

Linkage Health and Environmental Data: A Case Study on Asthma Prevalence in Children and Adolescents in Slovenia

Tanja REJC^{a,1}, Andreja KUKEC^{a,b}, Tanja CARLI^b and Ajda MLAKAR^a

^a*Faculty of medicine, Department of Public Health, University of Ljubljana, Slovenia*

^b*National Institute of Public Health, Slovenia*

ORCID ID: Andreja Kukec <https://orcid.org/0000-0002-5973-0345>

Abstract. For the last 10 years there is no data on the prevalence of asthma in Slovenian children. To ensure accurate and high-quality data we will conduct a cross-sectional survey Health Interview (HIS) and Health Examination Survey (HES) design type. Therefore, we first prepared the study protocol. To get the data for the HIS part of the study we developed a new questionnaire. The exposure to outdoor air quality will be evaluated from the National Air Quality network data. In Slovenia the problems with health data should be addressed with the common unified system at the national level.

Keywords. Protocol, prevalence study, asthma in children, health data, environmental data

1. Introduction

Asthma is the most common chronic disease, and cause of hospitalization of children. Researchers have linked air pollutants to a number of respiratory diseases [1]. For the last 10 years there is no data on the prevalence of asthma in Slovenian children. Environmental history questionnaire which could effectively assess the impact of environmental risk factors on the occurrence or worsening of asthma in children, has not yet been developed. The aim of the study is to design the methodology to get the best data possible to assess the national asthma prevalence in children and adolescents and its associated environmental risk factors.

2. Methods

Prior conducting the study the protocol was developed. The observed outcome will be asthma prevalence estimated using HIS and HES approach. To achieve the HIS part of the study a new questionnaire was developed considering 3 previously used questionnaires, aiming the assessment of respiratory diseases in relation to the built environment [2-4]. Observed population group will be 6 to 7 years old children, and 12 to 13 years old adolescents in 75 randomly selected primary schools in Slovenia.

¹ Corresponding Author: Tanja Rejc, E-mail: Tanja.rejc@mf.uni-lj.si.

3. Results

Based on the study protocol a set of questions considering our aim of research was selected from each of the three mentioned questionnaires. Together with the clinic pediatric specialists we added and reformulated questions, answers and certain terms to target more accurately the observed outcome and environmental risk factors. Validation process will be performed prior national cross-sectional study. The exposure to outdoor air quality will be additionally evaluated from the National Air Quality network data, considering the child's residential address. The cases with parent-reported current asthma, and the cases where the child's symptoms indicate possible presence of asthma, will be in the next step examined and confirmed by a pediatrician reviewing the child's medical records. The obtained data will be furthermore organized into a single database for statistical analyses.

4. Discussion

Kukec and colleagues report a significant differences and discrepancies in recording the health data between the health centres, and inconsistencies in using the International Classification of Diseases [3]. As we expected the same problems in our study, we formulated different methodological approach to collect the health data. The combination of HIS and HES type of study ensure us the verified and good quality data [5].

5. Conclusion

To get the quality data on asthma prevalence and asthma exacerbation in relation to environmental factors the study HIS and HES type is necessary. In Slovenia, there is a need to unify the methodology regarding the health data recording. The creation of a common database in which already obtained data on environmental pollution and health could be linked together would be of extreme importance in enduring the quality of public health research.

References

- [1] Khreis H, Kelly C, Tate J, Parslow R, Lucas K, Nieuwenhuijsen M. Exposure to traffic-related air pollution and risk of development of childhood asthma: A systematic review and meta-analysis. *Environ Int.* 2017; 100:1-31.
- [2] Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema: ISAAC. The International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee. *Lancet.* 1998;25;351(9111):1225-32.
- [3] Kukec A, Zaletel-Kragelj L, Farkaš Lainščak J, et al. Health geography in case of Zasavje: Linking of atmospheric air pollution and respiratory diseases data. *Acta Geographica Slovenica*, 2014 54(2), 345–362. <https://doi.org/10.3986/AGS54208>
- [4] Szabados M, Csákó Z, Kotlík B, et al. Indoor air quality and the associated health risk in primary school buildings in Central Europe - The InAirQ study. *Indoor Air.* 2021;31(4):989-1003.
- [5] Scheidt-Nave C, Kamtsiuris P, Gößwald A, et al. German health interview and examination survey for adults (DEGS) - design, objectives and implementation of the first data collection wave. *BMC Public Health.* 2012(1); 12:730.