



## INTRODUCTION

Fungal infections have emerged worldwide as a frequent cause of opportunistic infections immunocompromised individuals<sup>1</sup>. There is also a notable increase in the incidence of nosocomial fungal infections resulting in considerable high morbidity and mortality rate<sup>2</sup>.

Saudi Arabia is a Middle East country and is the largest country in the gulf region with a population of 29 million people<sup>3</sup>. There are only very few epidemiological studies on serious fungal infections in Saudi Arabia. The prevalence of fungal infections in Saudi Arabia is not known due to the deficiency of data from Saudi Arabia on the burden of fungal diseases

We therefore estimated the burden of serious fungal infections in Saudi Arabia based on the populations at risk.

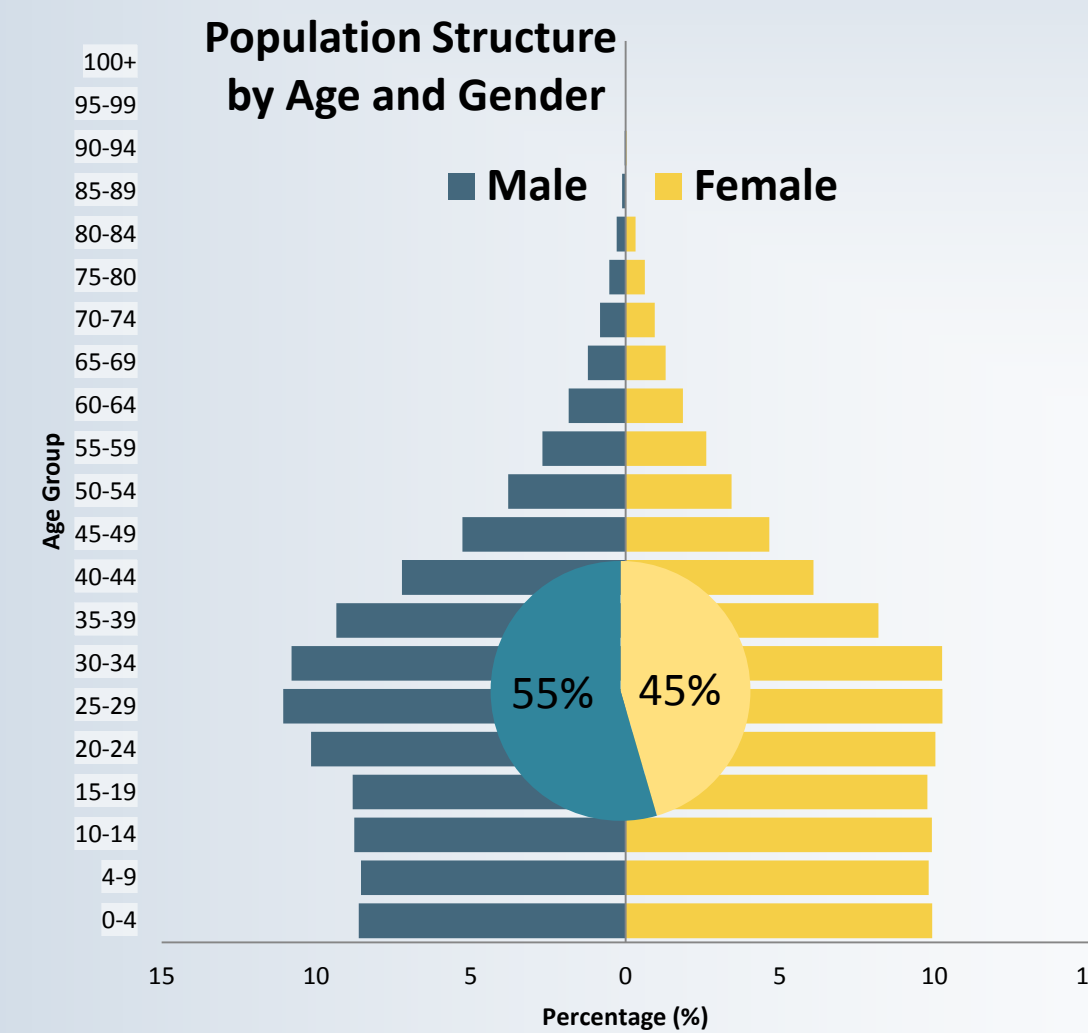
## MATERIALS AND METHODS

A literature search was done to identify all epidemiology papers on fungal diseases and prevalence from the country. Population data were obtained from the Central Department of Statistics (Ministry of Economy and Planning)<sup>3</sup>

Where no data existed, we used specific populations at risk and fungal infection frequencies in those populations to estimate national incidence or prevalence.

were made on assumptions based on incidence rates reported in the local and international literature and the World Health Organizations (WHO) reports<sup>4</sup>

## RESULTS



### Total population

29,994,272

Underlying conditions associated with fungal disease :

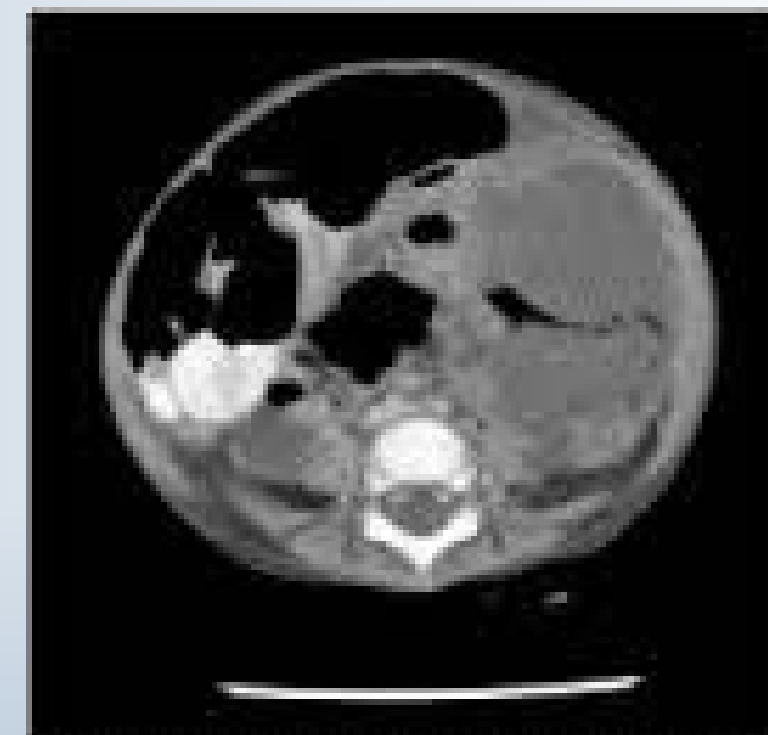
Cancer: 91 per 100,000

Tuberculosis: 15 per 100,000

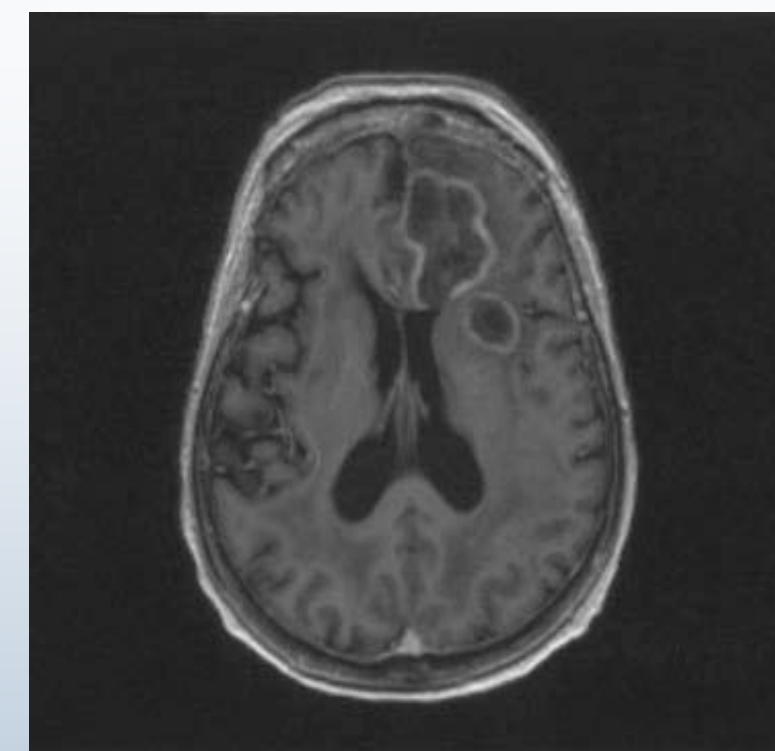
HIV/AIDS: ~ 6000 cases

Transplantation:(2013)

Stem Cell: >200/ year  
Lung: 31/year  
Kidney: 558/ year  
Liver: 49/ year



Abdominal CT scan. A Case of Basidiobolomycosis <sup>8</sup>



A brain CT scan showing a large lesion due to the dematiaceous fungus *Ramichloridium mackenziei* <sup>7</sup>

Infection	No. infections/yr (HIV/AIDS)	No. infections/yr (respiratory)	No. infections/yr (cancer/transplant)	Total burden/yr	Rate/10 <sup>5</sup> /yr
Oesophageal candidiasis	380	-	-	-	1.4
Candidemia	-	-	1123	2808	10
Candida peritonitis	-	-	-	444	1.6
Recurrent vaginal candidiasis (4x/y)	-	-	-	466,133	3320 (F only)
ABPA	-	59,466	-	59,466	212
SAFS	-	78,495	-	78,495	280
CPA	-	965	-	965	3.4
IA	-	1945	201	2146	7.6

ABPA :Allergic bronchopulmonary aspergillosis. SAFS.:Severe asthma with fungal sensitization. CPA:Chronic pulmonary aspergillosis. IA : Invasive aspergillosis

- Estimated numbers and rates of key infections per year are in the Table. Candidemia incidence is high at 10/100,000, with 60% occurring in the ICU.
- Of the 1,402 patients on peritoneal dialysis, 70 cases of fungal peritonitis occur and another 421 in post-surgical patients. .
- About around 6, <https://apps.mhs.manchester.ac.uk/applications/anon/announcement.aspx?id=XrUQq9nVOUOglmnb690Lqw000> Saudi were living with HIV, and 70% of those were receiving antiretroviral treatment and 30% with AIDS. Conservative estimates of oral and oesophageal candidiasis incidence were 1,080 and 380 cases/yr, respectively.
- At a 6% prevalence rate, an estimated 466,133 women suffer from recurrent VVC.
- IA is relatively common with an estimated 201 cases in immunocompromised patients and another 1,945 in the 149,626 COPD patients admitted to hospital.
- Asthma in adults is common affecting 12.1% of the population<sup>2</sup>, and ABPA affects 2.5% of these <sup>6</sup>. Allergic and granulomatous sinusitis are common in SA, with 23% of cases are fungal sinusitis.
- Other rarer infections such as Cerebral phaeohyphomycosis, mucormycosis, basidiobolomycosis and cryptococcal meningitis probably affect under 10 patients each.
- There are no data on *Pneumocystis* pneumonia and it was not possible to estimate the annual incidence.

## CONCLUSIONS

Over 600,000 people (>2.1%) in SA are affected by a serious fungal infection each year, with considerable morbidity and mortality. Particularly high burdens of vaginal candidiasis, ABPA and SAFS are notable. Greater focus in SA on long term morbidity caused by fungal infections is appropriate, especially life-threatening pulmonary disease.

## REFERENCES

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