Distribution and Determinants of MERS-CoV, Kingdom of Saudi Arabia, 2012 – 2014

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Introduction

- MERS-CoV is a novel virus that affects the Kingdom of Saudi Arabia (KSA) (>85% of cases have occurred there).
- It is important to analyze all reported case based information data to understand the distribution and determinants of morbidity and mortality

Objectives

- Describe the epidemiology of reported cases of MERS-CoV by person, time, and place

Methods

- Secondary analyses of laboratory-confirmed MERS-CoV cases reported to the KSA MoH by year, age, gender, nationality, and region

Table 1. Demographic Characteristics of Reported MERS-CoV Cases and Deaths, Kingdom of Saudi Arabia, 2012 – 2014

Characteristic	# Cases	# Deaths (%)	p-value
Year			*<.01*
2012	5	3 (60)	
2013	136	76 (56)	
2014	552	231 (42)	
Age			*<.001*
0 – 19 y	32	4 (12)	
20 – 39 y	201	37 (18)	
40 – 59 y	248	102 (42)	
≥ 60 y	212	167 (79)	
Gender			*<.01*
Male	442	217 (49)	
Female	251	93 (37)	
Nationality			*<.0001*
Saudi	449	243 (54)	
Non-Saudi	244	67 (28)	
Total	693	310 (45)	

Results

- Total of 693 reported MERS-CoV cases from 2012– 2014 in KSA
- Overall, 80% of cases were reported in 2014
- Average age of patient was 49.3 years old; 35.8% were 40–59 years old
- Patients were mostly male (64%) and Saudi (65%)
- Out of 693 cases, 310 (45%) resulted in death
- Average age of patients who died was 59.3 years old; those who died were mostly male (70%), Saudi (78%), and ≥ 60 years old (79%)
- Number of MERS-CoV cases and deaths significantly increased in KSA across the study period, while the case fatality rate (CFR) decreased

Figure 1. Reported Cases and Deaths of MERS-CoV, by Region, Kingdom of Saudi Arabia, 2012 — 2014

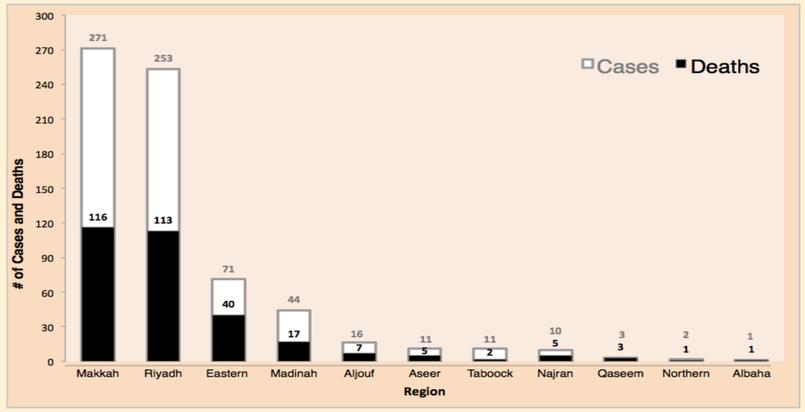
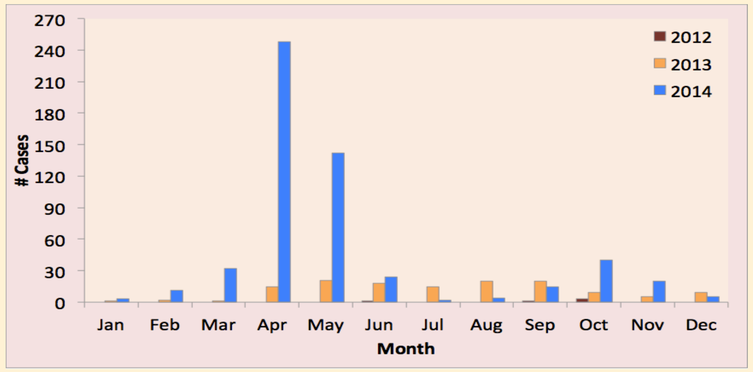


Table 2. Reported MERS-CoV Case Severity, Kingdom of Saudi Arabia, 2012 – 2014

Characteristic	# Asymptomatic or Mild Symptoms (%)	Severe Symptoms and #Survived (%)	Severe Symptoms and #Died (%)	p-value
Age				*<.0001*
0 – 19 y	16 (50)	12 (37)	4 (12)	
20 – 39 y	57 (28)	107 (53)	37 (18)	
40 – 59 y	16 (6)	130 (52)	102 (41)	
≥ 60 y	2 (1)	43 (20)	167 (79)	
Gender				*<.0001*
Male	37 (8)	188 (49)	217 (43)	
Female	54 (22)	104 (41)	93 (37)	
Nationality				*<.0001*
Saudi	37 (8)	169 (38)	243 (54)	
Non-Saudi	54 (22)	123 (50)	67 (27)	
Total	**91 (13)**	**292 (42)**	**310 (45)**	

Figure 3. Reported Cases of MERS-CoV, by Month and Year, Kingdom of Saudi Arabia, 2012 – 2014



Discussion

- Despite decreases in the CFR, number of reported cases sharply increased and MERS-CoV remains a public health threat
- Significant increases of case reports in 2014 might be due to real increase, broadening of the case definition, or hospital-associated outbreaks
- CFR was very high, but there might be bias due to the greater attention paid to severe cases than asymptomatic/mild ones

Recommendations

- We recommend:
  - Training for healthcare workers
  - Public health surveillance evaluation and strengthening (including adopting e-Surveillance),
  - Standardization of case reporting
  - Further studies addressing modes of transmission involving both human subjects and camels,
  - Monitoring compliance to current infection control protocols are also needed