**Objectives**:

Onychomycosis is a fungal infection of the nail that causes discoloration and thickening of the affected nail plate and is the most common nail infection, accounting for 50% of nail diseases worldwide. Dermatophytes, yeasts, and non-dermatophyte molds (NDMs) can be the cause of this nail disorder. Treatment of onychomycosis is difficult and is associated with high rates of failure. The aim of this retrospective study is to determine the epidemiology of fungal species related to the onychomycoses in the area of Athens during the last seven years (2018-2024).

**Methods:**

The retrospective analysis included outpatients attending the "Andreas Syggros" Hospital (Athens, Greece), a tertiary referral hospital for dermatological diseases covering more than four million people of the Greek capital (almost half of the national population). The study population included 11,312 patients (7,733 women and 3,579 men) who proceeded with suspected onychomycosis. Mycological nail investigation was performed by conventional methods (direct microscopy with KOH 20% and cultures on Sabouraud dextrose agar and Sabouraud dextrose agar with actidione). Macroscopic and microscopic images, as well as two Maldi-Tof MS platforms (Bruker Daltonics and AutoF 1000 MS) were used for the identification of isolated fungi (hyphomycetes and yeasts).

**Results**:

Onychomycosis was confirmed in 3,148 (27.8%) patients (1,818 women and 1,330 men). In women, 1,038 onychomycoses (57.1%) were localized in toenails and 780 (42.9%) in fingernails. In men, 1,015 onychomycoses (76.3%) were localized in toenails and 315 (23.7%) in fingernails Dermatophytes were the predominant causative agents, isolated in 1,099 (35%) cases, followed by yeasts in 1,070 (33.9%) and NDMs in 404 (12.9%) cases. Although 575 (18.2%) cases were microscopically positive, no fungal growth (NFF) was observed in culture. *Trichophyton rubrum* was the most frequent dermatophyte isolated in 959 (87.2%) cases and *Candida albicans* was the most common among the yeasts (819;76.5%). Regarding NDMs, *Acremonium* spp. (126;31.1%), *Fusarium* spp. (123;30.4%) and *Aspergillus spp.* (81;20.0%) were the most frequent isolates.

**Conclusions**:

The anthropophilic dermatophyte *T. rubrum* is the most common pathogen worldwide, as in our study. Toenail infections were the most common in both sexes. Strategies for effective management of onychomycosis, such as disinfection of fungal reservoirs, should be implemented. Studies on onychomycosis epidemiology in specific regions are of importance because of the constant change of environmental and genetic factors due to immigration, especially nowadays that resistant dermatophyte isolates have been reported worldwide.