



SHORT COMMUNICATION

Potential Years of Lost Life of the Lip, Oral Cavity and Pharynx Neoplasms in Slovak Population - 2010-2015

Pavol Beno¹, Martin Samohyl²

¹Department of Laboratory Medicine, Faculty of Health Sciences and Social Work, Trnava University in Trnava, Slovak Republic.

²Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, Slovak Republic.

Author to whom correspondence should be addressed: Martin Samohyl, Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, 24 Spitalska, Bratislava 813 72, Slovak Republic. Phone: +421 944 080 745. E-mail: martin.samohyl@fmed.uniba.sk.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 07 November 2017 / Accepted: 25 January 2018 / Published: 05 February 2018

Abstract

Objective: To analyse Potential Years of Life Lost (PYLL) rates trends of lip, oral cavity and pharynx neoplasms in the Slovak population by age and gender. **Material and Methods:** The study analyses PYLL rates (age-standardized) of lip, oral cavity and pharynx neoplasms (C00-C14) per 100,000 in the period of six years (2010-2015). The study sample was divided into two age sub-categories (all ages: 0-69y. and working group: 20-69y.) National mortality data (C00-C14) (3,138 mortality causes) were analysed from the Statistical Office of the Slovak Republic. **Results:** The highest PYLL rate was found in sub-category 20-69 years in males (378 per 100,000) in 2012 and in females (64 per 100,000) in 2013. The highest PYLL rate was observed in sub-category all age groups in males (296 per 100,000) in 2012 and in females (50 per 100,000) in 2013. The PYLL rates of lip, oral cavity and pharynx neoplasms had in the period 2011-2015 upward trend in both sexes, however, in the 2014 was found the opposite trend. In 2015 the highest PYLL rates (non-standardized) in both sexes was found in age sub-category 55-59y. **Conclusion:** Our study should contribute to the development of oral cancer intervention programs.

Keywords: Lip Neoplasms; Mouth Neoplasms; Pharyngeal Neoplasms; Life Expectancy.

Introduction

Lip, oral cavity and pharynx neoplasms (ICD-10 codes C00-C14) are an important public health problem [1] with an annual worldwide incidence estimated at approximately 529,500 cases (3.8% of all cancer cases) and mortality at 292,300 deaths (3.6% of cancer deaths) [2].

In developing countries, risk factors for lip, oral cavity and pharynx neoplasms include the chewing tobacco, smoke tobacco, the consumption of nitrosamine-rich foods, the consumption of salted fish, the presence of human papillomavirus (HPV) [3] and alcohol consumption [4-7]. Approximately 75-80% of lip, oral cavity and pharynx neoplasms are attributed to tobacco and alcohol consumption [8]. In the Slovak Republic, prevalence of tobacco smoking is approximately 20% and the alcohol consumption is 115 liters of all alcoholic beverages (beer, wine, spirits) per person/year [9,10]. Relationship between alcohol consumption and oral-pharyngeal neoplasms was described in literature [11,12].

As a premature mortality measure, potential years of life lost (PYLL) provides estimating the average years a person would have lived if population had not died prematurely. Potential years of life lost is one of the most used indicator for the well-being population monitoring [13,14].

In Europe, there are limited numbers of PYLL studies analysed of lip, oral cavity and pharynx neoplasms. The aim of this study is to analyse potential years of life lost rates trends of lip, oral cavity and pharynx neoplasms in the Slovak population by age and gender in the 6-years period of 2010-2015.

Material and Methods

The study sample was divided into two age sub-categories (all age groups: 0-69 years and working group: 20-69 years). National mortality data (C00-C14) (3,138 mortality causes) were analysed from the Statistical Office of the Slovak Republic.

The PYLL rate was calculated according to the following formula [15]:

$$PYLL_{it} = \sum (l - a) (d_{at} / p_{at}) (p_a / p_n) * 100,000$$

l: the population's life expectancy; **i**: year; **dat**: the deaths number; **pat**: population number in an age group; **Pa**: the number of standard population; **Pn**: the standard population number (0-69 years).

Results

The PYLL rates of lip, oral cavity and pharynx neoplasms according to gender and particular periods for sub-category all ages can be seen in Figure 1A and the PYLL rates for sub-category 20-69 years can be seen in Figure 1B. In the period of 2010-2015, the highest mean PYLL rate was observed in males (sub-category 20-69 y.: 365 per 100,000 and sub-category all ages: 285 per 100,000), in females (sub-category 20-69 y.: 58 per 100,000 and sub-category all age groups: 47 per 100,000) as well as in both sexes (sub-category 20-69 y.: 212 per 100,000 and sub-category all age groups: 166 per 100,000).

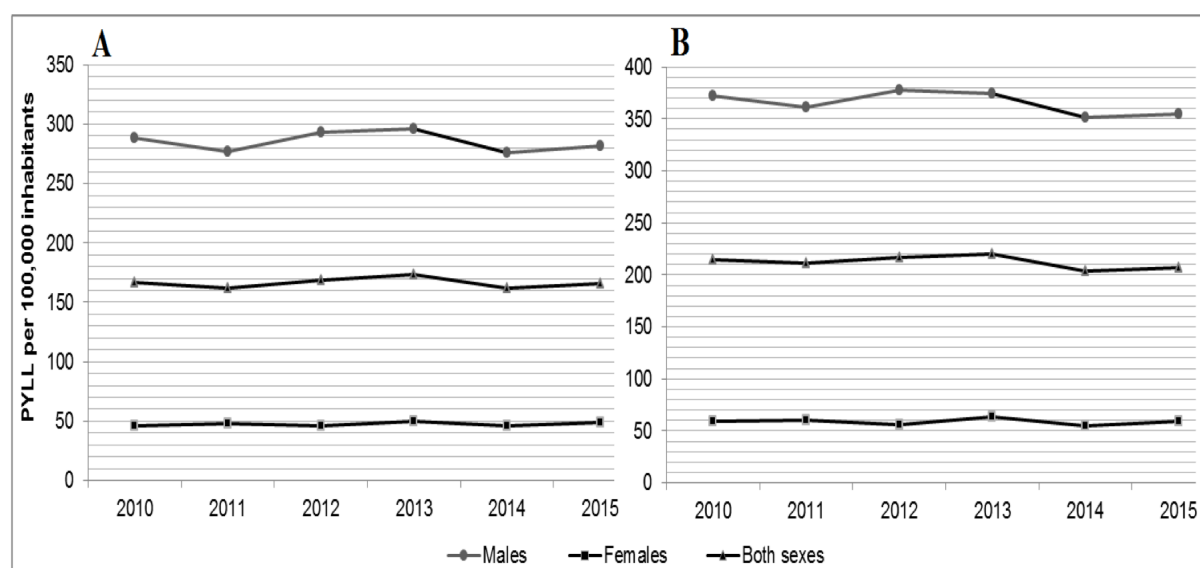


Figure 1A: The PYLL rates of lip, oral cavity and pharynx neoplasms according to gender and particular periods, all age groups. Figure 1B: The PYLL rates of lip, oral cavity and pharynx neoplasms according to gender and particular periods, 20-69 ages.

The highest PYLL rate was found in sub-category 20-69y. in males (378 per 100,000) in 2012 and in females (64 per 100,000) in 2013. The highest PYLL rate was observed in sub-category all ages in males (296 per 100,000) in 2012 and in females (50 per 100,000) in 2013.

The PYLL rates of lip, oral cavity and pharynx neoplasms had in the period 2011-2015 upward trend in both sexes, however, in the 2014 was found the opposite trend. The PYLL rates (non-standardized) of lip, oral cavity and pharynx neoplasms according to gender and age, all ages in 2015 can be seen in Figure 2. In 2015 the highest PYLL rates (non-standardized) in both sexes was found in age sub-category 55-59y.

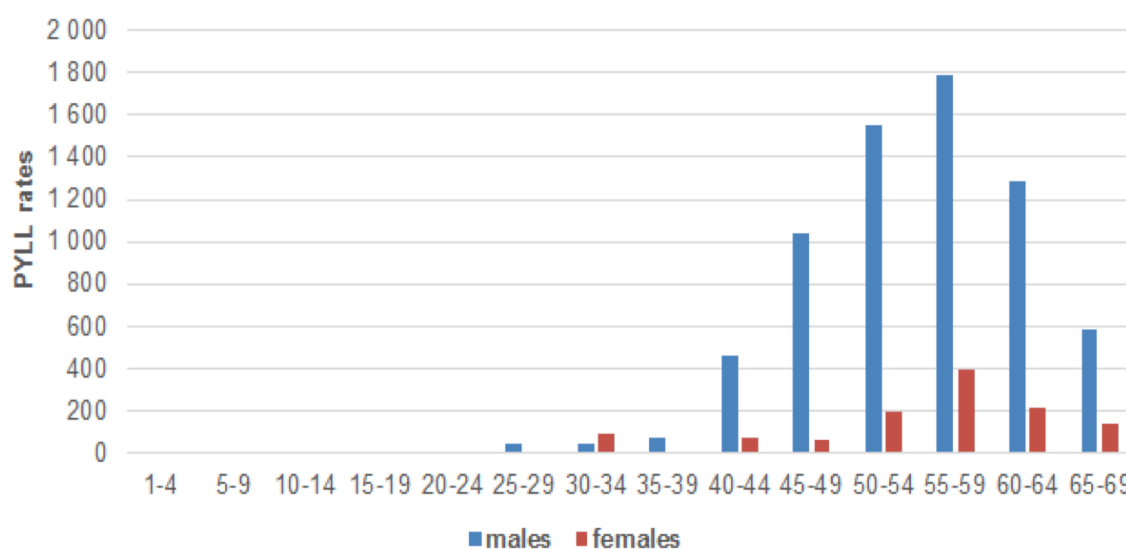


Figure 2. The PYLL rates (non-standardized) of lip, oral cavity and pharynx neoplasms according to gender and age, all ages, 2015.

Discussion

Worldwide cancer is one of the public health problem. The differences in incidence of oral and of oropharyngeal cancer in different parts of the world reflects differences in the specific risk factors prevalence. A high lip cancer incidence is associated with white race exposed to solar radiation. High incidence rates of cancers of intra-oral sites are associated with high tobacco consumption [16]. Diet, nutrition, environmental factors, environmental determinants can contribute to the risk of oral cancer [17]. The early diagnosis of oral cancer increases the probability of cure and deformity [18].

The cancers of oral cavity are classified into sub-categories: (1) upper alveolus and gingival; (2) buccal mucosa; (3) hard palate; (4) tongue; (5) floor of mouth; and (6) lower alveolus and gingival [19].

In 2011 according to Munich cancer registry was diagnosed 517 cases of lip, oral cavity and pharynx neoplasms (males: 359 cases and females: 158 cases) in Bavaria (4.5 million inhabitants) [20]. In the Slovak Republic (5.5 million inhabitants) was diagnosed 491 cases (males: 439 cases and females: 52 cases) of lip, oral cavity and pharynx neoplasms in this same year. In our country in females was found three times lower incidence of lip, oral cavity and pharynx neoplasms than Bavaria. This can be partly explained the differences in lifestyle in females.

In Munich study the mean PYLL rates of lip, oral cavity and pharynx neoplasms in the period 1998-2011 was in males 128 per 100,000 inhabitant and in females 27 per 100,000 inhabitant [20]. In our study, the mean PYLL rates of lip, oral cavity and pharynx neoplasms in the period 2010-2015 was in males 285 per 100,000 inhabitant and in females 47 per 100,000 inhabitant. The oral cancer mortality in females was lower than in males it was confirmed by the Nieto and Ramos study [21].

Our study was limited low numbers of PYLL studies (oral cancer). In the National center for biotechnology information database (PubMed) it was found only one PYLL oral cancer study [21] with the help of key words "oral cancer and PYLL".

Conclusion

In the Slovak Republic, the highest PYLL rate of oral cancer was found in sub-category 20-69 years and in sub-category all age groups in both sexes in 2013. In the PYLL rates of oral cancer was found rising trend in both sexes in the period 2011-2015, however, in the 2014 was found the opposite trend. In 2015 the highest PYLL rates of oral cancer (non-standardized) in both sexes was found in age sub-category 55-59y.

References

1. de Sousa RIM, de Sousa RTA, Godoy GP, Cavalcanti AL, Nonaka CF, Alves PM. Knowledge of Brazilian dentists about oral cancer. *Braz Res Pediatr Dent Integr Clin* 2016; 16(1):177-84. doi: 10.4034/PBOCI.2016.161.19.

2. Shield KD, Ferlay J, Jemal A, Sankaranarayanan R, Chaturvedi AK, Bray F, et al. The global incidence of lip, oral cavity, and pharyngeal cancers by subsite in 2012. *CA Cancer J Clin* 2017; 67(1):51-64. doi: 10.3322/caac.21384.
3. de Lemos Almeida MMR, da Rosa MRD, Alves PM, da Paz AR, de Almeida Rodrigues MI, Jatobá CAN. Changes in the immuno-expression of galectins-1,-3 and-7 in relation to the biological behavior of lip squamous cell carcinoma. *Pesq Bras Odontoped Clin Integr* 2017; 17(1):e2759. doi: 10.4034/PBOCI.2017.171.09.
4. Petti S. Lifestyle risk factors for oral cancer. *Oral Oncol* 2009; 45(4-5):340-50. doi: 10.1016/j.oraloncology.2008.05.018.
5. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. A review of human carcinogens. Part B: Biological agents / IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon: IARC Press; 2009. 475p.
6. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Tobacco smoke and involuntary smoking / IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon: IARC Press; 2004.
7. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Alcohol consumption and ethylcarbamate / IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon: IARC Press; 2005.
8. Varela-Lema L, Ruano-Ravina A, Juiz Crespo MA, Barros-Dios JM. Tobacco consumption and oral and pharyngeal cancer in a Spanish male population. *Cancer Lett* 2010; 288(1):28-35. doi: 10.1016/j.canlet.2009.06.015.
9. Jurkovicova J. Do we know live healthy? Bratislava: Univerzita Komenskeho v Bratislave; 2005. [In Slovak].
10. Jurkovicova J, Stefanikova Z, Sobotova L, Sevcikova L. Prevalence and development trends in cardiovascular disease risk factor in college students. In: Jurkovicova J, Stefanikova Z. Living conditions and health. Bratislava: Public Health Authority of the Slovak Republic; 2010. p. 142-151. [In Slovak].
11. Boeing H; EPIC Working Group on Dietary Patterns. Alcohol and risk of cancer of the upper gastrointestinal tract: First analysis of the EPIC data. *IARC Sci Publ* 2002; 156:151-4.
12. Boffetta P, Garfinkel L. Alcohol drinking and mortality among men enrolled in an American Cancer Society prospective study. *Epidemiology* 1990; 1(5):342-8.
13. Maximova K, Rozen S, Springett J, Stachenko S. The use of potential years of life lost for monitoring premature mortality from chronic diseases: Canadian perspectives. *Can J Public Health* 2016; 107(2):e202-4. doi: 10.17269/cjph.107.5261.
14. O'Shea E. Social gradients in years of potential life lost in Ireland. *Eur J Public Health* 2003; 13(4):327-33.
15. Fleiss JL. Statistical Methods for Rates and Proportions. New York: John Wiley & Sons; 1973.
16. Ariyawardana A, Johnson NW. Trends of lip, oral cavity and oropharyngeal cancers in Australia 1982-2008: overall good news but with rising rates in the oropharynx. *BMC Cancer* 2013; 13:333. doi: 10.1186/1471-2407-13-333.
17. Taghavi N, Yazdi I. Type of food and risk of oral cancer. *Arch Iran Med* 2007; 10(2):227-32.
18. Joseph BK. Oral cancer: prevention and detection. *Med Princ Pract* 2002; 11(Suppl 1):32-5.
19. Chong V. Oral cavity cancer. *Cancer Imaging* 2005; 5(Spec No A):S49-S52. doi: 10.1102/1470-7330.2005.0029.
20. Munich Cancer Registry (MCR). Cancer statistics: Baseline statisticsC00-C14: HN cancer. Available from: https://www.tumorregister-muenchen.de/en/facts/base_20130402/base_C0014E.pdf. [Cited 2017 Nov 11].
21. Nieto A, Ramos MR. Rising trends in oral cancer mortality in Spain, 1975-94. *J Oral Pathol Med* 2002; 31(3):147-52.