

## THE PROFILE OF SCABIES PATIENTS IN ZAGREB

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### SUMMARY

**Background:** Scabies is a mandatory notifiable disease according to Croatian law. Due to an increased reports of scabies within a couple of years in Zagreb, we decided to present epidemiological characteristics of patients diagnosed with scabies in Zagreb.

**Subjects and methods:** A retrospective survey was carried out in county Public Health Institute “Dr. Andrija Stampar” in Zagreb and analysis was performed for the period of 2010-2013 upon individual notifications on scabies cases. The patients are presented by sociodemographic data, diagnosis and treatment.

**Results:** In a 4 year period there were 246 scabies cases recorded in Zagreb. Cases have been registered in all quarters of the City. The highest incidence (50/100 000) was recorded in every child age group following by incidence of over 30/100 000 in elderly institutionalized in nursing homes. In almost two thirds of patients management of scabies has not been conducted in accordance to current guidelines. 10% of scabies cases were found in medical health personnel predominantly in those working in nursing homes and psychiatric wards. A small amount of cases 19 (8%) were infected outside Croatia; the majority of these cases 15 (78%) are registered within last two years.

**Conclusion:** High percentage of scabies cases registered in nursing homes and psychiatric wards suggests that there is a need of raising awareness on scabies epidemiology and management by public health officers. Due to a higher incidence of scabies in children age, the obligation of medical practitioners is also to emphasize the importance of following treatment guidelines. In order to control scabies cases as well to prevent outbreaks within hospital wards or nursing homes there is an obligation of implementation of strict guidelines regarding treatment of scabies and a public health service referral

**Key words:** scabies – epidemiology – Zagreb - nursing homes - psychiatric wards

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### INTRODUCTION

Scabies is parasitic skin infection, caused by infestation with a mite *Sarcoptes scabiei* var. *hominis*. It is estimated that 300 million cases of scabies occur globally every year, but the disease is not notifiable in many countries so data could vary (WHO 2014, CNIPH 2014, CDC 2014). Scabies has a worldwide distribution, the disease is endemic and highly prevalent within the countries of the developing world in resource poor settings (Heukelbach et al. 2006, Heukelbach et al. 2013). Scabies is one of the 17 neglected tropical diseases prioritized by WHO due to a fact that scabies contribute to overall morbidity substantially; in 2010 it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5 million YLDS (years lived with disability) (Johns et al. 2013, WHO 2014).

In high income countries scabies outbreaks have been reported in long – term care facilities and hospitals, often originated after a single undiagnosed or incompletely treated case (Heukelbach et. al 2006, Makigami et al. 2009, Amor et al. 2012).

All human are susceptible to the acquisition of scabies, but transmission is more often in nursing homes, psychiatric wards, asylum centres; but also in children and immunosuppressed persons. Prevalence within the child population in resource poor countries is 5-10% (Muhammad Zayyid 2010, Heukelbach 2013). Scabies can be complicated with secondary bacterial infection (*Streptococcus pyogenes* and *Staphylococcus*)

and lead to systemic infection which increases morbidity and hospitalization rate, as well as the financial costs of treatment (Hay et al. 2012).

Beside typical clinical signs, the definitive method for scabies diagnosis is skin scraping with identification of mites and eggs (Hengge et al. 2006, Chosidow 2006). Also dermoscopy can be used, particularly in patients where some difficulties to obtain skin scraping (children, immunocompromised) (Towersey et al. 2013).

Scabies is treated with locally applied scabicides (permethrin, lindane, benzyl benzoate, crotamiton); the choice is made upon: availability of drugs, age of patients, and life condition of patients (Hengge et al. 2006, Mounsey et al. 2013). Excellent results provide orally used ivermectin especially when it's used in institutional outbreaks, but it is not licensed in many countries, and it is contraindicated in children below 15kgs and pregnant or lactating women (Fawcett 2003).

In Croatia, scabies is notifiable disease since 1971 (CNIPH 2014). In the last decade, approximately 600 cases per year is recorded, respectively 60 cases in Zagreb (CNIPH 2014).

During the past several years in Zagreb we noticed an upsurge of scabies notifications, not only in nursing homes and psychiatric wards but also an increase of sporadic cases or minor family outbreaks. We analysed a period from 2010-2013 in order to have a better insight of epidemiological characteristics of our cases. Our aim is also to adapt a wide range of existing scabies management procedures and to tailor it to the current needs.

## SUBJECTS AND METHODS

A retrospective survey was carried out in county Public Health Institute "Dr. Andrija Stampar" in Zagreb, Department of epidemiology for infectious disease. The data were obtained from individual notifications on infectious diseases, which is mandatory under Croatian law. (Official Gazette 2007) Data were collected for the years 2010-2013 inclusive and were examined by week and then aggregated to provide annual incidence rate in age specific groups. (0-4, 5-9, 10-14, 15-19, 20-29, 30-39, 40-49, 50-59, >60). Rates are presented per 100 000 age-specific person-years.

This study was conducted using a questionnaire developed for this research that contained demographic data, patient history, diagnostic methods, prescribed treatment and duration of treatment and finally the number of contacts put on treatment due to an index patient.

An investigation and consultation is carried out by a medical doctor specialized in epidemiology in patient's homes, hospital and nursing wards, according to notifications.

## RESULTS

From 2010 to 2013 included, 246 cases of scabies have been recorded, which accounts 10% of all scabies notifications in Croatia within the same period. The crude incidence rate of 21.2/100 000 was found in Croatia in 2013. In the last two years incidence rate has doubled in Zagreb from 5/100 000 in 2010 and 2011 to 9.7 /100 00 in 2012 and 11.6/100 000 in 2013. Scabies is registered in all quarters of Zagreb, the highest incidence rate within the last two years has been recorded in Sesvete (44.3/100 000 in 2012; 2013.-22.9/100 000 in 2013); following by Pescenica and Maksimir. A high incidence rate of 44.3/100 000 is a result of epidemic in a nursing home. Overall, almost equal number of men and women were reported. (M 52%; F 48%). The incidence rate of over 50/100 000 was found in child age (0-5, 5-9, 10-14, 15-19 years). A substantial proportion of cases (38%) was found in elderly (60 years and older) with an incidence of 33.2/100 000.

Only 17% of registered cases live in poor living conditions. One third of cases (working age population) are unemployed. Over the half of recorded cases was diagnosed by dermatologists. A diagnosis made by skin scraping has been performed in two thirds of cases, with an extremely high proportion (94%) of positive results (mites, eggs and scybala were found). In 37% of cases, the treatment has been conducted during 5 days (with benzyl-benzoate), almost 1/5 of scabies cases has undergone treatment for a more than a month. 65% of cases live within families, 19% are institutionalized. In a quarter of registered cases scabies did not affect their families, sexual partners, other residents of nursing homes or other patients admitted on the same hospital ward. 10% of scabies cases were found in medical

health personnel predominantly in those working in nursing homes and psychiatric wards. A small amount of cases 19 (8%) were infected outside Croatia; the majority of these cases 15 (78%) are registered within last two years. Half of the cases infected abroad have been infected in our neighbouring countries (Bosnia and Hercegovina, Serbia). Immigrants comprise only 10% of scabies reports within an observed period.

## DISCUSSION

Infectious diseases reporting system is mandatory and regulated by law, and for scabies is conducted from 1971 (Official Gazette 2007, CNIPH 2014). Even though scabies does not contribute significantly to all notifications on infectious diseases, during the last year in Croatia and within two years in Zagreb a number of notifications has doubled. The analysis of cases in Zagreb as well as in other economically developed countries shows that scabies cases are not related with bad hygiene and poverty but are mainly a result of late diagnosis and misdiagnosis (Laya et al. 2011, Hewitt et al. 2014). Similarly as in Belgium and UK, the highest incidence rate (50/100 000) was found in child age (0-4, 5-9, 10-14, 15-19 years) (Lapeere et al. 2008, Lassa et al. 2011). In our study all of these children live in families which indicate a lack of awareness of urgent and immediate scabicide treatment needed if there is a scabies case in the family. Little less than a half of patients were diagnosed by primary care physicians, and majority of them were diagnosed clinically so there is a possibility that the real number of scabies cases may be underestimated, especially in those with milder clinical symptoms or some other concordant dermatological disorder. (Jeanneret et al. 2007)

In almost two thirds of patients management of scabies has not been conducted in accordance with current guidelines which suggests to incompletely applied therapy and the possibility of re-infection, mainly in nursing homes and among people with lower socioeconomic status as seen also in other countries (Scheinfeld 2004, Badiaga et al. 2008, van de Hoek et al. 2008).

In 75% of cases, infestation with scabies has been transmitted to close contacts (family, sexual partners, residents of nursing homes) which are more often recognized in resource poor settings, which implies that either medical practitioners are not familiar with guidelines regarding treatment nor do household contacts don't comply with therapy (Chouela et al. 2002, Hicks et al. 2009, Scott et al. 2011).

A substantial percent of scabies cases is recorded among health care personnel (HCP) which is noticed also among other health care institutions in Europe and USA. In these countries scabies cases are not as prevalent as in endemic countries, so HCP are not familiar with epidemiological characteristics of scabies and also rarely see atypical clinical presentations of cases (Larrosa et al. 2003, Scheinfeld 2004, Vorou et al. 2007, Buehlmann et al. 2009).

8% of our scabies cases have been infected with scabies outside Croatia, but there is an upsurge of these cases within last 2 years. This reflects the situation in our close neighbourhood where the prevalence of scabies is 35.6/100 000 in 2011 (ZZJZBiH 2011, ZZJZBiH 2013). Minority of scabies patients are within immigrant population that is somewhat different from other studies of scabies that are mainly driven by immigrant population (Lapeere et al. 2008, Pérez-Crespo et al. 2014)

There are several possible limitations of the study. The survey was performed only on official notifications of scabies cases, so it could be that scabies is under-reported as well as any other infectious disease in Croatia due to a lack of computerized system of registration of communicable diseases. We also do not know what is the proportion of scabies cases among all other dermatoses as well as what is the rate of systemic complications due to a scabies infection. The data were not linked with pharmacies so it is not known how many drugs for treatment of scabies was sold over the counter (OTC).

## CONCLUSION

Even though our surveillance of infectious diseases is passive, it gives us a good insight of trends. It also indicates the need of epidemiological investigation of scabies cases in order to have a better understanding of characteristics of patients.

There is a need of raising awareness on scabies in health care personnel as well as in general public with the information about disease and the management of disease. In order to control scabies cases as well to prevent outbreaks within the hospital wards or nursing homes, there is an obligation of implementation of strict guidelines regarding treatment of scabies. Nevertheless, there is also a demand to monitor and supervise all scabies cases and contacts in case of outbreaks, plus early involvement of responsible public health service. All above measures point out that a public health officials should be involved promptly in the management of scabies in order to enhance surveillance and to monitor the conduction of guidelines.

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**Conflict of interest :** None to declare.

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