Visually assess facial symmetry
- e. Visually assess the posture or gait
- f. Palpate the cervical lymph nodes or other lymph nodes
- g. Palpate the temporomandibular joint
- h. Palpate the musculature
- i. Palpate the submandibular gland
- j. Palpate the parotid gland
- k. Palpate the thyroid gland
- l. Other (please specify) \_\_\_\_\_

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16 Which of the following head and neck cancer risk factors are your students taught to assess in their patients? Mark all that apply.

- a. Tobacco use
- b. Alcohol use
- c. Sexual practices
- d. Nutrition/diet
- e. Previous head and neck cancer
- f. Familial occurrence of head and neck cancer (heredity)
- g. (Male) patients over 40 years old
- h. Prolonged sun exposure/solar radiation
- i. Gastro-oesophageal reflux
- j. Oral conditions (for example leukoplakia and erythroplakia)

- k. Other (please specify) \_\_\_\_\_

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17 For which of the following risk factors are your graduating students taught to counsel patients? Mark all that apply.

- a. Tobacco use
- b. Alcohol use
- c. Sexual practices
- d. Nutrition/diet
- e. Previous head and neck cancer
- f. Familial occurrence of head and neck cancer (heredity)
- g. (Male) patients over 40 years old
- h. Prolonged sun exposure/solar radiation
- i. Gastro-oesophageal reflux
- j. Oral conditions (for example leukoplakia and erythroplakia)
- k. Other (please specify) \_\_\_\_\_

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18 Are your students specifically taught and made aware of the fact that the human papillomavirus (HPV) has emerged as a big risk factor for oropharyngeal cancer?

- a. Yes
- b. No

19 Are your students taught about any strategies for prevention of human papillomavirus-related cancer?

- a. Yes
- b. No

20 If you have any other information about your head and neck cancer programme or curriculum you would like to share, please specify below: \_\_\_\_\_

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**End of the questionnaire. Thank you for participating.**