



Pulmonary Non-tuberculous Mycobacteria (NTM) Infections in Adult Patients at a Tertiary Care Hospital in Saudi Arabia



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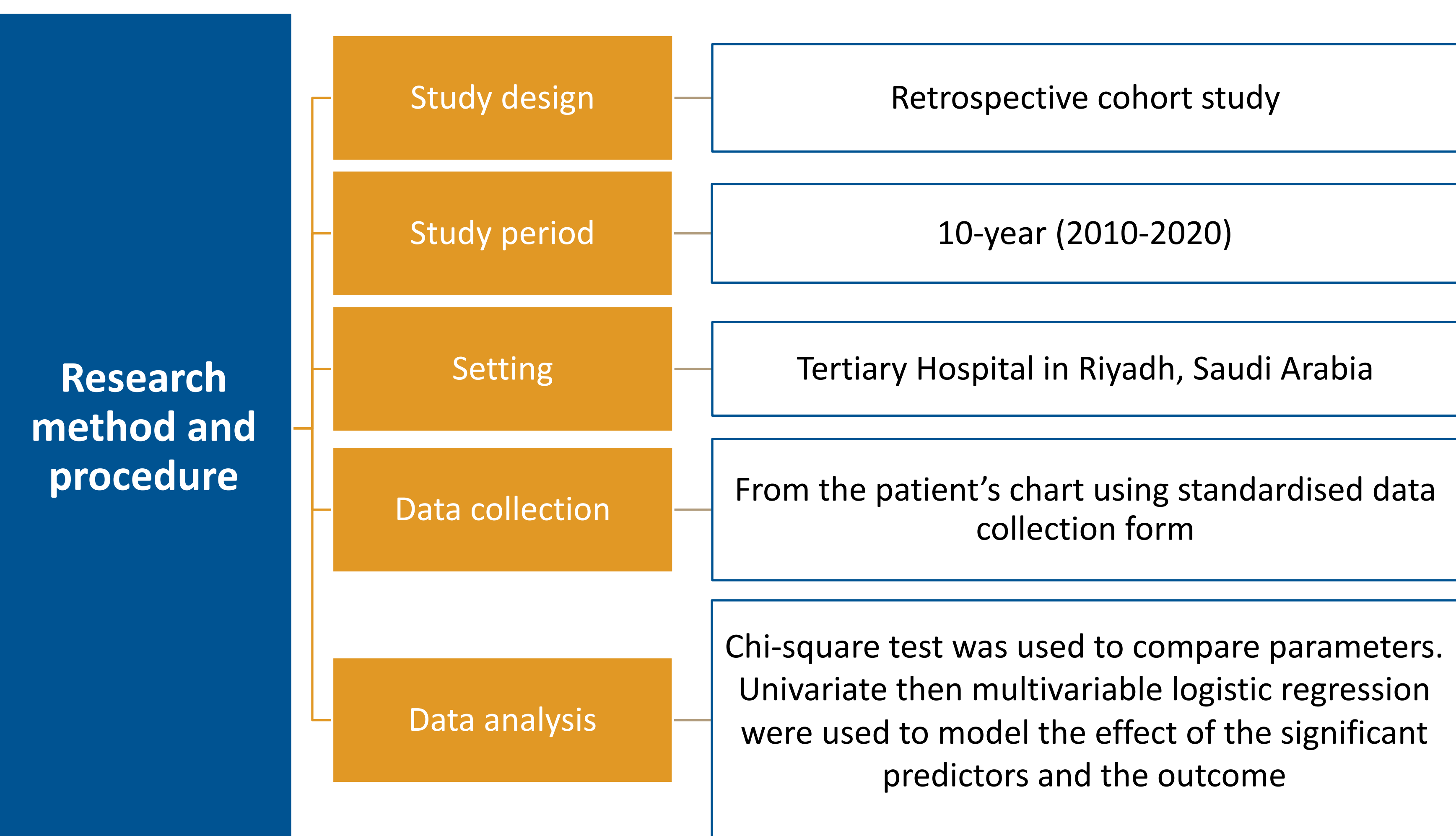
Introduction

Burden of Non-Tuberculous Mycobacteria (NTM) disease is increasing in both developed and developing countries. There is a paucity of studies and experiences of hospitals worldwide in treating these infections. Local and regional data are needed to guide our understanding of the epidemiology and outcome of NTM management in our population

Objectives

The main objectives of the study are to describe the management of patients with NTM infection and determine pulmonary NTM treatment outcomes in adult patients. Other objective is to explore the epidemiology of mycobacterial species associated with pulmonary NTM

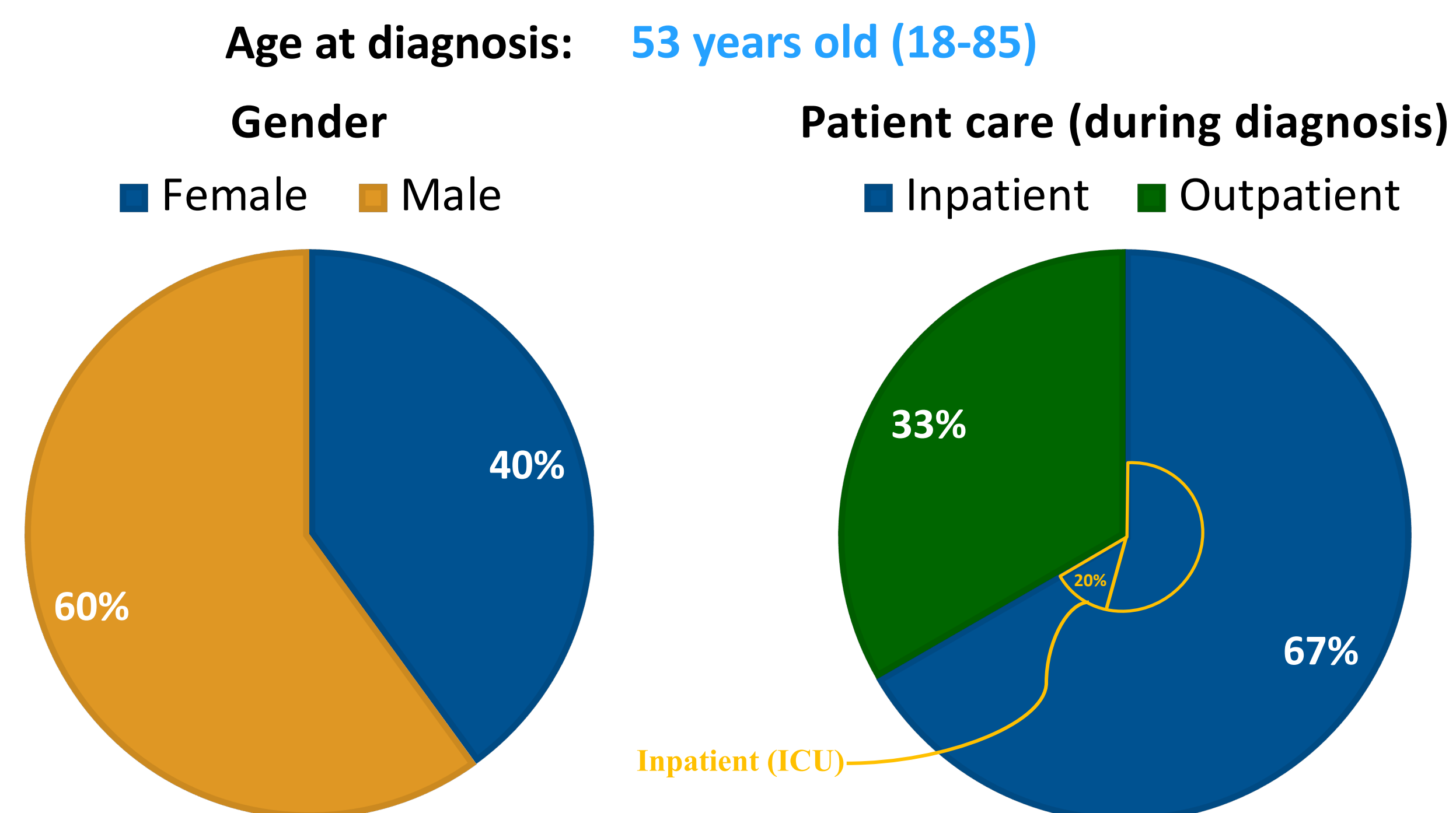
Material and Method



- Inclusion criteria,** adult patients (≥ 18 years old) AND diagnosed with pulmonary NTM disease AND received treatment for ≥ two months
- Exclusion criteria,** Pediatric patients who were diagnosed with extra-pulmonary NTM or TB or diagnosed with the pulmonary disease but wasn't initiated on therapy or received treatment for < two months
- The primary end points were** overall cure rate (clinical, microbiological, and radiological cure), recurrence, relapse, and re-infection rate.
- The secondary end points** were mortality and hospital admission rate for NTM infection.

Results:

Baseline Characteristics of Included Patients:



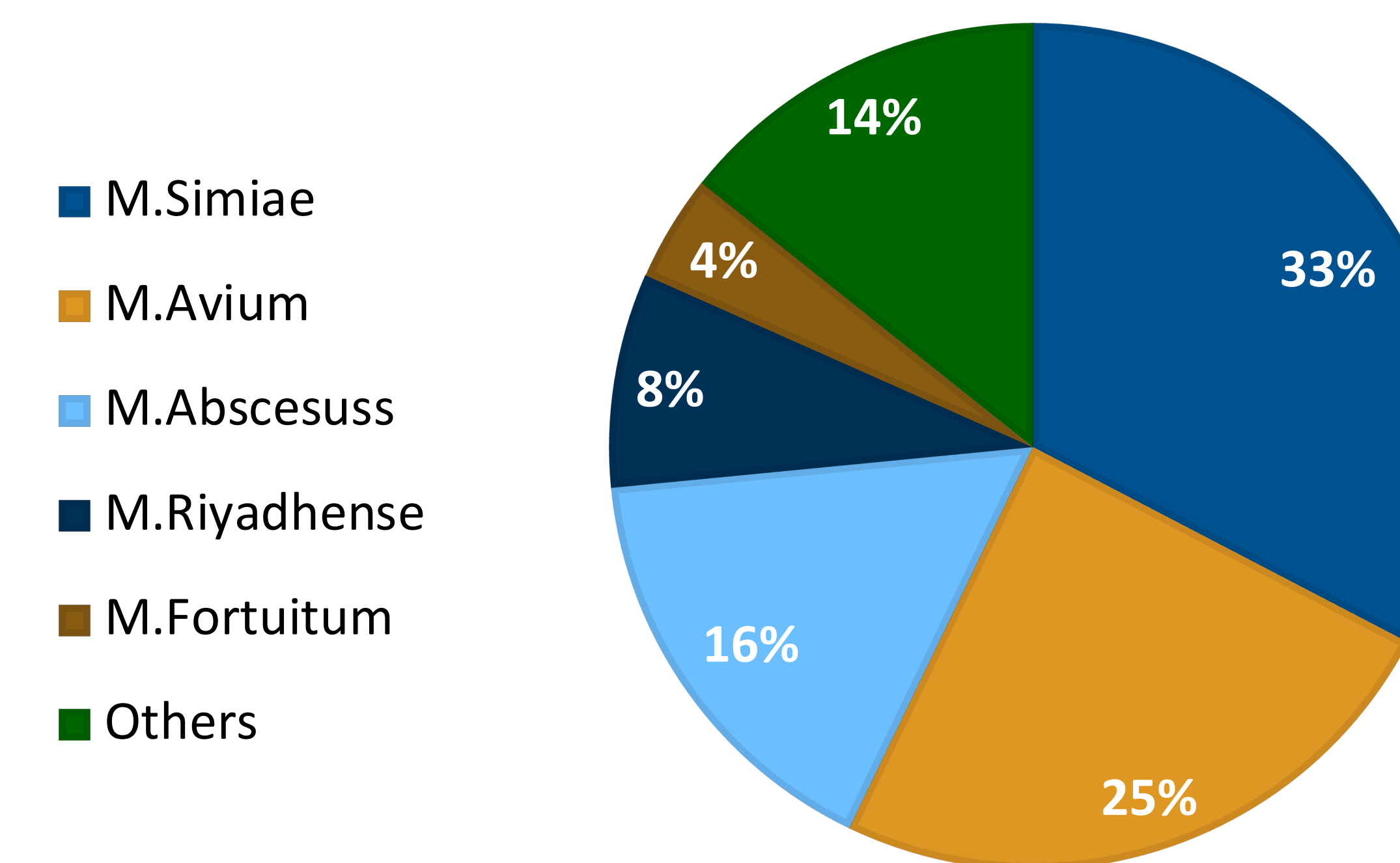
Comorbidities

COPD	2 (4.4%)
Asthma	4 (8.9%)
Bronchiectasis	10 (22%)
Cystic fibrosis	1 (2.2%)
Interstitial lung disease	5 (11.9%)
Autoimmune diseases	5 (11.9%)
Chronic kidney disease	6 (13%)
Diabetes	12 (26%)
Hypertension	7 (15.5%)
HIV	13 (28.8%)
Post- transplant (Stem cell or Solid organ)	6 (13%)
Malignancy	7 (15.5%)
	13 (28.8%)

Study end points:

Primary Endpoints		Secondary Endpoints	
Overall cure rate*	43/45 (95%)	Hospital admission rate	15/44 (34%)
Microbiologic cure*	28/33(85%)	*ICU admission	4/15 (26%)
Clinical cure*	29/34 (85%)	Mortality due to NTM	10/44 (23%)
Radiologic cure*	26/35 (74%)		
Recurrence of infection	4/44 (9%)		
Relapse of infection	9/44 (20%)		
Re-infection rate	1/44 (2%)		

Epidemiology of Mycobacterium Species:



Subgroup analysis of NTM management and clinical course:

	All (n=45)	M.Simiae (n=16)	M.Aviium (n=12)	M.Abscessus (n=8)	M. Riyadhense (n=4)	Others (n=9)
Aspergillus co-infection	5 (11.9%)	..	1 (8%)	2 (25%)	..	2 (22%)
Staphylococcus aureus co-infection	6 (14.3%)	3 (18.75%)	1 (8%)	1 (12.5%)	1 (25%)	1 (11%)
Pseudomonas aeruginosa co-infection	8 (19%)	4 (25%)	2 (16%)	2 (25%)	..	1 (11%)
Pneumocystis pneumonia (PCP) co-infection	..	..	..	..	..	..
No. of antibiotics administered as initial therapy (Median, Q1-Q2)	3 (2-5)	3 (2-4)	3 (3-5)	3 (3-4)	4 (3-4)	3 (2-4)
Mode of initial antibiotics administration						
Oral only	31 (71.4%)	14 (87.5%)	11 (90%)	4 (50%)	2 (50%)	2 (22%)
Oral and parenteral	11 (28.6%)	2 (12.5%)	1 (92%)	4 (50%)	2 (50%)	4 (44%)
Duration of treatment, weeks (Median, Q1-Q2)	36 (8-234)	33	24	52	62	48
Antibiotic used as initial therapy						
Azithromycin	11 (26.2%)	4 (25%)	4 (33%)	2 (25%)	..	1 (11%)
Clarithromycin	23 (54.8%)	9 (56.25%)	7 (58%)	5 (62.5%)	3 (75%)	2 (22%)
Amikacin	6 (14.3%)	2 (12.5%)	1 (8%)	1 (12.5%)	2 (50%)	2 (22%)
Ethambutol	27 (64.3%)	11 (68.75%)	10 (83%)	4 (50%)	2 (50%)	4 (44%)
Rifampicin	13 (31%)	5 (31.25%)	5 (42%)	..	4 (100%)	3 (33%)
Isoniazid	6 (14.3%)	2 (12.5%)	2 (16%)	1 (12.5%)	3 (75%)	..
Levofloxacin	14 (33.3%)	8 (50%)	2 (16%)	1 (12.5%)	1 (25%)	3 (33%)
Moxifloxacin	12 (28.6%)	4 (25%)	4 (33%)	4 (50%)	1 (25%)	1 (11%)
Linezolid	6 (14.3%)	1 (6.25%)	3 (25%)	1 (12.5%)	2 (50%)	1 (11%)
Cefoxitin	4 (9.5%)	1 (6.25%)	1 (8%)	1 (12.5%)	..	1 (11%)
Imipenem	3 (7.1%)	..	..	2 (25%)	..	1 (11%)
Others	9 (21.4%)	4 (25%)	2 (16%)	2 (25%)	..	2 (22%)
Change in treatment	29 (69%)	9 (56.25%)	8 (66%)	6 (75%)	3	5 (60%)
NTM culture negative at follow up, weeks (Median, Q1-Q2)	16 (2-116)	16	9.5	23	32	16
Symptom's improvement, weeks (Median, Q1-Q2)	8 (1-116)	12	4	46	5	14

Factors associated with clinical, microbiological, and radiological cure were compared between cured and not cured patients and weren't statistically significant

Conclusion:

- Pulmonary NTM disease in our patients is mainly due to four species in **88.9%**.
- An overall cure rate of **95%** and recurrence rate of **9%** were achieved, with a mortality rate of **23%**.
- The findings of this study will serve as a guide for healthcare providers for NTM epidemiology, clinical manifestations, and management of pulmonary NTM disease in the Saudi population.