Physician-Diagnosed Respiratory Conditions and Mental Health Symptoms in FDNY Rescue/Recovery Workers 7-9 Years Following the World Trade Center Disaster

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Background

• The traumatic events that took place on 9/11/2001, and during the 10-month rescue/recovery effort, took a physical and psychological toll on New York City Fire Department (FDNY) rescue workers

• FDNY has performed health evaluations every 12-18 months on its workforce since 1997

• Since 9/11/2001, these evaluations also include self-administered, computer-based, physical and mental health questionnaires
Background

• This study describes:
  • Current burden of post-9/11 respiratory conditions
    • Self-Reported Diagnoses
    • FDNY Physician Diagnoses
  • Current burden of post-9/11 mental health conditions
    • Probable PTSD
    • Probable Depression
• Co-Morbidity
  • Between probable PTSD and depression
  • Between physical and mental health
Background

Time of first arrival to WTC site:

- **Group 1**: Morning of 9/11/2001
- **Group 2**: Afternoon of 9/11/2001
- **Group 3**: Day of 9/12/2001
- **Group 4**: Any day between 9/13/2001 - 9/24/2001
Methods – Population

• 10,943 firefighters and EMS workers in final analytic cohort

• Inclusion Criteria:
  • Study Period: 9/11/2007 – 9/10/2010
  • Arrived at the WTC site before September 25, 2001
  • Male firefighters and EMS workers
  • Spirometry within 90 days of physical health survey
  • Mental health survey within 90 days of physical health survey
Methods – Physical Health

• Pulmonary Function Test (PFT)
  • Quintiles of FEV1 %Predicted
• Self-Reported Respiratory Diagnoses
  • Based on self-administered questionnaire
• FDNY Physician Diagnoses
  • From the FDNY electronic medical record
FDNY Physician Diagnoses

• Sinusitis, Asthma, Chronic Bronchitis, COPD/Emphysema
  • Asthma, Chronic Bronchitis, and COPD/Emphysema were combined to create obstructive airway disease (OAD)

• Case definition for diagnoses:
  • Multiple visits in the same month were counted once
  • Patients must have had three visits with the same diagnosis since 9/11
    • One diagnosis had to be within the study period (9/11/2007-9/10/2010)
Results

- 9,715 male firefighters
- 1,228 male EMS workers
- Median age on 9/11 = 40 years
- 75% arrived on 9/11
Results
Self-Reported Respiratory Diagnoses
Firefighters and EMS Workers

19.7% with OAD
Results
FDNY Physician Diagnoses
Firefighters and EMS Workers

15.5% with OAD
Results

FDNY Physician Diagnoses

Based on Quintiles of FEV1 %Predicted in Firefighters Only

FDNY Physician Diagnosis

Quintiles of FEV1 %predicted

- 20-82
- 83-89
- 90-96
- 97-103
- 104-147
Methods – Mental Health

• Probable PTSD was defined by the PTSD Checklist (PCL)-Civilian Version

• Probable depression was defined using the Centers for Epidemiologic Studies Depression Scale (CES-D)
Results
Mental Health

- 10,867 (99.3%) took the mental health questionnaire during our study period
- 752 (6.9%) with probable PTSD
- 2,106 (19.4%) with probable depression
- 715 (6.6%) with probable PTSD and probable depression
Results
Mental Health

- Those who arrived in the morning of 9/11 were **3 times more likely** to report probable PTSD than those who arrived after day 3.

- Those who arrived in the morning of 9/11 were **2 times more likely** to report probable depression than those who arrived after day 3.
Results
Comorbidity between Physical and Mental Health

19.7% with self-reported OAD

6.9% with probable PTSD
Results

Comorbidity between Physical and Mental Health

- 19.7% with self-reported OAD
- 6.9% with probable PTSD
- 2.9% with probable PTSD and OAD
Results
Comorbidity between Physical and Mental Health

19.7% with self-reported OAD

19.4% with probable depression
Results

Comorbidity between Physical and Mental Health

19.7% with self-reported OAD

6.4% with probable depression and OAD

19.4% with probable depression
Limitations

• No treatment analysis so cannot look at treatment effects
• All questionnaires are given at the same time so we cannot see the temporal association between physical and mental health outcomes
Conclusion

• First study to describe the elevated prevalence of respiratory diagnoses by an assessment of medical records

• Co-morbidity
  • 95% of those with probable PTSD also screened positive for probable depression
  • Co-morbidity between self-reported respiratory diagnoses and both probable PTSD and depression
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