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ORIGINAL ARTICLE

Analysis of the demographic structure of patients participating in the preventive action "Saturday for health" organized by the ENT clinic

Analiza struktury demograficznej pacjentów uczestniczących w akcji profilaktycznej „Sobota dla zdrowia" zorganizowanej przez poradnię otolaryngologiczną

Authors' Contribution:
A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

Julia Wiśniewska[1ABCDEF], Anna Bohdziewicz[1ABCDEF], Karolina Piskadło-Zborowska[1,2AD], Karolina Dżaman[1,3AD]

[1]Department of Otolaryngology, Mazovian Brodnowski Hospital, Warsaw, Poland
[2]Faculty of Medicine, Cardinal Stefan Wyszynski University in Warsaw, Warsaw, Poland
[3]Department of Otolaryngology, Medical Centre of Postgraduate Education, Warsaw, Poland

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ABSTRACT:

Introduction: Screening enables early detection of head and neck cancers, improving treatment outcomes and reducing mortality. Preventive programs and public education are essential to raise awareness and promote timely diagnosis. "Saturday for health" is a preventive event offering participants basic examinations to identify risk factors and detect neoplastic diseases early.

Aim: This study aimed to assess the profile of patients undergoing otolaryngological examinations during the "Saturday for health" campaign, analyze risk factors for head and neck cancers (HNCs), and evaluate the effectiveness of the preventive event.

Materials and methods: The analysis included 97 patients (77.3%—women, 22.7%—men), aged 2 to 88 years (average 54 years). Each participant completed a questionnaire on HNC risk factors and underwent a routine otolaryngological examination. Patients requiring further diagnostics were referred for specialized examinations: audiological, videofiberoscopic, imaging studies, and histopathology.

Results: Alcohol consumption reported 63.6% of adults, mostly (92.8%) as "occasional" drinking. Approximately 40% of adults currently use tobacco products or declared smoking in the past. The majority of respondents declared 1 to 3 previous sexual partners, and over 85.0% of them had no contact with a Human Papillomavirus-infected person. Common symptoms included auditory problems (36.1%), oral cavity and throat issues (12.0%), and hoarseness (7.0%). Notably, 35.0% participated in the examination despite absent symptoms. Physical examination unveiled anomalies in 10.3% of individuals, necessitating further diagnostic evaluation, which confirmed neoplastic alterations in 5 patients (3 malignant tumors and 2 benign tumors) and chronic inflammation in 5 patients.

Conclusions: Additional diagnostic assessment required 10.3% of patients, confirming neoplasms in 5.15%. Women participated four times more often than men, despite HNCs being 5 times more frequent in males.

KEYWORDS: alcohol use, head and neck cancers (HNC), otolaryngology examination, prevention, risk factors, screening of hearing impairment, Smoking

STRESZCZENIE:

Wstęp: Badania przesiewowe umożliwiają wczesne wykrycie nowotworów głowy i szyi, co poprawia wyniki leczenia i zmniejsza śmiertelność. Programy profilaktyczne oraz edukacja zdrowotna są niezbędne, aby zwiększać świadomość i wspierać szybką diagnostykę. „Sobota dla zdrowia" to wydarzenie profilaktyczne, które oferuje uczestnikom podstawowe badania w celu identyfikacji czynników ryzyka nowotworów głowy i szyi oraz wczesnego ich wykrywania.

Cel: Celami niniejszego badania były ocena profilu pacjentów poddających się badaniom otorynolaryngologicznym w ramach akcji „Sobota dla zdrowia", analiza czynników ryzyka nowotworów głowy i szyi oraz ocena skuteczności powyższego wydarzenia profilaktycznego.

Materiały i metody: Analiza obejmowała 97 pacjentów (77,3% – kobiety, 22,7% – mężczyźni), w wieku 2–88 lat (średnio 54 lata). Każdy uczestnik wypełnił kwestionariusz dotyczący czynników ryzyka nowotworów głowy i szyi oraz przeszedł

pełne badanie otorynolaryngologiczne. Pacjenci wymagający dalszej diagnostyki byli kierowani na specjalistyczne badania: audiologiczne, wideofiberoskopowe, obrazowe oraz histopatologiczne.

Wyniki: Spożycie alkoholu zgłaszało 63,6% dorosłych, z czego większość (92,8%) deklarowała „okazjonalne" picie. Około 40% dorosłych aktualnie używało wyrobów tytoniowych lub deklarowało nałóg palenia w przeszłości. Większość (76%) respondentów wskazała na 1–3 wcześniejszych partnerów seksualnych, a ponad 85,0% z nich stwierdziło brak kontaktu z osobą zakażoną wirusem brodawczaka ludzkiego (HPV). Do najczęstszych objawów należały dolegliwości ze strony narządu słuchu (36,1%), dolegliwości jamy ustnej i gardła (12,0%) oraz chrypka (7,0%). Co ciekawe, 35,0% uczestników zgłosiło się na badanie pomimo braku objawów. Badanie fizykalne ujawniające nieprawidłowości wystąpiło u 10,3% osób, wymagających dalszej diagnostyki, co potwierdziło obecność zmian nowotworowych u 5 pacjentów (3 nowotwory złośliwe i 2 łagodne) oraz przewlekłe zapalenie u 5 pacjentów.

Wnioski: Dodatkowej oceny diagnostycznej wymagało 10,3% pacjentów, a obecność nowotworów potwierdzono u 5,15%. Kobiety uczestniczyły w badaniach 4 razy częściej niż mężczyźni, pomimo że nowotwory głowy i szyi występują 5 razy częściej u mężczyzn.

SŁOWA KLUCZOWE: badanie laryngologiczne, czynniki ryzyka, nikotynizm, nowotwory głowy i szyi, przesiewowe badanie słuchu, profilaktyka, spożywanie alkoholu

ABBREVIATIONS

ACE-I – angiotensin-converting enzyme inhibitors
CMKP – Centre of Postgraduate Medical Education
CT – computed tomography
DNA – deoxyribonucleic acid
ENT – ear, nose, and throat
GERD – gastroesophageal reflux disease
GLOBOCAN 2012 – Global Cancer Incidence Mortality Prevalence Worldwide
HNC – head and neck cancer
HNSCC – Head and Neck Squamous Cell Carcinoma
HPV – Human Papilloma Virus
LPR – laryngopharyngeal reflux
PPI – proton pump inhibitor
SCC – squamous cell carcinoma
WHO – World Health Organization

INTRODUCTION

Screening examinations are a fundamental component of disease prevention, with their main objective being the detection of disorders at an early stage, thereby accelerating the initiation of effective therapeutic interventions. In such cases, the chance of successful treatment substantially rises, resulting in a reduction in mortality rates. Preventive examinations assume a particular crucial role in the field of oncology. According to the epidemiological data from GLOBOCAN 2012 (Global Cancer Incidence Mortality Prevalence Worldwide), nearly 11,000 cases of head and neck cancer (HNC) were diagnosed in 2012 alone. In the same year, close to 6,000 patients succumbed to the disease. Moreover, over the past 2 decades, there has been a 20% increase in the incidence of these malignancies [1]. Current estimates indicate that the incidence of HNC in Europe is around 21.8 cases per 100,000 individuals, with mortality rates at approximately 15.6 per 100,000 [2]. The incidence of HNCs in Poland has remained consistently between 5.5% and 6.2% over recent years, translating to approximately 5,500 to 6,000 new cases annually [3]. Their nonspecific symptoms (including sore throat, hoarseness, nasal obstruction, swallowing difficulties), resembling upper respiratory tract infections, frequently result in the diagnosis of cancer at an advanced stage, thus limiting treatment options [4]. Regular preventive programs enhance public awareness of alarm symptoms, which is essential for early diagnosis and effective treatment. Therefore, health promotion campaigns also have an educational purpose. This is particularly crucial given the findings of a recent study, which revealed low levels of public awareness regarding head and neck cancers among adults in Poland [5]. In Poland, a Nationwide Program for Primary Prevention and Early Detection of HNCs has been established, targeting individuals at risk. Selected centers are responsible for implementing the program and thereby improving awareness of risk factors and early diagnosis [6]. Our ENT Department undertakes various initiatives and informational campaigns aimed at health promotion, public education, and emphasizing the significance of regular preventive examinations, and one of them was the health-promoting event "Saturday for health" organized in May 2023. A week earlier, the event was publicized in both local and social media. Participants had the opportunity to attend several lectures on healthy lifestyles, participate in various workshops, and avail themselves of complimentary preventive otolaryngological examinations provided by physicians from the Department of Otolaryngology at the Centre of Postgraduate Medical Education (CMKP) in Warsaw.

AIM

The aim of the study was to assess the profile of patients presenting for otolaryngological examination as part of the "Saturday for health" campaign, as well as to analyze the risk factors for HNC in the study group and the effectiveness of the preventive action.

MATERIALS AND METHODS

The analysis included 97 patients who attended preventive ENT examinations as part of a one-day "Saturday for health" campaign organized by the Department of Otolaryngology CMKP in May 2023. Adults comprised 90.7% of the participants, while children

constituted 9.3%. The age range of patients ranged from 2 to 88 years, with an average age of 54 years. Each participant completed a questionnaire regarding otolaryngological complaints and risk factors for HNCs. Subsequently, a comprehensive otolaryngological examination was conducted for each patient. Those presenting with abnormalities necessitating exclusion of neoplastic processes were referred to the Department of Otolaryngology CMKP for further diagnostic assessment and potential treatment. These patients underwent fiberoscopic examinations of the nose, throat, and larynx, imaging studies (ultrasound, computed tomography [CT]), and histopathology. Data analysis was performed using Microsoft Excel, Windows 10 package.

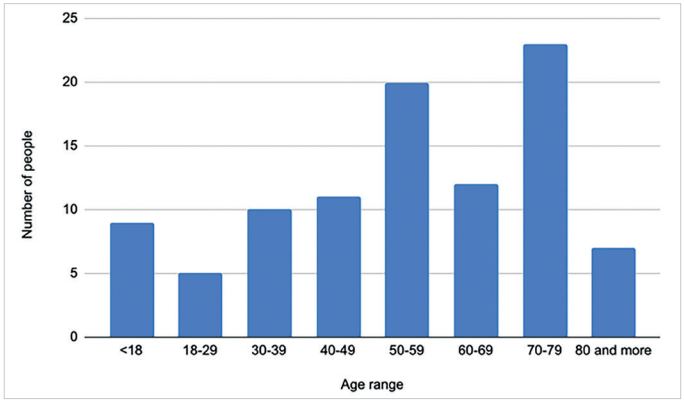

Fig. 1. The age structure of the respondents.

RESULTS

Among the participants in our study, the largest group consisted of individuals in the age range of 70–79 years (n = 23, 23.7%). Additionally, there was notable participation from individuals aged 50–59 years (20.6%) and those aged 60–69 years (12.4%). As many as 38.1% were aged over 65 years, a threshold commonly accepted as the conventional definition of old age. The age structure of the respondents is illustrated in Fig. 1. In the adult population, the most frequently observed risk factors for HNC were related to lifestyle. Alcohol consumption was reported by 63.6% of the participants, with the vast majority (92.8%) indicating "occasional" frequency of drinking. Approximately 1/5 (17.0%) of adult participants declared nicotine use. As many as 60.0% of them used traditional tobacco products, while 40.0% used alternative substances, including e-cigarettes. When queried regarding the number of sexual partners, nearly half (43.2%) of the adult patients abstained from responding. Among the remaining participants, 74.0% indicated the current number of sexual partners as 1–3, 16.0% as 4–7, and 10.0% above 7. Among other risk factors, 13.4% of respondents had experienced cancer in the past, and 35.0% indicated a family history of cancer. 85.6% of participants answered negatively to the question regarding potential contact with an Human Papilloma Virus (HPV)--infected person. As many as 20.6% of the study group visited a dentist less than once a year, and 25% of adult patients wore dentures. The risk factors for the development of HNCs among the respondents are presented in Fig. 2.

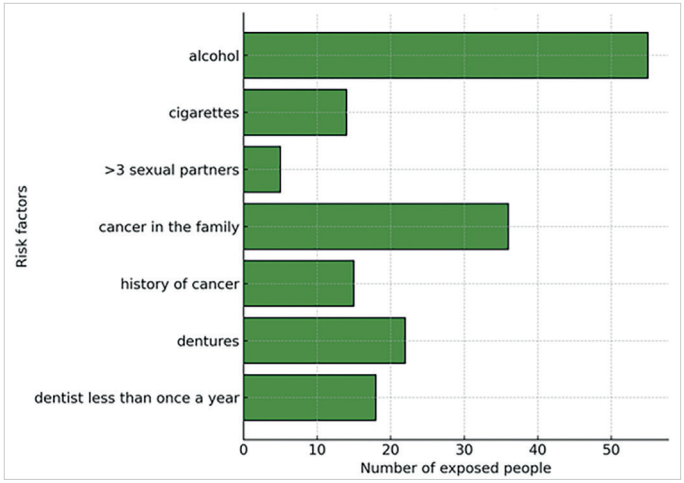

Fig. 2. The risk factors for the development of HNCs among the respondents.

In total, 35.1% of event attendees underwent preventive examinations for health monitoring purposes, without reporting any specific symptoms concerning health. Among the remaining individuals, the most common symptom that prompted "Saturday for health" participants to undergo free ENT examination was a disorder of the auditory organ, such as hearing impairment or a sensation of fullness in the ear, reported by 36.1% of respondents (n = 35). Objective audiometric examination confirmed the subjective hearing disorders in 37.0% of these individuals. The second most common complaint pertained to symptoms involving the oral cavity and throat, such as sensations of dryness or throat scratching. These issues affected 12.4% of respondents. Another notable symptom was hoarseness, reported by 7.2% of respondents. In 71.4% of these cases, abnormalities were observed during the physical examination, confirming the etiology of the reported ailments. These abnormalities primarily consisted of chronic inflammatory changes in the larynx, such as reflux-related alterations, Reinke's edema, and exophytic folds of the vocal cords. The chart illustrating the most reported complaints is displayed in Fig. 3.

During the ENT examination, suspected abnormalities necessitating further diagnostics were identified in 10.3% of the study group (n = 10). These included pathological changes in the larynx (n = 5), a tumor in the angle of the mandible region (n = 2), ulceration of the skin of the nasal dorsum (n = 1), ulceration of the tongue (n = 1), and an exophytic change in the soft palate (n = 1). All 10 individuals (10.3%) were referred for further videofiberoscopic diagnostics, and 5 individuals underwent imaging tests (neck ultrasound – 5 individuals, expanded to head and neck CT – 3 individuals). Histopathological examinations confirmed neoplastic changes in 5 people, including 3 malignant tumors (basal cell carcinoma of the nose, squamous cell carcinomas of the tongue and larynx) and 2 benign tumors (Warthin tumor of the parotid gland and papilloma of the soft palate). Chronic inflammatory conditions of the head and neck area were diagnosed in 5 patients, including chronic inflammation of the parotid gland (n = 1), inflammatory changes in the larynx associated with reflux (n = 3), and Reinke's edema (n = 1).

CONCLUSIONS

The effectiveness of one-day proactive health actions can vary depending on the specific actions taken and the individual's overall

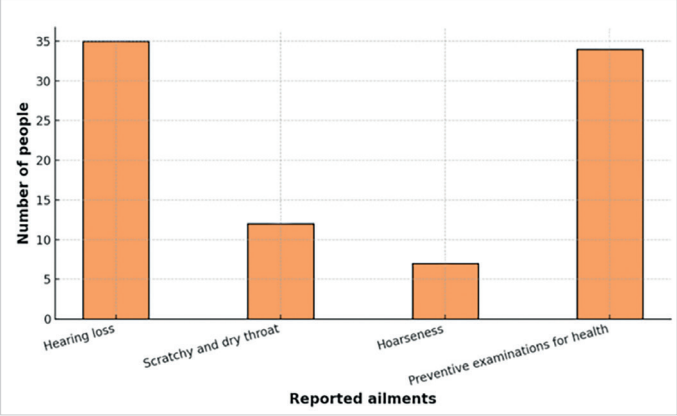

Fig. 3. The most common complaints reported by participants.

health habits. These kinds of events led by doctors can be highly effective in promoting health awareness, providing preventive care, and encouraging positive health behaviors within a community. Our data showed a significant interest in population, which resulted in high attendance rates at the "Saturday for health". This study assessed the profile of patients reporting for the preventive campaign, focusing on their symptoms and risk factors. One of the most common ENT problems in the population is hearing disturbances affecting people of all ages. Hearing impairment, causing difficulty understanding speech, is especially noticeable in the elderly population [7].

Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted. According to the data, it is estimated that approximately 30% of men and 20% of women in Europe have a hearing loss of 30 dB HL or more at age 70 years. It is also noteworthy that studies reflect the well-known patterns of a nonlinear increase of hearing loss with age affecting males more than females [8]. In turn, the findings from cross-sectional analyses conducted by Goman et al. indicate that 23% of Americans aged 12 years or older are directly impacted by hearing loss. Most affected individuals exhibit mild hearing impairment. Nonetheless, among those aged 80 years or older, moderate hearing loss is more prevalent than mild loss [9]. As many as 38.1% of the participants in our study group were aged 65 or more, while 30.9% were aged 70 or more. Analyzing the age distribution of the studied population and the mentioned data, it is not surprising that self-reported hearing impairment was the primary reason for seeking evaluation in 1/3 of respondents. Simultaneously, it is noteworthy that only 1/3 of these individuals had their self-reported hearing disturbances confirmed by objective audiometric assessment. The epidemiology of conditions involving the oral cavity, throat, and larynx among the elderly includes various factors such as tooth loss, dental caries, periodontitis, dry mouth, oral pre-cancerous or cancerous lesions, substantial tooth wear, oral implants, sophisticated tooth and implant-supported removable dentures and fixed dental prostheses [10]. Symptoms related to this region, including dry mouth, throat irritation, or hoarseness, were reported relatively frequently by respondents (19.6%), and further diagnostic evaluation confirmed pathological changes within the oral cavity, throat, or larynx in 8 individuals (3 with neoplastic changes, 1 with benign changes, and 4 with chronic inflammatory changes). From the study by Dzaman et al. conducted among a comparable patient cohort, participating in the Head and Neck Cancer Prevention Program in Warsaw in 2017, the predominant symptoms reported by participants were chronic hoarseness (reported by 64% of individuals) and dry mouth (reported by 39% of individuals) [11]. In contrast to our findings, there appears to be a discernible decrease in the prevalence of symptoms involving the oral cavity, throat, and larynx. This trend may potentially be associated with the increased prevalence of proton pump inhibitor (PPI) dispensation, as observed over a 14-year follow-up period. The frequency of prescription dispensation notably surged among individuals aged 65 years and older [12]. The same mentioned study revealed 12 participants with concerning changes in the oral cavity, throat, and larynx (excluding abnormalities related to salivary glands), necessitating further diagnostic evaluation and treatment [8]. It is worth mentioning that our study observed one male child (11.11%) among the participants who displayed symptoms related to the oral cavity, throat, and larynx. This finding is in line with other authors. Kallvik et al. revealed that approximately 12% of children aged 6–10 years exhibit changes in their voice characterized by hoarseness. Specifically, hoarseness was noted in 15.8% of boys and 7.8% of girls within the studied cohort [13]. Similar results were obtained by Szkielkowska et al. According to their analysis, dysphonia was prevalent in 12.8% of Polish children aged 7 at the start of primary school. Additionally, the study revealed that voice disorders were more frequently observed in boys (14.6%) compared to girls (10.8%) [14]. In the context of medical symptoms involving the oral cavity, throat, and larynx, particular attention should be directed towards hoarseness. Chronic hoarseness, diagnosed when symptoms persist beyond three to four weeks, often arises from prolonged exposure to irritants (mainly through smoking), reflux, chronic vocal strain, and postnasal drip. Irritation of the vocal fold mucosa due to reflux can be attributed to either laryngopharyngeal reflux (LPR) or gastroesophageal reflux disease (GERD). Additionally, medications commonly used in the elderly population (the main group of participants of our study), such as angiotensin-converting enzyme inhibitors (ACE-I), diuretics, and warfarin, can also contribute to chronic laryngitis. It should be emphasized that any hoarseness that persists for more than 1 week requires a detailed ENT evaluation [15]. The next symptom presented by patients was a neck tumor, which always raises oncological concern. The study conducted by Zurek et al. indicated a rising incidence trend of benign salivary gland neoplasms, coupled with a decline in malignant pathologies, observed over the past decade among the Polish population [16]. In our study cohort, 2 participants (2%) presented with tumors located in the mandibular angle region. Subsequent advanced diagnostic procedures confirmed a diagnosis of benign parotid gland tumor and chronic parotitis. This finding aligns with the research by Dzaman et al., who reported four cases of tumors located in the mandibular angle among a comparable patient cohort participating in the HNCs Prevention Program (1.78%). These tumors appear to be associated with salivary glands, comprising two benign

parotid gland tumors and two cases of chronic parotitis [11]. Based on the findings of Kim et al., who conducted an analysis of the Korean National Health Insurance Service-Health Screening Cohort (comprising individuals aged ≥40) from 2002 to 2013, the estimated annual incidence rate of benign parotid tumors was 5.66 per 100,000, with malignant parotid tumors standing at 0.81 per 100,000. Their examination of patients' medical histories, including factors such as smoking, alcohol consumption, and obesity, led to the conclusion that benign parotid tumors were associated with alcohol consumption, specifically among women. Importantly, it should be noted that chronic alcohol exposure can induce morphological and functional alterations in the salivary gland [17]. As previously mentioned in our study, we identified only one case of a benign parotid gland tumor in a woman who reported "occasional" alcohol consumption. However, there is a necessity for conducting further analyses with a larger sample size, dividing participants into groups with benign parotid tumors and control groups, in order to substantiate this association within the population residing in Poland. Another aim of the study was to analyze HNC risk factors observed in the preventive campaign participants. Several risk factors have been identified for cancers in this region, including alcohol consumption, tobacco use, HPV infection, poor oral hygiene, gender, age, family history as well as diet and occupational or radiation exposures. Heavy alcohol consumption, particularly when combined with tobacco use or poor oral hygiene, significantly increases the risk of HNCs [18]. Alcohol can irritate the cells in the lining of the mouth and throat, making them more susceptible to cancer-causing agents [19]. Alcohol consumption was reported by 63.6% of the participants but only 8% reported that it is not occasional. Our results are consistent with the findings of studies conducted on Polish participants by Nowosielska et al. and Kowalski et al. In a study conducted by Nowosielska-Grygiel et al., involving a comparable group of patients participating in the Head and Neck Cancer Awareness Week in Lodz in 2016, 67.16% of women and 82.05% of men were found to consume alcohol, most frequently on an occasional basis [20]. On the other hand, data from the study conducted by Kowalski et al., involving a total of 300 patients, including 186 women and 114 men, as part of the HNC Prevention Program between 2014 and 2018, indicate that the majority of participants consumed alcoholic beverages (as much as 80%), with significantly fewer women examined compared to men. Occasional alcohol consumption was reported by 87.08% of the participants [21]. Tobacco smoking, as well as the use of e-cigarettes and waterpipes (shisha, hookah, narghile), are well-established significant risk factors for HNCs. It is worth mentioning that over the past few years, there has been a rise in innovative nicotine delivery methods, leading to a significant portion of users opting for electronic nicotine delivery systems instead of conventional tobacco products. Furthermore, e-cigarettes harbor disturbingly elevated concentrations of carcinogens and toxic substances [22]. *In vitro* studies conducted by Vicky-Yu et al., utilizing 2 different e-cigarette brands, indicate that vaporized e-liquid, at doses relevant to biological systems, triggers elevated levels of DNA strand damage and cell mortality. Additionally, it diminishes clonogenic survival in both normal epithelial and HNSCC cell lines utilized in these studies, regardless of nicotine levels [23]. Despite existing studies conducted both in laboratory settings (*in vitro*) and in living organisms (*in vivo*), additional research is required to investigate the direct connection between e-cigarette usage and the development of cancer in humans [24]. Among adult participants in our study who reported nicotine use, 60.0% used traditional cigarettes, while 40.0% utilized alternative products such as e-cigarettes. Recent data from the World Health Organization (WHO) indicate a significant global decline in tobacco use over the past two decades, driven primarily by reduced numbers of female smokers. However, the use of e-cigarettes and waterpipes (shisha, hookah, narghile) is an emerging trend, particularly among younger generations [25]. Chronic irritation of the oral cavity due to poor dental hygiene, ill-fitting dentures, or chronic mouth ulcers may increase the risk of developing oral cavity cancers, especially in conjunction with alcohol consumption. Data suggest that the correlation between alcohol intake and HNC risk could be influenced by the interaction of genetic polymorphisms of *ADH1B* and *ALDH2* with oral hygiene [26]. Among adult respondents in our study, a staggering 25.0% wore dentures, and approximately 1/5 of all individuals surveyed (20.6%) utilized dental services less frequently than once a year, underscoring the importance of promoting good oral hygiene habits. HPV infection is increasingly recognized as a causative factor in a significant portion of HNCs, predominantly comprising subsets of oral SCC and oropharyngeal SCC. The majority of HPV-associated HNCs are attributed to HPV16. HPV-related oropharyngeal cancer is more common in younger individuals and is often unrelated to tobacco and alcohol use. In comparison to other HPV-related malignancies, such as cervical cancer, the association of HNCs with HPV infection appears to be often overlooked [27]. The most recent data highlight significant obstacles in the field and potential avenues for the future: difficulties in early detection of HPV-positive head and neck. Additionally, screening tests for early diagnosis are not widely promoted [28]. HPVs associated with HNCs, unlike those linked to anogenital cancers and genital warts, are commonly transmitted orally, predominantly through oral sexual contact. Oral sex, as delineated in this review, encompasses interactions involving the oral and anogenital regions, including vaginal, anal, penile, and genital areas, among others. Studies suggest that participation in oral sexual practices and having multiple oral sexual partners can heighten the likelihood of HPV transmission through the oral route [29]. In our study, 85.6% of participants responded negatively to the question regarding potential contact with an individual infected with HPV. Interestingly, only 56.8% of adult respondents provided information about the number of sexual partners, with the remaining participants opting not to respond. This may indicate ongoing stigma associated with the potential transmission route of the HPV virus. Efforts are being made in the context of head and neck tumors to establish a simple management scheme that could facilitate primary care physicians in maintaining heightened oncological vigilance. One recently proposed algorithm focuses on three key aspects. When a patient presents with persistent or progressive hoarseness and possesses risk factors such as male gender, chronic smoking, or alcohol consumption, suspicion of an underlying malignant process should be raised. The presence of this concerning triad necessitates immediate and thorough assessment by a skilled otolaryngologist. Timely referral enhances the likelihood of implementing

conservative treatment protocols leading to improved functional and oncological outcomes [30].

FUNDING

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INSTITUTIONAL REVIEW BOARD STATEMENT

The study adhered to the principles of the Declaration of Helsinki and received approval from the Local Ethics Committee at the Medical Centre of Postgraduate Education for K.C. (approval number #50/PB/2019) and I.K. (approval number #15/PB/2018) for research involving human participants. Approval Date: 10 April 2019.

INFORMED CONSENT STATEMENT

Informed verbal consent was obtained from all subjects involved in the study.

DATA AVAILABILITY STATEMENT

The data have been deposited into a publicly available repository and can be obtained on request.

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Corresponding author: Julia Wiśniewska; Department of Otolaryngology, Mazovian Brodnowski Hospital; Warsaw, Poland;
E-mail: wisniewskajulia1403@gmail.com

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