



Introduction

The Republic of Tajikistan in Central Asia with a population of approximately 8.9 million people (Figure 1). There are more men (52%) than women (48%) and more than 70% of the population lives in rural regions. Tajikistan is one of several 'young' countries with the average age of the population being 24.0 years. The natural population increase is 24.2 per 100,000 population.

Tajikistan is a low-income country with a projected GDP per capita in 2019 of 1054 USD. The poverty rates are high with the number of people living below \$2 purchasing power parity (PPP) per day is 4.8% of the population (427,000 people) and the number of people living below \$5.5 PPP per day is 52% (4.6 M people) of the population. Malnutrition is one of the main healthcare problems in Tajikistan.

We have estimated the number of serious fungal infections in order to define the burden of these diseases in Tajikistan.

Methods and results

The previously published LIFE model was used to estimate the burden of serious fungal infections in Tajikistan. The first step was to identify all published papers on the burden of each serious fungal infection in English, Tajik, and Russian languages via several databases, namely 'cyberleninka', 'elibrary.ru', 'Google Scholar', and 'PubMed'. The search period includes all dates up to June 2019. Unfortunately, there are no published data on this topic. So, we have used deterministic modelling developed by LIFE to make estimates based on each population 'at-risk'. The total burden of serious fungal infections and the rate per 100,000 population are summarized in the Table 1.

- There are more than 14,000 HIV positive patients in Tajikistan, 9,800 (70%) not receiving antiretroviral therapy, so an estimated 1,260 cases of oral and 490 cases of oesophageal candidiasis annually.
- The number of adult (15-50 yrs.) women is 2,813,903. We have estimated that 168,834 Tajik women get recurrent vulvovaginal candidiasis (4 or more episodes annually).
- We have estimated 1,040 cases of chronic pulmonary aspergillosis (CPA) as a sequel of TB; CPA occurs as a sequel of multiple conditions, so a total prevalence of 4,161 cases was estimated.
- Assuming asthma prevalence of 1.47%, we have estimated 6,008 patients with ABPA and 7,930 with SAFS; and 137 fungal asthma deaths annually
- There are approximately 283 cases of invasive aspergillosis annually, 256 of them are in patients with COPD and 27 in immunocompromised patients.
- Assuming prevalence of Cryptococcal antigenemia being 2.9% we have estimated 41 cases of cryptococcal meningitis annually; an annual incidence of PCP is estimated at 210 cases annually.
- The incidence of candidemia was estimated at 371 cases using the low European rate of 5/100,000.
- We were not able to estimate a burden of candida peritonitis in patients on continuous peritoneal dialysis, mucormycosis, fungal keratitis, and tinea capitis.

Infection	Number of infections per underlying disorder per year					Rate/100K	Total burden
	None	HIV/AIDS	Respiratory	Cancer/Tx	ICU		
Oesophageal candidiasis	-	490	-	-	-	5.5	490
Oral candidiasis	-	1260	-	-	-	14.1	1,260
Candidemia	-	-	-	-	371	4.2	371
Candida peritonitis	-	-	-	-	74	0.8	74
Recurrent vaginal candidiasis (4x/year +)	168,834	-	-	-	-	3,794	168,834
ABPA	-	-	6008	-	-	67.5	6008
SAFS	-	-	7930	-	-	89.1	7930
Fungal asthma deaths	-	-	137	-	-	1.5	137
Chronic pulmonary aspergillosis	-	-	4161	-	-	46.8	4161
Invasive aspergillosis	-	-	-	27	256	3.2	283
Cryptococcal meningitis	-	41	-	-	-	0.5	41
Pneumocystis pneumonia	-	210	-	-	-	2.4	210
Fungal keratitis	?	-	-	-	-	?	?
Tinea capitis	?	-	-	-	-	?	?
Total burden estimated	168,834	2001	18,099	27	701		189,662

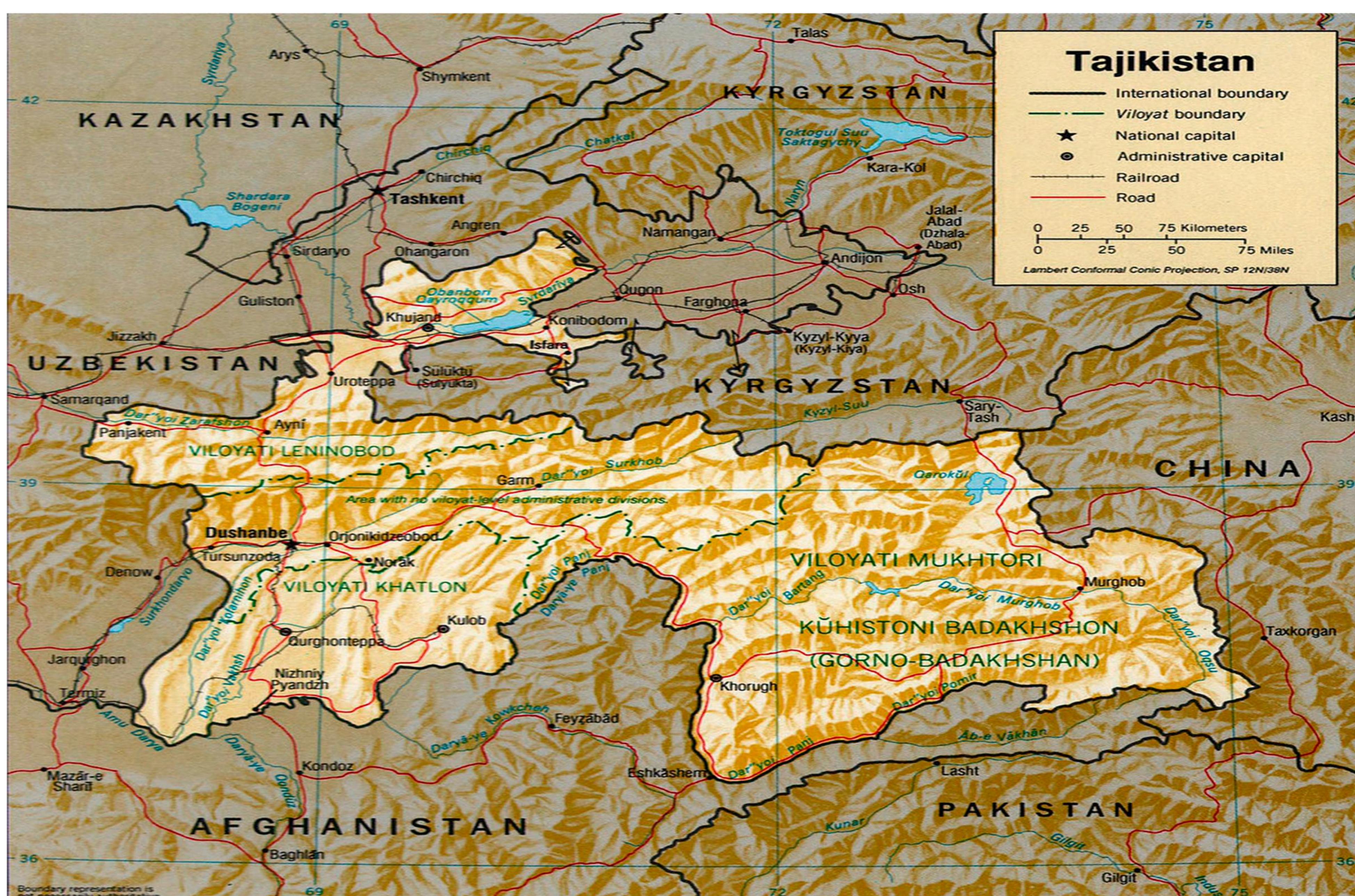


Figure 1. Geography of Tajikistan

Conclusions

- We have estimated a total of 189,662 people (2.2% of the population) with serious fungal infection in Tajikistan
- There are gaps in knowledge of the burden of underlying conditions
- The awareness of healthcare professionals on fungal infections remains low
- Diagnostic improvements are necessary given this burden.

References

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