COVID-19 Sex Differences
A study by the Women of OHDSI group
Presenter: Maura Beaton
Mediators: sex chromosomes, sex hormones, behavior

Host Damage

Disease

Low

High

Immune Response

Weak

Strong

Male Bias

Female Bias

Columbia University Irving Medical Center

Vom Steeg et al., 2016
Background

• No gender differences in COVID-19 infection rate
• Male COVID-19 patients have increased odds of ITU admissions and death
• Most studies on gender differences in COVID-19 have focused on ITU, requiring ventilation and mortality

Aim of this study:

• To characterize severe health outcomes associated with COVID-19 in male and female patients
Methods

• Data collected as part of CHARYBDIS 1.0
  • Data submissions made between March 2020 to Feb 2021
• Cohorts Included:
  • **Diagnosed** - Persons with a COVID-19 diagnosis or a SARS-CoV-2 positive test with at least 365d prior observation
  • **Hospitalized** - Persons hospitalized with a COVID-19 diagnosis record or a SARS-CoV-2 positive test with at least 365d prior observation
• Analysis
  • Proportions & Standard Deviations (SD) – Stratified by gender
  • Standardized mean differences (SMD)
Outcomes

- Diagnosed
  - Symptoms – at index
  - Death
  - Hospitalization
- Hospitalized – 30 days post hospitalization
  - Pneumonia
  - ARDS
  - Cardiac Arrhythmia
  - Sepsis
  - Acute Kidney Injury
  - CV events
  - Heart Failure

- Bleeding
- Vein Thrombosis Events
- Chest pain/angina
- GI bleedings
- Dialysis
- Hepatic Failure
- Pancreatitis
Death within 30 days of index date among males & females diagnosed with COVID-19 across various settings

- **SIDIAP (Spain)**
- **HIRA (South Korea)**
- **CU-AMC-HDC (US)**
- **CUIMC (US)**
- **OHSU (US)**
- **OPTUM-EHR (US)**

Legend: **Female** in yellow, **Male** in blue.
Comparison of clinical outcomes within 30 days of index date among males vs. females in various settings.
Next Steps

• Database review
• Review sex differences at baseline
• Finalize manuscript

Future directions

• Investigate intersection of age & gender
  o Menopause as an independent risk factor for COVID-19
  o Faster immune aging in men
Thank you to the study team!

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References


