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Epidemiology of paediatric burns in Lithuania: Focus on a vulnerable population exposed to the risk of scalds at home without hot tap water supply

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ABSTRACT

Objective: To describe the epidemiology of paediatric burns in Lithuania, identify the trends of burn occurrence, the vulnerable population and aetiology.

Methods: This study was based on all inclusive national information obtained from the National Health Insurance database for the period of 2001–2010. Information on the burns aetiology was collected in the Hospital of Lithuanian University of Heath Sciences Kauno Klinikos.

Findings: 7146 children in the age group of 0–14 were hospitalized in Lithuania and constituted 44% of all admissions due to burns. The incidence among boys was 149.8 and among girls 99.9 per 100,000. The highest risk of burns was observed from 11 to 15 months of age. Scalding in 0–1 years age group composed 96% of all burns in this age group.

Conclusion: Children younger than 2 years of age are a vulnerable population of burns in Lithuania. Scalding was main cause of their burns. The aetiological subgroups of scalding were scalding with hot drinks/food and scalding with hot water meant for household. The major part of scalding with hot drinks was due to scalding with parents' drinks. Scalding with hot water meant for household is associated with the lack of hot water supply.

1. Introduction

Lithuania is situated in the Southeastern coast of the Baltic Sea. It covers the area of 65.3 thousand km^2 [1]. Although the Geographic Centre of Europe is in Lithuania, the country is classified as the Northern Europe by the United Nations Statistics Division [2]. Despite the fact that Lithuania is closely related linguistically with Latvia and historically with Poland, the situation in Lithuania is often compared with countries of the Eastern region of Europe. Such a situation emerged probably in the course of common historical events and

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Abbreviations: HDI, Human Development Index; WHO, World Health Organisation; ISBI, International Society for Burn Injuries; ICD-10, 10th revision of the International Classification of Diseases; APC, annual percentage change; HLUHS, Hospital of Lithuanian University of Heath Sciences Kauno Klinikos; LOS, mean length of hospitalisation; CI, confidence interval.

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socioeconomic changes in the countries under the influence of the former Soviet Union since the World War II. When, determining the position of the country, however, we refer to objective indicators such as the Human Development Index (HDI) of the United Nations Development Programme [3], where Lithuania was attributed to countries with High HDI by 2010.

Knowledge of the general demographics of Lithuania should make assessment of epidemiology of burns easier. According to the 2011 Census data, Lithuania has slightly more than 3 million inhabitants, two thirds were urban and one third rural. The population aged under 15 years decreased from 21.1% in 2001 to 16.1% in 2010 and consists of 8.2% men and 7.8% women of the overall population, though births and the number of infants increased from 30 to 35 thousand per year [1,4]. The WHO estimate for infant mortality in Lithuania – 9 per 1000 live births – equals the national reported figure. Both infant and neonatal mortality rates are in between of numbers of countries of very low and low child mortality. [5]

Our research was encouraged by the observation that the incidence of burns of children aged under 15 years appeared to be increasing. Previously arranged children burn prevention campaigns based on public information measures and education at schools in Lithuania did not bring proven results. A legal obligation for Primary Health Centres to inform parents on child injury risks came into force in 2010. Although legislative changes are regarded as principal prevention measures [6], a particular legal obligation is still not effective as there is not a unified action plan who and how should transfer knowledge to parents due to the lack of epidemiologic information on children injuries, prevention measures and educational tools.

Knowledge of the epidemiology of burns is essential for the planning, implementation and evaluation of preventive measures [7] yet the recent epidemiological information on burns in Lithuania and neighbouring countries is scarce [8]. This research is designed on the basis of WHO and ISBI guidelines and examines the recent pattern of burns in children in Lithuania [6,7,9,10]. Considerable attention was granted to identify vulnerable populations and to extract more precise aetiology of burns – referred as the cornerstone information for the burn prevention [11,12].

2. Methods

This study was based on all inclusive national information obtained from the National Health Insurance database for the period of 2001–2010. Burn cases were selected according to ICD-10 ''Burns and Corrosions'' disease codes T20–T32. Data about the persons for whom outpatient or inpatient health care facilities recorded at least one diagnosis of burns during the year was used in the study. Duplications were avoided. The age of the study subjects was limited to the age between 0 and 14 years.

Trends in paediatric burns incidence rates during a period of 10 years were analysed. Incidence rates were calculated for both genders. Corresponding mid-year population data by age, gender and year was available from Statistics Lithuania [4]. The estimated annual percentage change (APC) was computed for trends by means of generalised linear models. Joinpoint software was used for the analysis of changes in burns morbidity in the Lithuanian population (Joinpoint Regression Program, Version 4.0.1. January 2013; Statistical Research and Applications Branch, US National Cancer Institute). The maximum number of 2 join points was allowed for estimations.

Information on the burns aetiology was collected in the Hospital of Lithuanian University of Heath Sciences Kauno Klinikos (HLUHS). HLUHS is a significant burn centre in Lithuania which was established in 1971 and is one of three hospitals in Lithuania where children burns are treated. During the period of 2001–2010, 1945 children or 27% of all burns in Lithuania in this age group were treated in the centre. Digitalised records of case narratives of HLUHS sample were available for the period of 2004–2010 and data regarding the age, gender and available burn aetiology was collected. Etiologic data of burnt patients of previous years was not analysed.

The Ethics Committee of Lithuania approved the study (No. BE-2-19).

3. Results

From 2001 to 2010, 7146 children in the age group of 0–14 were hospitalized in Lithuania and this number constituted 44% of all admissions due to burns. The incidence of burns was higher among boys than among girls (incidence rates 149.8 and 99.9 per 100 000 respectively), 4374 boys accounted for 61% of hospitalised children burns. The mean length of hospitalisation (LOS) of burnt children was 10.5 days. For boys, the incidence of burns was stable during the study period (APC ±0.7%, with 95% confidence interval (CI) −0.9 to 2.3), though among girls the incidence of burns increased by 1.7% per year (95% CI 0.1–3.3) (Fig. 1). For both genders the combined incidence changed insignificantly (+1.1%, 95% CI −0.5 to 2.6). There were no join points found in the data on boys or girls.

The incidence of hospitalised patients by age is shown in Fig. 2. The highest incidence of burns was observed during the first three years of life. The incidence rates in the age of 1 were 1165.3 for boys and 723.4 for girls per 100,000. In this age group, differences in the burns incidence among genders were the highest. In the age group from 4 to 9, the incidence of burns among girls and boys was similar and in the age group from 10 to 14 this indicator became higher among boys.

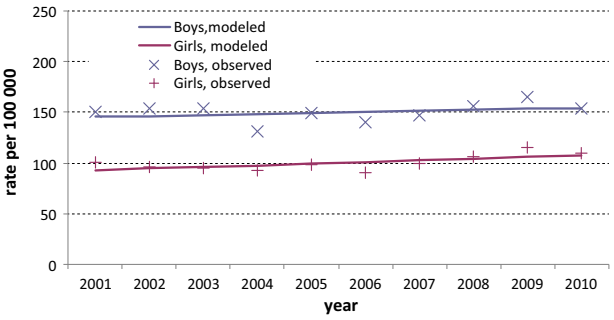

Fig. 1 – The incidence of hospitalised paediatric burns in Lithuania in 2001–2010.