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## SHORT REPORT

### Incidence of scabies in Belgium

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#### SUMMARY

A prospective survey on scabies in Ghent, Belgium was performed in 2004. Sixty-four individual cases were reported, corresponding to a crude incidence rate of 28/100 000 inhabitants. The incidence was higher in the elderly (51/100 000 in persons aged >75 years) and a higher incidence was also found in immigrants (88/100 000). More than 40% of the registered scabies patients had symptoms for more than 4 weeks at the time of presentation. In 54% of the consultations, the patient had already consulted a physician for his/her skin problem. Of this group, 44% had not yet received any scabicide treatment, indicating that scabies was not yet diagnosed or that an inappropriate treatment was prescribed. The observations suggest that the diagnosis and/or treatment of scabies in this region can still be improved.

Scabies is an infectious skin disease caused by *S. scabiei* var. *hominis*. According to the WHO about 300 million persons per year develop scabies worldwide [1].

Some reports on the epidemiology of scabies are based on nationwide reporting systems [2–5]. Other resources such as army databases [6, 7], sentinel practice networks [8, 9] or patient files [10–12] have also been used. Few countries have an obligatory reporting system. In Belgium, the reporting of scabies to the Health Inspection has been mandatory since 1995. These data are published quarterly on the Health Inspections website [13] and seem to suggest that there has been a resurgence of scabies in Belgium. The incidence has increased from 125 individual cases (or a relative incidence of 2.1/100 000 inhabitants) in 1995 to 449 cases (7.5/100 000) in 2001. Since then, the incidence has decreased again to 231 cases

(3.8/100 000) in 2005. However, it is suspected that these data are incomplete because of underreporting by physicians to the Health Inspection.

Insight in the epidemiological and clinical profile of scabies patients can be helpful to adapt the management of scabies to the current needs. The information in many of the epidemiological studies mentioned above is not applicable because these reports are often outdated [2, 10, 11, 14, 15] and/or based on a specific population [7]. The current survey presents data on the incidence of scabies and the socio-demographic and clinical profile of scabies patients in Ghent. This industrialized city in the northern part of Belgium has 229 377 inhabitants of which 6.9% are of non-Belgian origin [16]. Demographic characteristics, patient history and clinical information on all new scabies patients that consulted a physician in Ghent between 1 January 2004 and 31 December 2004 was collected by means of a prospective survey. The survey was conducted using a self-developed questionnaire that contained questions about demographic characteristics (sex, age, nationality) and patient history

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(was the patient referred, how long had the symptoms been present, had the patient previously consulted another physician). The physician was asked which elements were suggestive for the diagnosis of scabies in each patient (contact persons with scabies, nocturnal itch, family members or contacts with itch, scabies burrows, papules, erythema, flakes, crusts, scratch lesions, impetigo). Finally the survey contained questions about which treatment was prescribed and how many contacts of the index patient were treated. Approval for this project was obtained from the Ethics Committee of the Ghent University Hospital (2003/295).

All dermatologists ( $n=32$ ), General Practitioners (GPs) ( $n=344$ ) and paediatricians ( $n=75$ ) in Ghent were invited to participate in this survey. The questionnaire and an accompanying letter were sent by mail in December 2003. The survey was also promoted during a local press conference in June 2004.

Eighteen different physicians returned 69 completed forms, reporting 64 scabies patients. Twenty-four (38%) cases were registered by physicians working at the dermatology department of the University hospital, 27 (42%) cases by other dermatologists and the remaining 13 (20%) cases by GPs.

The recorded 64 cases correspond to a crude incidence rate of scabies in Ghent of 28/100 000 inhabitants (95% CI 22–36/100 000). An equal number of men and women were reported. The highest incidence rates were found in children aged <5 years (five cases corresponding to 50/100 000, 95% CI 22–116/100 000), in young adults aged between 15 and 24 years (nine cases corresponding to 35/100 000, 95% CI 19–67/100 000) and in the elderly (11 cases in persons aged >75 years corresponding to 51/100 000, 95% CI 29–91/100 000) (see Table).

Incidence rates were almost four times higher in immigrants (14 cases or 88/100 000, 95% CI 53–148/100 000) than in persons with Belgian nationality (50 cases corresponding to 23/100 000, 95% CI 18–31/100 000) ( $P<0.001$ , Fisher's exact test). About 70% (95% CI 59–81) of the reported scabies patients lived in a family, 16% (95% CI 9–26) lived alone and 14% (95% CI 8–25) were residing in different institutions.

In 43% (95% CI 31–52) of the consultations, the patient had symptoms for 1–4 weeks. In 12% (95% CI 4–20) of the consultations, symptoms were present for 1–2 months and in 31% (95% CI 20–42) for more than 2 months. In 54% (95% CI 42–66) of the consultations, the patient had already seen a physician for their skin problem and this was not

Table. *Reported cases of scabies in Ghent in 2004 and crude incidence rates (n=64)*

Age category (years)	No. of cases	Crude incidence rate per 100 000 inhabitants
<4	5	50
5–14	5	21
15–24	9	35
25–34	6	16
35–44	8	24
45–54	9	30
55–64	4	17
65–74	6	27
>75	11	51
Unknown	1	
Total	64	28

statistically significantly different between GPs and dermatologists. Of this group, 36% (95% CI 20–52) (or 19% of the total group) had received a scabicide treatment and 44% (95% CI 22–56) (or 25% of the total group) had received another type of treatment.

Nocturnal itching was the most frequently cited element in the patient history and was present in 87% (95% CI 79–95) of the patients. In 27% (95% CI 16–38) of the cases scabies was diagnosed in contact persons of the patients and in 48% (95% CI 36–60) itching was present in household members or other contact persons.

Scratch lesions were the most frequent clinical finding (72%, 95% CI 61–83). Burrows, erythema, papules and scaling were present in respectively 66% (95% CI 55–77), 64% (95% CI 53–75), 67% (95% CI 56–78) and 61% (95% CI 49–73) of the patients.

Skin scrapings were performed in 64% (95% CI 53–75) of the patients and demonstrated mites, eggs or scybala in 70% (95% CI 56–84). Permethrin cream was prescribed for 53 patients. Six patients received ivermectin (in two cases combined with permethrin cream) and one patient benzyl benzoate emulsion. The treatment was not specified in seven subjects.

This survey was performed using a self-developed questionnaire sent by mail. Several forms of bias could have an influence on the results of this type of survey and need to be taken into account. For instance, patients with difficulties in accessing health care might be under-represented causing a diagnostic access bias. A spectrum bias is possible if only clear, definite cases of scabies are reported [17].

In 2004 we received information from 64 individual patients. During the same period, 39 scabies patients

in this region were reported to the Health Inspection. These results suggest a possible under-registration by the Health Inspection. In a recent survey of knowledge and management of scabies in Belgium, respectively 40% and 55% of the participating dermatologists and GPs admitted they rarely or never reported a patient with scabies to the Health Inspection [18]. Perhaps the obligation to report scabies is insufficiently known or physicians might undervalue notification of a disease which is not life threatening [19].

Even though a higher number of cases were reported in the current survey, the actual incidence could still be higher.

The completeness of registration can be assessed by comparing the collected data to other registries such as pathology reports, patient records, laboratories for clinical biology, morbidity databases, information from sentinel practice networks or sales figures of disease-specific medication. However, biopsies are seldom taken if scabies is suspected and this diagnosis is not recorded in sentinel practice networks in Belgium. Samples are not sent to laboratories for clinical biology and the standard treatment for scabies, permethrin cream, is not only prescribed for scabies patients but also to treat asymptomatic contact persons.

The incidence of scabies reported in Ghent is comparable to crude incidence rates reported in Poland but is much lower than the incidence in the United Kingdom which was 233/100 000 in 2003 [4, 8]. It is possible that registration through sentinel network practices (in which physicians are highly motivated) is more accurate than in a registration project depending on the voluntary participation of physicians. On the other hand, the incidence rates in both countries might be intrinsically different.

The age distribution for scabies in Ghent is similar to that observed in the United Kingdom where there is also a peak in children aged <5 years and in young adults between 15 and 24 years [8]. These incidence rates are, however, difficult to compare because they are crude rates, not adjusted for age distribution and the demographic profile of the populations.

We observed a remarkable high incidence in persons aged >65 years which is in contrast to the lower incidence usually found in the elderly [2, 4, 9, 12]. In a recent survey in the United Kingdom an increased incidence in persons aged >75 years compared to persons aged between 65 and 74 years was observed [8]. Older persons frequently require

ambulant health care and are more often hospitalized or residing in institutions. Their multiple intense contacts with health-care workers and fellow residents could predispose them to a higher risk of infection. Elderly patients with scabies require extra attention because they often have an atypical presentation and are at a higher risk of developing crusted scabies [20].

The incidence was almost four times higher in immigrants than in native Belgians. Nationality could be an indicator of socioeconomic status or living conditions with a non-Belgian nationality reflecting a lower status or worse living conditions. Studies in Poland have shown a higher incidence of scabies in areas with a high level of unemployment and worse sanitary conditions [3, 4]. In a study in Italy the incidence of scabies was four times higher in immigrants than in matched native Italians. However, there was no difference when only the subpopulation of employed persons was analysed, illustrating that not only nationality by itself but also associated different socioeconomic status can contribute to the risk of getting scabies [21]. Another contributing factor could be a language barrier causing difficulties in accessing health-care services [22, 23].

In this survey no difference in incidence of scabies was found between men and women. Reports on sex differences in the incidence or prevalence of scabies are inconsistent [14]. Some authors observed that scabies occurs equally in men and women [2, 4] while others reported a higher incidence in men [11, 12] or in women [8–10].

Almost one out of five reported cases had received a scabicide treatment which was apparently unsuccessful. This observation illustrates the limited effectiveness of scabies treatments. The success rate of local treatments for scabies depends on thoroughness with which the cream is applied and on the treatment of asymptomatic contact persons. Resistance to treatments is possible but is not very likely. Currently, no *in vivo* resistance has been reported to permethrin. Resistance to ivermectin has been reported in two cases that had been extensively treated over the past 5 years [24].

In 25% of the consultations, patients had already visited a physician for their skin problem but had not received scabicide treatment, suggesting that the diagnosis of scabies had not been established or that the patient was ineffectively treated. A recent survey on knowledge and management of scabies in the region showed that the knowledge of GPs and dermatologists was of an acceptable level [18]. However,

the performance status of the participating physicians could have been biased with an over-representation of physicians who are interested in scabies. On the other hand, it is also possible that physicians do have sufficient basic knowledge but have difficulties in putting that knowledge into practice. The current survey is perhaps a more realistic reflection of daily practice.

Skin scrapings were performed in two out of three consultations and were positive in only 70%. This diagnostic procedure is currently considered the gold standard for the diagnosis of scabies but has low sensitivity.

The current survey suggests that there is still room to improve diagnosis and adequate treatment of scabies. In the management of scabies, extra attention should be given to vulnerable groups, especially immigrants, children and the elderly.

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#### DECLARATION OF INTEREST

None.

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