



Burden of fungal diseases in Egypt

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Introduction

Fungal diseases cause 1.5 million deaths and cause cutaneous infections to billions of people worldwide every year (Vos *et al.*, 2012; GAFFI, 2015).

Egypt is the highest populated country in the Middle East and North Africa region. Due to the fact that many risk groups of patients exist in Egypt, Egyptians suffer from serious fungal diseases annually. Zaki and Denning, (2017) reported the estimation of the total burden of serious fungal diseases in Egypt and concluded that about 1,649,686 (2%) of Egyptians suffer from serious fungal diseases annually.

Recurrent vulvovaginal candidiasis (rVVC) (≥ 4 episodes/year) was estimated to occur in 1,307,766 million (6%) out of 21.8 million women aged 15 – 20 years in Egypt.

4,127 cases of candidemia (5/100,000) and 806 patients with intra-abdominal candidiasis (0.98/100,000) were estimated. As the HIV-infected population was 6,500 patients only, the rates of oral and esophageal candidiasis were low. Oral candidiasis was reported in 2250,

while esophageal candidiasis was reported in 695 HIV patients (Zaki and Denning, 2017).

Asthma and Chronic pulmonary obstructive diseases (COPD) is prevalent in Egypt which indicate that high number of patients are at risk of allergic, chronic, and invasive fungal diseases. Asthmatic bronchitis pulmonary disease (ABPA) was therefore estimated to affect 133,834 (162/ 100,000). Severe asthma with fungal sensitization (SAFS) was estimated in around 176,661 people (214/ 100,000).

(COPD) is an important underlying cause of chronic pulmonary aspergillosis (CPA) and Invasive aspergillosis (IA), as is pulmonary (TB). 319 new cases of (CPA) and 1,005 (post-TB) cases were reported per year. (IA) estimation was 8,337 cases annually in hospitalized (COPD) patients. In addition, there were an estimated 37 cases in renal and liver transplant recipients, and an estimated 132 patients develop (IA) in the context of lung cancer (Zaki and Denning, 2017).

Cryptococcal meningitis and *Pneumocystis* pneumonia were estimated in 38 cases (0.6%) and 125 cases (1.9%) in HIV-infected patients each year, respectively. Nearly, 40% of corneal infection was fungal and 11,550 cases (14/100,000) of fungal keratitis were reported annually which indicate that fungal keratitis is common in Egypt (Zaki and Denning, 2017).

Conclusively, recurrent vulvovaginal candidiasis (rVVC), candidemia, intra-abdominal candidiasis, oral candidiasis, and esophageal candidiasis, Aspergillosis (ABPA, SAFS, CPA, and IA), Cryptococcal meningitis, *Pneumocystis* pneumonia, and fungal keratitis are the main fungal diseases that affect nearly 2% of the

Egyptian population each year. Cutaneous fungal diseases still need to be estimated to complete the country estimate of fungal diseases, in order to aid prioritization of diagnostic and treatment resources, and identifying gaps in care.

The public health authority in Egypt have to support multicenter epidemiological studies on fungal diseases, increase the availability of antifungal drugs, fungal diseases diagnostic tests, and establish medical mycology reference laboratories for better management and control of fungal diseases.

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