



ORIGINAL ARTICLE

Analysis of population knowledge on head and neck cancer in two municipalities from the interior of São Paulo state

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Abstract

Introduction: Head and neck cancer has a high incidence and early stage diagnosis increases the chance of cure and decreases morbidity and mortality. However, one of the difficulties in achieving early diagnosis is the delay of patients seeking care, partly due to lack of knowledge. **Objective:** This study aimed to evaluate the population knowledge on head and neck cancer in two municipalities from the interior of the State of São Paulo. **Methods:** A cross-sectional study with 323 participants, carried out in 11 health units, in 2017. We used questionnaires divided into four categories: term definition, epidemiology, risk factors and symptoms. **Results:** Less than half presented satisfactory term definition knowledge. About 87.93% of the interviewees associated smoking and/or alcohol as risk factors for head and neck cancer; however, only 33.43% of the participants were aware of the relation between head and neck cancer and HPV. **Conclusion:** The population studied presented gaps in knowledge about head and neck neoplasms. Mapping the knowledge limitations on the subject is of paramount importance for future planning, oriented mainly in the deficiencies on the subject.

Keywords: head and neck neoplasms; public health; disease prevention; health literacy.

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Introduction

Head and neck cancer is a generic term that defines a set of neoplasms according to its anatomical location. It includes the oral cavity, nasal cavity, paranasal sinuses, pharynx, larynx, and adjacent areas, such as the sublingual, submandibular, parotid and thyroid glands. Over 90% of cases are squamous cell carcinoma epithelial neoplasms. The worldwide incidence is about 780,000 new cases per year, ranking fifth in the list of most frequent neoplasms^{1,2}. According to INCA, for the 2018-2019 biennium in Brazil, oral cavity cancer will affect around 11,200 men and 3,500 women per year and an estimated 6,390 new cases in men and 1,280 women per year for laryngeal cancer^{3,4}.

Risk factors such as alcohol and tobacco consumption are well defined in head and neck neoplasms, especially for oral cavity, pharynx, and larynx malignancies. Smoking, when associated with alcohol consumption, increases



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the risk of developing head and neck cancer by 40 times. However, smoking cessation reduces the risk but does not eliminate it⁴⁻⁹.

Another risk factor is the relationship between Human Papilloma Virus (HPV) infection with head and neck cancer. In head and neck neoplasms, HPV virus is present in approximately 20% of cases, and the most affected places are the oral cavity, oropharynx, and larynx. Regarding the virus subtype, around 80% of cases are of subtype 16 and 20% of subtype 18¹⁰⁻¹⁵.

Other cofactors contribute to the carcinogenesis of head and neck cancer, such as professional activity, especially those associated with the metallurgical, petrochemical, plastic industry, rubber, and rural activities, which are constantly exposed to carcinogenic substances, including asbestos, polycyclic aromatic hydrocarbons, and textile dust^{4,6,16}.

The disease is often diagnosed in advanced clinical stages and with metastasis, resulting in a worse prognosis, more aggressive and expensive therapies, and a lower cure rate. Therefore, it is important to recognize the individuals at higher risk and elaborate guiding public policies that favor early diagnosis^{1,17,18}.

Health literacy is an important pillar to facilitate prevention and promote early diagnosis, which is considered a result of health education and is related to skills that go beyond simply understanding information but also acting on health issues^{19,20}. Educational strategies to fulfill the areas with lack of knowledge are essential to enable the population to make appropriate decisions about their health. Thus, this study aimed to evaluate the population knowledge on head and neck cancer in two municipalities from the interior of São Paulo State/Brazil.

Methods

Sample

This is a cross-sectional observational study conducted through a questionnaire regarding head and neck cancer. The sample size calculation considered a confidence level of 90%, α of 0.10, and a sampling error of 5%, with a sample of 271 participants.

We randomly recruited 323 participants (198 female and 125 male) over 18 years old, during the Ministry of Health's 2017 Vaccination Campaign at 11 health units, in the municipalities of São João da Boa Vista and Águas da Prata, in the interior of São Paulo State, Brazil. The Ethics Committee of the University Center of the Associated Faculties of Education - UNIFAE approved the study by CAAE: 70557517.0.0000.5382.

Questionnaire

The work team elaborated the questionnaire used due to the lack of a questionnaire to evaluate the population's knowledge about head and neck cancer in the literature. The variables are composed of gender, classified as male or female, and age group, classified in years old.

The instrument consists of eight questions with closed options, grouped into four categories to evaluate the population’s knowledge on term definition, epidemiology, risk factors and symptoms, as shown in Table 1.

Table 1. Questions to evaluate the population’s knowledge about head and neck cancer.

	Term Description	Epidemiology	Risk factors	Symptoms
1- Did you know that head and neck cancer is a generic term and represents malignant tumors of the mouth (buccal mucosa, gums, hard palate, tongue, the floor of the mouth); pharynx; the nasal cavity and sinuses; of the larynx; and the sublingual, submandibular, parotid and thyroid glands?	X			
2- Risk factors for developing head and neck cancer include:			X	
3- Human Papilloma Virus (HPV) is a risk factor for cervical cancer; this virus is also related to head and neck cancer:			X	
4- Certain occupations increase the risk of developing head and neck cancer, from the following list below, please choose which ones you consider to be at risk for head and neck cancer, you can select more than one option:			X	
5- What symptoms are common in head and neck cancer:				X
6- Larynx cancer is more common:		X		
7- Quitting smoking reduces the risk of developing head and neck cancer:			X	
8- What is the most common age group for head and neck cancer:		X		

The respondent evaluated the term head and neck cancer by answering the question: “Did you know that head and neck cancer is a generic term and represents malignant tumors of the mouth (buccal mucosa, gums, hard palate, tongue, the floor of the mouth); pharynx; the nasal cavity and sinuses; of the larynx; and the sublingual, submandibular, parotid and thyroid glands?” The answers were yes or no.

The following questions assessed the knowledge regarding epidemiology. The participant answered the following question about prevalence of laryngeal cancer according to gender: “Laryngeal cancer is more common:”. The possible answers were in men, women or both. For the evaluation of the age group most affected by head and neck cancer, the participant answered the following question: “What is the most common age group of head and neck cancer?”, the possible answer was divided into the following categories: from 20 to 40 years old; from 30 to 45 years old; from 50 to 70 years old; and from 75 to 85 years old.

Risk factors were evaluated with four questions. For smoking and alcohol, the respondent answered the following question: "Risk factors for the development of head and neck cancer are:", for which the possible answers were: smoking; alcohol use; smoking and alcohol; none of the options. For smoking, the participant answered the following question: "Quitting smoking reduces the risk of developing head and neck cancer:", for which they answered yes or no.

Regarding the relationship between the Human Papilloma Virus (HPV) and head and neck cancer, the participant answered the question: "Human papilloma virus (HPV) is a risk factor for cervical cancer. This virus is also related to cancer of the cervix head and neck:", with the options of yes or no.

The question on work activities related to the increased risk of developing head and neck cancer was: "Certain occupations increase the risk of developing head and neck cancer, from the following list below, please choose which ones you consider to be at risk for head and neck cancer, you can select more than one option:", for which the possible answers were: dentist; mechanic; carpet installer; teacher; worker exposed to metal and steel; tire repairman; nurse; worker exposed to asbestos.

The following question evaluated the symptoms often present in head and neck cancer patients: "What symptoms are common in head and neck cancer (may mark more than one alternative)", for which they answered by choosing among following options (all that apply): neck lump, unilateral ear pain, progressive hoarseness, pain when swallowing, difficulty swallowing and fever.

Results

The total number of respondents was 323 participants: 198 females (61.3%) and 125 males (38.7%). Participants were grouped into five age groups as shown in Figure 1.

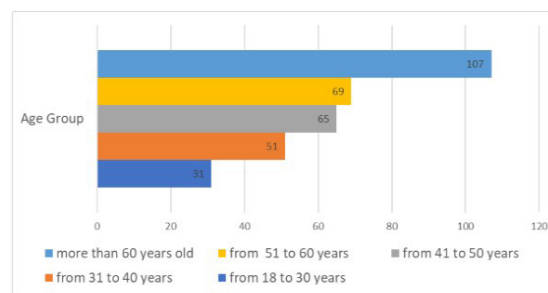


Figure 1 - Distribution of participants according to age group.

Figure 1. Distribution of participants according to age group.

The evaluation of the question about the knowledge of the term head and neck cancer showed that 138 (42.72%) participants knew the term, 166 (51.4%) did not know, and 19 (5.88%) did not answer.

The incidence of larynx cancer was considered higher in men by 156 (48.3%) participants, while 60 (18.57%) believed it to be more common in women; 21 (6.5%) participants believed the incidence to be equal in both genders, and 86 (26.63%) participants did not answer.

Results obtained in the answers about risk factors for the development of head and neck cancer, such as smoking, alcohol, HPV exposure, and risk work activities are listed in Table 2.

Table 2. Risk factors related to head and neck cancer.

Association between head and neck cancer and alcohol and tobacco consumption.	Smoking	25 (7.74%)
	Smoking and alcohol	250 (77.4%)
	Alcohol	9 (2.79%)
	None of the options or no answer	39 (12.07%)
Quitting smoking reduces the risk of developing head and neck cancer.	Yes	278 (86.07%)
	No	25 (7.74%)
	No answer	20 (6.19%)
HPV relationship with head and neck cancer.	Yes	108 (33.43%)
	No	155 (47.99%)
	No answer	60 (18.58%)
Occupation with a higher risk for the development of head and neck cancer.	A worker exposed to asbestos	206 (63.77%)
	A worker exposed to metal and steel	173 (53.56%)
	Mechanic	71 (21.98%)
	Tire repairman	69 (21.36%)
	Dentist	68 (21.05%)
	Carpet installer	67 (20.74%)
	Nurse	51 (15.79%)
	Teacher	42 (13.0%)
No answer	55 (17.02%)	

Table 3. Symptoms related to head and neck cancer.

Neck lump	250 (77.4%)
Dysphagia	204 (63.15%)
Progressive hoarseness	187 (57.89%)
Pain when swallowing	182 (56.34%)
Unilateral Otagia	115 (35.60%)
Fever	102 (31.57%)
No answer	25 (7.74%)

One hundred and six respondents (42.1%) considered that the age group most affected by head and neck cancer to be from 50 to 70 years old, followed by the age group from 30 to 45 years old, chosen by 97 (30.03%) of the participants. Twenty-eight (8.67%) participants chose the age group

between 20 and 40 years old as the most frequent, 7 (2.17%) chose the age group from 75 to 85 years old, while 55 (17.03%) participants did not answer. Table 3 lists the symptoms participants related to head and neck cancer.

Discussion

Our literature review showed that studies for evaluation of the population's knowledge about head and neck neoplasms were mainly restricted to the knowledge of the specific population and exclusively to oral cancer. For example, the study conducted by Oliveira et al. evaluated the knowledge of oral cancer among dental and nursing students, representing only one socio-educational level of the population²¹. The work by Vidal et al.²² verified the knowledge of the Pernambuco population for oral cancer, while Souza et al.²³ studied the knowledge on oral cancer in Horticulturists of Teresina (PI). Therefore, the need for a broader evaluation of the population's knowledge about head and neck neoplasms, and not only about oral cancer, is evident.

Regarding the knowledge about the risk factors of head and neck cancer, the studies evaluated the population knowledge only about oral cancer, with a positive relation to tobacco and alcohol, in agreement with this work. Santos et al. well documented this relationship, in which among the patients with head and neck cancer, 88.2% used tobacco and 79.0% used alcohol, and 76.5% consumed both substances^{9,21,24}.

HPV is another risk factor for head and neck cancer. Burlamaqui et al.²⁵ evaluated the knowledge of university students about HPV, and only 21.1% associated it with pharyngeal cancer and 19.1% associated with larynx cancer. In this study, only 33.4% of participants made this relationship. Thus, the population showed difficulty in recognizing HPV as a risk factor for these neoplasms.

In addition, HPV vaccination could be used as a preventative for head and neck cancer, although the benefit is not clear. But it is already used in the prevention of cervical cancer, with coverage for the most carcinogenic subtypes (16,18)²⁶.

Regarding the symptoms, patients are generally asymptomatic in the early stage of the disease. The main complaints reported by the patients were local pain, ear pain, cervical lymphadenopathy, trismus, odynophagia, dysphagia, and hoarseness^{3,4}. A significant portion of participants identified the main symptoms in the questionnaire, with only 31.5% correlated fever with head and neck neoplasms. Although they know the symptoms related to these neoplasms, the symptom most linked to head and neck cancer was the cervical nodule by 77.4% of participants. It is important to highlight that for patients with cervical nodule; the cancer usually is already at a more advanced stage of the disease when diagnosed, which impairs treatment and prognosis.

The studies found in the literature did not investigate the population knowledge about the professions exposed to carcinogenic factors associated with the development of head and neck cancer, including studies on oral cancer, highlighting the need for further exploration of this theme, as done in this research.

Therefore, health literacy, which refers to the ability to search, find, and obtain health information, aimed at promotion and prevention. In a study conducted by Martins et al.¹⁷, only 58.9% of participants had access to information on how to prevent oral cancer. This study showed that 57.2% of participants did not even know the term head and neck cancer.

This study revealed the importance of health literacy on head and neck cancer, highlighting a greater clarification of the population studied about what are the head and neck neoplasms, their risk factors, especially with emphasis on HPV, since smoking and alcoholism are known to most of the population, and work activities with greater exposure to carcinogenic factors. In addition, it is important to know the initial symptoms and to seek specialist service as soon as possible to improve prevention and reduce the damage caused by the various types of head and neck neoplasms.

Conclusion

By proposing a questionnaire to evaluate head and neck cancer knowledge, this research provided broader information on the topic, contributing to relevant data for the scientific community and encouraging further study of the topic.

We highlight the importance of distinguishing knowledge deficiencies, as it allows for more effective programs focused mainly on health education and literacy, providing the population with prevention and early diagnosis, and reducing morbidity and mortality caused by the disease.

References

1. Casati MFM, Vasconcelos JA, Vergnhanini GS, Contreiro PF, Graça TB, Kanda JL, Akerman M, Matos LL. Epidemiologia do câncer de cabeça e pescoço no Brasil: estudo transversal de base populacional. *Rev Bras Cir Cabeça Pescoço*. 2012;41:186-91.
2. Colombo J, Rahal P. Alterações genéticas em câncer de cabeça e pescoço. *Rev Bras Cancerol*. 2009;55:165-74.
3. Brasil. Ministério da Saúde. Instituto Nacional do Câncer José Alencar Gomes da Silva. Estimativa 2018/2019: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2018.
4. Steuer CE, El-Deiry M, Parks JR, Higgins KA, Saba NF. An update on larynx cancer. *CA Cancer J Clin*. 2017;67(1):31-50. <http://dx.doi.org/10.3322/caac.21386>. PMID:27898173.
5. Almeida AA, Bandeira CM, Gonçalves AJ, Araújo AJ. Dependência nicotínica e perfil tabágico em pacientes com câncer de cabeça e pescoço. *J Bras Pneumol*. 2014;40:286-93. <http://dx.doi.org/10.1590/S1806-37132014000300012>. PMID:25029652.
6. Galbiatti ALS, Padovani-Junior JA, Maníglia JV, Rodrigues LDS, Pavarino EC, Goloni-Bertollo EM. Head and neck cancer: causes, prevention and treatment. *Rev Bras Otorrinolaringol (Engl Ed)*. 2013;79(2):239-47. <http://dx.doi.org/10.5935/1808-8694.20130041>. PMID:23670332.

7. Wang TH, Hsia SM, Shih YH, Shieh TM. Association of smoking, alcohol use, and betel quid chewing with epigenetic aberrations in cancers. *Int J Mol Sci*. 2017;18(6):1-15. <http://dx.doi.org/10.3390/ijms18061210>. PMID:28587272.
8. Granados-García M. Oropharyngeal cancer: An emergent disease? *Salud Publica Mex*. 2016;58(2):285-90. <http://dx.doi.org/10.21149/spm.v58i2.7798>. PMID:27557387.
9. Santos RA, Portugal FB, Felix DJ, Santos PMO, Siqueira MM. Avaliação epidemiológica de pacientes com câncer no trato aerodigestivo superior: relevância dos fatores de risco álcool e tabaco. *Rev Bras Cancerol*. 2012;58:21-9.
10. Quintero K, Giraldo GA, Uribe ML, Baena A, Lopez C, Alvarez E, Sanchez GI. Human papillomavirus types in cases of squamous cell carcinoma of head and neck in Colombia. *Rev Bras Otorrinolaringol (Engl Ed)*. 2013;79(3):375-81. <http://dx.doi.org/10.5935/1808-8694.20130065>. PMID:23743755.
11. Saraiva N, Rodrigues J, Bonito N, Prazeres H, Cruz E, Costa M, Teixeira M, Silva R, Gervásio H. The role of human papillomavirus in head and neck tumors. *Rev Port Otorrinol Cirur Cerv Fac*. 2016;54(4):227-31.
12. Zonta MA, Monteiro J, Santos-Junior G, Pignatari ACC. Oral infection by the Human Papilloma Virus in women with cervical lesions at a prison in São Paulo, Brazil. *Rev Bras Otorrinolaringol (Engl Ed)*. 2012;78(2):66-72. PMID:22499372.
13. Saini R, Khim TP, Rahman SA, Ismail M, Tang TH. High-risk human papillomavirus in the oral cavity of women with cervical cancer, and their children. *Virology*. 2010;7(1):131. <http://dx.doi.org/10.1186/1743-422X-7-131>. PMID:20550718.
14. Wagner S, Sharma SJ, Wuerdemann N, Knuth J, Reder H, Wittekindt C, Klusmann JP. Human Papillomavirus-Related Head and Neck Cancer. *Oncol Res Treat*. 2017;40(6):334-40. <http://dx.doi.org/10.1159/000477252>. PMID:28521311.
15. Nowińska K, Ciesielska U, Podhorska-Okolów M, Dzięgieł P. The role of human papillomavirus in oncogenic transformation and its contribution to the etiology of precancerous lesions and cancer of the larynx: A review. *Adv Clin Exp Med*. 2017;26(3):539-47. <http://dx.doi.org/10.17219/acem/67461>. PMID:28791831.
16. Chagas CC, Guimarães RM, Boccolini PMM. Occupational cancer: A systematic review. *Cad Saude Colet*. 2013;21:209-23. <http://dx.doi.org/10.1590/S1414-462X2013000200017>.
17. Martins AMEBL, Barreto SM, Santos-Neto PE, Sá MPB, Souza JGS, Haikal DS, Ferreira e Ferreira E, Pordeus IA. Greater access to information on how to prevent oral cancer among elderly using primary health care. *Cien Saude Colet*. 2015;20(7):2239-53. <http://dx.doi.org/10.1590/1413-81232015207.15272014>. PMID:26132263.
18. Le Campion ACOV, Santos KCB, Carmo ES, Silva-Júnior FF, Peixoto FB, Ribeiro CMB, Gonçalves LS, Ferreira SMS. Characterization of diagnostic delay in oral and oropharyngeal cancer at two referral centers. *Cad Saude Colet*. 2016;24:178-84. <http://dx.doi.org/10.1590/1414-462X201600020004>.
19. Paskulin LMG, Bierhals CCBK, Valer DB, Aires M, Guimarães NV, Brocker AR, Lanziotti LH, Morais EP. Alfabetização em saúde de pessoas idosas na atenção básica. *Acta Paul Enferm*. 2012;25:129-35. <http://dx.doi.org/10.1590/S0103-21002012000800020>.

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20. Martins AMEBL, Almeida ER, Oliveira CC, Oliveira RCN, Pelino JEP, Santos ASF, Costa AS, Souza GM, Batista BTP, Ferreira e Ferreira E. Alfabetização em saúde bucal: uma revisão da literatura. *Rev Assoc Paul Cir Dent.* 2015;69(4):328-34.
21. Oliveira JMB, Pinto LO, Lima NGM, Almeida GCM. Câncer de boca: Avaliação do conhecimento de acadêmicos de odontologia e enfermagem quanto aos fatores de risco e procedimentos de diagnóstico. *Rev Bras Cancerol.* 2013;59:211-8.
22. Vidal KL, Aguiar DMA, Gouveia MVC, Cavalcante Neto PM, Tavares ANS, Guimaraens MA. Verificação do conhecimento da população pernambucana acerca do câncer de boca e dos fatores de risco – Brasil. *Pesqui Bras Odontopediatria Clin Integr.* 2012;12(3):383-7. <http://dx.doi.org/10.4034/PBOCI.2012.123.13>.
23. Souza LRB, Ferraz KD, Pereira NS, Martins MV. Conhecimento acerca do Câncer Bucal e Atitudes frente à sua Etiologia e Prevenção em um Grupo de Horticultores de Teresina (PI). *Rev Bras Cancerol.* 2012;58:31-9.
24. Souza AL, Carvalho CHP. Nível de Conhecimento da População e dos Odontólogos no Sertão Paraibano Sobre o Câncer Oral. *Rev. Saúde Ciênc.* 2017;6:5-19.
25. Burlamaqui JCF, Cassanti AC, Borim GB, Damrose E, Villa LL, Silva L. Human Papillomavirus and students in Brazil: an assessment of knowledge of a common infection - preliminary repor. *Rev Bras Otorrinolaringol (Engl Ed).* 2017;83(2):120-5. <http://dx.doi.org/10.1016/j.bjorl.2016.02.006>. PMID:27170346.
26. Guo T, Eisele DW, Fakhry C. The potential impact of Prophylactic HPV Vaccination on Oropharynx Cancer. *Cancer.* 2016;122:2313-23. <http://dx.doi.org/10.1002/cncr.29992>. PMID:27152637.