

# PREVALENCE OF *TINEA PEDIS* AND *ONYCHOMYCOSIS* IN MALTA - THE *ACHILLES* PROJECT

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## INTRODUCTION

The Achilles project was set up because of the general poor awareness of foot disease, especially of fungal foot infections. Foot diseases are often not viewed as a real problem, and the general public has limited knowledge of them. Most previous studies have involved small and specific population groups, such as school children, subjects visiting swimming baths, populations with specific occupations, or patients with underlying diseases like diabetes. Moreover, patients often had to diagnose the condition themselves. The results of these self-assessments, was an underestimation of the prevalence of foot infections.(1, 2)

The Achilles project was the largest epidemiological study ever to be carried out on foot health in Europe and other countries, related to the part of the body below the Achilles heel (e.g. foot, toes, toenails). Started in 1998, the aim of the project was to gain a better understanding of diseases affecting the feet and their prevalence among different patient groups with a view to improve the timely diagnosis and optimal treatment of this significant medical problem. The project also allowed an insight to be gained into the predisposing factors and quality of life in a large population, and to generate clinical data from a sample of the population. The data also served as the basis for epidemiological studies, allowing both medical professionals and patients to benefit from this knowledge. The ultimate goal is therefore to increase the chance for timely diagnosis and treatment of foot disorders.

Several European countries, including Austria, Belgium, the Czech Republic, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Portugal, Poland, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom (UK), have thus far participated in this foot-screening project, which was endorsed by the European Academy of Dermatology and Venerology (EADV) and the European Nail Society. Following the example of these countries, in 1999 Malta, Jordan and Cyprus implemented the Achilles project.

## METHODS

Patients visiting the dermatologist for any condition unrelated to foot problems had a clinical evaluation of the feet. 186 patients were screened. Patients were included in the study irrespective of their age, sex, or medical complaints. Participating dermatologists examined patients' feet for seven working days during the last week of October 1999. Assessments were also carried out for demography, predisposing factors, diagnosis of foot disease, skin and nail examination, and quality of life measurements. The project investigated the effect of gender, age and several clinical factors, including diabetes, obesity, antibiotics, corticosteroids, immunodepression, vascular disease, trauma, osteoarticular pathology, and sports activity, on the prevalence of foot disease.

Four patient age groups were defined as follows: child, 0-17 years; adult, 18-39 years; medium aged, 40-64 years; elderly, 65 years and older. In assessing the nature of the foot disease, tinea pedis was defined as a fungal infection involving the plantar and/or interdigital side of the foot while onychomycosis was defined as a fungal infection

of the nail. The prevalence was calculated as the number of cases divided by the number of subjects in the corresponding population.

## RESULTS

186 patients were screened, and 6 dermatologists practising in Malta took part in this project.

### *Onychomycosis*

Onychomycosis was reported in 19.1% of individuals: (males 10.5% and females 7.7%). The risk of onychomycosis for males was approximately 1.30 times higher than the risk for females, and increased with each additional year of age by 1.02 times for both sexes. The prevalence of onychomycosis was higher among persons with diabetes, obesity, vascular disease, trauma, and those practising sports.

### *Tinea Pedis*

Tinea pedis was reported for 16.1% of individuals, with prevalence being higher in males (20.0%) than females (12.1%). Tinea pedis incidence increased with age up to the age of 56.

## Fungal foot infections

The percentage incidence of fungal foot infection was 23.7%, with an expected higher prevalence in males (28.4%) than females (18.7%). The risk increased by 1.65 times for males relative to females, and with each additional year of age by 1.28 times for both males and females. Practising sports was observed to be a predisposing factor for foot diseases, mainly in children and adults.

## DISCUSSION

Table 1 compares the results for onychomycosis, tinea pedis, and fungal foot infections in Europe (1998 survey) and in Malta, Cyprus and Jordan (1999 survey). In Europe, 13,695 patients were included in the survey. In Malta 186 patients

	Patients	Fungal foot infections	Tinea pedis	Onychomycosis
Europe	13,695	35.0%	22.0%	23.0%
Malta	186	23.7%	16.1%	19.1%
Cyprus	1506	41.2%	28.2%	21.7%
Jordan	1287	27.3%	20.5%	11.5%

Table 1: Comparison of Achilles project results, adapted from Haneke (1999)

were screened (population 376,000), compared to 1506 in Cyprus (population 751,500) and 1287 in Jordan (population 936,300). Cyprus screened the largest percentage of their population, while Europe screened the least.

The prevalence of fungal foot infections as found in the Achilles project is much higher (3) when compared to other epidemiological studies. (1, 2)

However, it can be seen from the table that the incidence of all onychomycosis, tinea pedis, and fungal foot infections is comparable for all regions participating in the Achilles project. (3) The sex-dependency of onychomycosis remains a topic of discussion. The Achilles project data for Europe parallels the results obtained in Malta and firmly establishes the higher prevalence of clinically diagnosed fungal foot infections in the males of the total screened population. (3)

Because of their lack of knowledge of foot problems, patients do not seek treatment at the early stages of foot fungal infections and the condition often becomes very serious, affecting quality of life (itching, pain, discomfort in walking, embarrassment, limitations in work and other activities). This makes the disease more difficult to treat, and longer treatment duration is needed. It should be pointed out that foot problems are not due to poor personal hygiene, but that underlying causes may be related to a variety of predisposing factors which mean that some people are more likely to contract a foot problem like a fungal infection.

In the European study, for example, diabetes was associated with an approximately 50% increase in the risk of fungal foot infections, including tinea pedis and onychomycosis. (4) Among diabetic patients the prevalence of simultaneous tinea pedis and onychomycosis was more than two times higher than for non-diabetics, and most infections were caused by mixed fungi.(4)

The elderly (65 years and over) also had a predisposition for mixed infections, (5) and as expected practising sports increased the risk of fungal foot infections, especially tinea pedis. (6)

The family doctor is in a prime position to diagnose these conditions, and would be able to link any underlying factors. Moreover, both physicians and patients should be aware of effective therapy to treat these very common conditions. (3)

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