

TRENDS IN THE SPREAD OF BURNS IN LITHUANIA 2001-2010

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Key words: *burns, epidemiology, prevention, injury.*

Abstract

Background and objective. The article presents the main Lithuanian burns epidemiological data, assesses raw and standardized data trends. The burns data is compared with particular data of other casualties of external causes of the Lithuanian population and also compared with international data.

Material and methods. The non-experimental descriptive study examined burn casualties in the period of 2001–2010. Burn cases were selected from national institutions according to ICD-10 disease codes T20-T32. The data was classified and standardised by gender and age groups.

Results. There were 77.025 of burns diagnosed. The ratio of men and women was 4:3. The largest total number of burns was at the 15-39 and 40-64 year age groups - 51941 persons. The highest burn injury case rate was in the 0-14 years age group - 284 cases, the lowest in the 65+ age group - 172 cases. There were 2.574 fire related deaths and 2.456 injuries registered. People were mainly affected by fires in the domestic environment (86%). Since 2008 the ratio of burns and traffic injury has changed from 1 to 1.4 in the disfavour of burns.

Conclusions. The total number of burns is decreasing. However, according to standardized figures, there is an increasing trend in the children group.

Burns of the workable age people (15-64 years of age) make up the largest share of all burns.

The number of burns should be reduced by implementing intensive burns prevention programs.

INTRODUCTION

People get burned and scalded in all countries of all climatic zones. Burns are common in low and high income countries, though in low income countries people suffer from burns considerably more – 90% of fire related burns occur in low and middle income countries [1]. Burns are among mostly devastating injuries [2] and are responsible for one of the leading causes of disability-adjusted life years. A lot of studies indicate that the poverty and socio-economic status of inhabitants is a backing factor influenc-

ing the emergency, morbidity and mortality of all injuries, including burns [3, 4, 5]. Burns is the poly-etiological phenomenon that relates not only to socio-economic status, but also to domestic, cultural, religious practices, technology and spread of harmful habits, the country's legislation and regulatory basis. [5].

Burns is the fourth leading cause of an external unintentional death. Children under 10 years of age constitute 22.2% of the total estimated deaths from fires. Burns are usually mentioned as a cause of injury and death for one of ten children under the age of 5 years and adults older than 34 years [4]. Burns in Lithuania have been gradually decreasing [6]. This can be attributed to the growth in national income and an improving socio-economic status [7]. However, as it will be seen from our estimates, the reduction of burns incidence rate is small, and according to the assessment of certain sub-groups, there is no reduction at all.

The source of the burns epidemiology is estimates based on the target databases (listed in the methodology section). The case incidence and their distribution are determined according to the estimates and serves as the basis for the injury control. [8]. As mentioned above, burns in general belong to an unintentional injury group. The aim of our non-experimental descriptive study was to assess the spread of burn injuries in Lithuania, compare with certain data of other injuries and compare the results with international data.

MATERIAL AND METHODS

The study examined burn casualties in the period of 2001–2010. The study used data from the Health Information Centre of Institute of Hygiene [9], Statistics Lithuania [10], Fire and Rescue Department [11] and the Lithuanian Road Administration [12].

For the analysis the data of the persons for whom an outpatient or inpatient health care facilities recorded at least one diagnosis of burn during the year was used. The investigation also includes the assessment of data of fire related injuries and deaths. All the abovementioned institutions that accumulate this information issue authorisations for the publication of this data.

We analysed absolute and standardised figures of burns. The data of burns is standardised according the age group and gender per 100 000 inhabitants. The median of the standardized rate of the analysed period is abbreviated as MSR.

Burn cases are selected according to ICD-10 disease codes T20-T32. These codes include all diagnoses except the burn of the digestive tract, respiratory paths and eye burns.

Persons who have suffered burns, are classified by gender and age groups: 0-14, 15-39, 40-64 and 65 + years. On the basis of initial estimates, the 0-14 years age group was subdivided into 0-2 years and 3-14 years age group. The

Table 1. The number of fire related casualties of home setting and outside home environment, median of absolute figures of 2001-2010.

	Number of fires	Killed	Injured
Home setting	4335	227	190
Outside home environment	11493	36	48

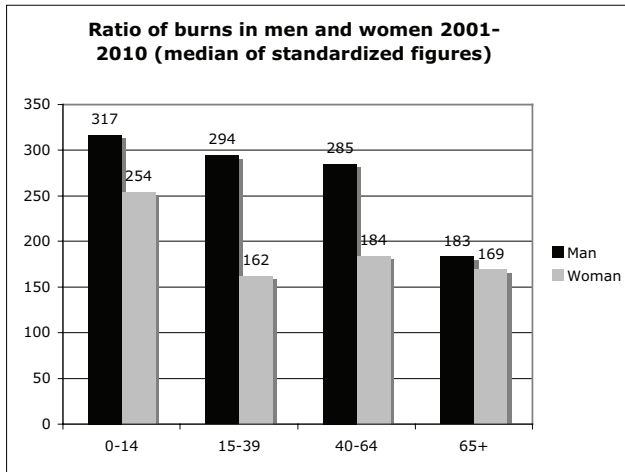


Figure 1. The illustration of man and woman ratio in standardized age groups.

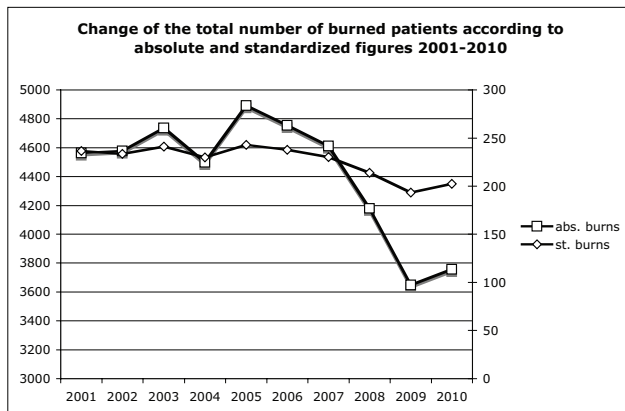


Figure 2. The illustration of difference of raw and standardized figures of burn injuries. Left-hand scale shows absolute figures, right-hand scale - standardized figures.

age groups were selected on the basis of burns frequency, the experience of similar studies [8] and the general statistical clustering criteria [7].

RESULTS

There were 77.025 of burns diagnosed during the period of 2001-2010 in Lithuania (the median of the standardized rate of the analysed period (MSR 232). Burns were diagnosed in 44.216 men (MSR 232) and 32.809 women (MSR 184). In terms of absolute figures of men and women, the burn ratio was 4:3. According to standardized figures, the burn ratio of men and women was equal to 3:2.

In absolute terms, the largest total number of people are burned at the 15-39 and 40-64 year age groups – 51941 persons. In the group of 0-14 and 65+ years of age the number of burns is twice less – 25084 persons.

The evaluation of standardized values indicated the 0-14 years age group as the most numerous of burn injuries

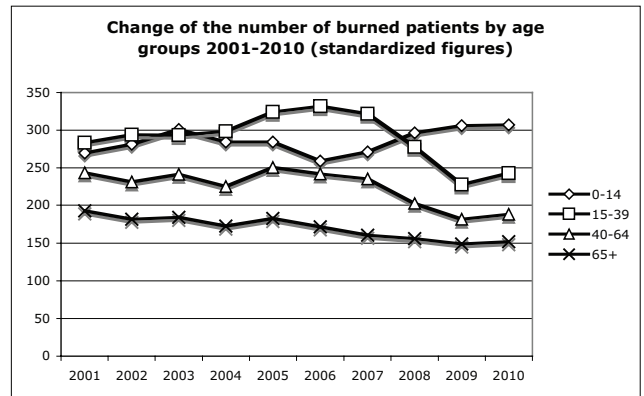


Figure 3. The illustration of tendencies of burn injury rate in standardized age groups.

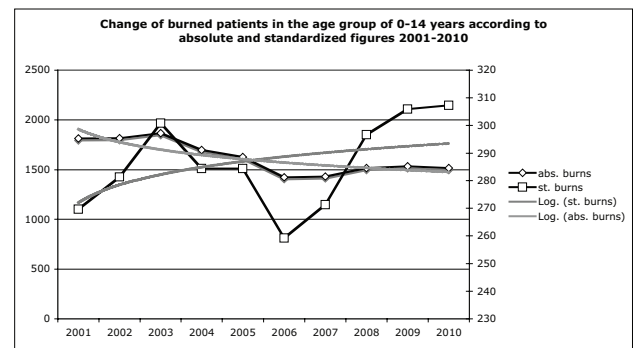
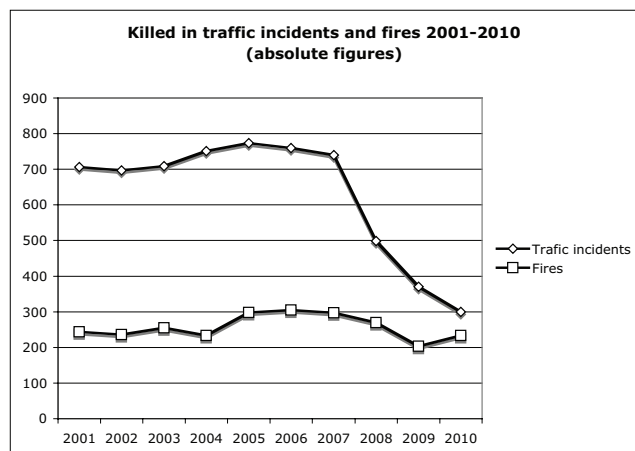


Figure 4. The illustration of difference of raw and standardized figures of burn injuries in 0-14 age group. The gray lines indicates the trend of absolute figures and the trend of standardized data. Left-hand scale shows absolute figures, right-hand scale - standardized figures.

Figure 5. The illustration of the ratio of the death in traffic incidents



and fires.

Figure 6. The illustration of the ratio of the injuries in traffic incidents (MSR 284). The lowest burn injury rate was in the 65+ year age group – (MSR 172). According to standardized figures, men predominate against women in all age groups. The highest ratio was in the group of 15–39 years of age - 1.81, the lowest in the 65+ year age group - 1.08. (Fig. 1).

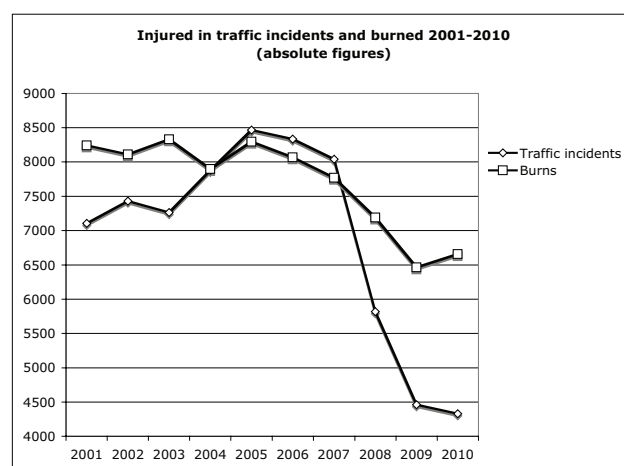
During the investigation period, in terms of absolute and standardized figures, more burns occurred in 2005, the smallest number - in 2009. (Fig. 2) The total number of burns have a tendency to decrease in all age groups of standardized figures, except in the age group of 0-14 years, where the number of burns tends to grow. (Fig. 3, 4)

According to our calculations made on the data presented by the Fire and Rescue Department, there were 2.574 fire related deaths and 2.456 injuries during the period of 2001-2010. The number of fire related casualties has not been decreasing during the period of investigation. (Fig. 5) There were 27% of all fires in the domestic environment and other 73% of fires occurred outside the home environment, such as an open land, forest, industrial facilities and others. People are mainly affected by fires in the domestic environment (86%) such as residential and farm premises fires. However, home setting fires make only one-third of all fires (Table 1).

Fatalities in road incidents have decreased significantly since 2008 and currently the numbers of these fatalities are close to numbers of fire deaths. (Fig. 5) The number of burned cases and injured in traffic incidents was almost the same until 2008. However, since 2008 this ratio has changed from 1 to 1.4 in the disfavour of burns (Fig. 6)

DISCUSSION

In absolute figures and the results of standardized data is an obvious difference. Absolute figures show the total number of people that got burned, and the number of patients who require treatment for burns in hospitals and out-



and burns.

patient departments. The count of raw numbers creates the possibility for the assessment of treatment and rehabilitation service needs, the number of hospital beds, and for the determination of the need of these services according to the age group and gender. Standardized readings indicate the rate of burns in different age, gender or other groups and is significant because it allows to distinguish people who face the highest risk of burns. These calculations is the basis for the burn prevention. The more accurate the group is, the more successful prevention of burns can be expected.

According to our calculations of the absolute numbers, the biggest number of patients is in groups of 15-39 and 40-64 years of age and they need the largest quantity of medical and rehabilitation services. This is the working-age population and, therefore, the total loss increases even more. There are less patients in the group of 0-14 and 65 + age and they require less medical services. The average age ratio of adults-children-elderly is 6:2:1.

According to standardized readings, burns affected mostly patients in the age group of 0-14 years. The largest portion in this group were children aged under 3 years. Burned children up to 2 years of age account for nearly 1% of the 0-2 age group population. Looking at absolute numbers across all age groups, the number of burned patients is declining. However, according to standardized readings of the 0-14 years age group, the number of burned patients is increasing. This increase is mainly due to a large number of burns of children in the group of under 3 years.

It can be argued that the overall decline in the number of burns in Lithuania is caused by growing economy and the improvement of a socio-economic status. This is consistent with the general global trend, indicating that more developed countries count for a smaller number of burns.

[14]. However, the number of the fire related casualties is not decreasing in Lithuania. Table 1 shows that, although fires in the home setting are less frequent than outside the home environment, the vast majority of people is affected particularly during the home setting fires. The main reason could be that the home setting is controlled least of all and is the most unsafe environment for fire, as compared with public and industrial premises or vehicles.

In order to assess the extent of the burns problem, we used the comparison of road incidents data. Road incidents are treated as the benchmark for injuries because persons killed or injured in traffic incidents in Lithuania and worldwide take the first place according to external, unintentional deaths and injuries [8, 10]. Lithuania, according to the World Bank's allocation is assigned to higher middle-income countries [10]. According to WHO aggregated data, the number of people killed in traffic incidents should exceed the number of fire related deaths about 10 times in the countries of this income group. [10]. In Lithuania, since 2008, because of an intensive road incident prevention, the injured in traffic incidents decreased by a half. Events of burns during the same period decreased by 14%. Those killed in traffic incidents by 2008 exceeded the number of fire deaths by 2.5 to 3 times. In 2010 these numbers became almost the same. (Fig. 7, 8). According to the WHO [9], the number of those killed in road incidents in Lithuania amounts to high-income countries, and the number of those killed in fires keeps the level of low and middle income countries. Based on this, we can make following generalizations:

1. The group of people that suffered from burns in Lithuania is sufficiently large, equivalent and in some cases even exceeding the number of victims of traffic incidents.
2. The implementation of more intensive burns prevention programs would reduce the number of persons that suffer from burns in Lithuania.

CONCLUSIONS

The total number of burns is decreasing. According to absolute figures, the number of burns is reducing in all age groups, however, according to standardized figures, there is an increasing trend in the children group.

Burns of the workable age people (15-64 years of age) make up the largest share of all burns.

The number of burns should be reduced by implementing intensive burns prevention programs.

Conflict of interest statement:

The authors of the study above declare, that there are no interest conflict of any concern.

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NUDEGIMŲ IŠPLITIMO LIETUVOJE TENDENCIJOS IR EPIDEMIOLOGIJA 2001-2010 m.

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Santrauka

Raktažodžiai: nudegimai, epidemiologija, prevencija, sužalojimai.

Tyrimo tikslas. Išanalizuoti pagrindinius Lietuvos nudegimų epidemiologinius duomenis, įvertinti nudegimų absoliučių ir standartizuotų rodmenų kitimo tendencijas. Nudegimų duomenis palyginti su kitų sužalojimo įvykių išorinių priežasčių duomenimis bei tarptautiniais epidemiologiniais duomenimis.

Metodai. Neeksperimentinis aprašomasis tyrimas apima 2001–2010 metų laikotarpio nudegimus. Tyrimui naudoti nacionalinių institucijų pateikti duomenys, kurie buvo išrinkti pagal TLK-10 ligų kodus T20-T32. Nudegimai suskirstyti ir standartizuoti pagal lytį ir amžiaus grupes.

Rezultatai. Tiriamuoju laikotarpiu buvo diagnozuoti 77025 nudegimai. Vyrų ir moterų nudegimų santykis buvo 4:3. Didžiausias bendras nudegusių asmenų skaičius buvo 15–39 metų ir 40–64 metų amžiaus grupėse – 51941 asmenys. Pagal standartizuotus rodiklius daugiausia asmenų nudega 0–14 metų amžiaus grupėje – 284 asmenys, mažiausiai – 65+ metų amžiaus grupėje – 172 asmenys. Tiriamuoju laikotarpiu 2574 žmonės žuvo ir 2456 buvo sužaloti gaisruose. Žmonės daugiausia nukentėia namų aplinkos gaisruose (86%). Nuo 2008 metų nudegusių ir sužalotų eismo įvykiuose santykis pasikeitė nuo 1 iki 1,4 nudegusiųjų nenaudai.

Išvados. Bendras nudegimų skaičius yra mažėjantis. Pagal standartizuotus rodmenis vaikų amžiaus grupėje yra nudegimų didėjimo tendencija.

Darbingo amžiaus žmonių (15-64 metų amžiaus) nudegimai apima didžiąją visų nudegimų dalį.

Nudegimų skaičių būtų galima sumažinti įdiegus intensyvas nudegimų prevencijos programas.

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