Analysis and prediction of In-Hospital Risks Among COVID-19 Patients with Substance Use Disorder (SUD)

Jiawei Wu

Jiawei Wu
Dept. of Computer Science
Marquette University
Milwaukee, WI 53233
jiawei.wu@marquette.edu

The crisis of substance use disorder (SUD), a problematic pattern of substance use that causes significant impairment or distress, is one of the most devastating threats to the public health system in the United States and it is ongoing. Opioid dependency or opioid overdose is a common drug use disorder and the number of deaths due to opioid overdose is increasing significantly during the COVID-19 pandemic because opioid use impacts mostly human respiratory, increases vulnerability to COVID-19, and further leads to higher morbidity and mortality. Other substance use disorders, including alcohol, cocaine, cannabis, and tobacco, will also exacerbate both physical and mental health. To address the challenges for patients with SUD brought by COVID-19, this work will mainly focus on, first, measuring the severity of opioid overdose outcomes for in-hospital patients and identifying clinical features that impact the outcomes; second, identifying the factors that make patients with OUD more vulnerable to COVID-19. Lastly, this work will further measure the severity of COVID-19 outcomes for SUD-related admitted patients and the long-term impact of COVID-19 among SUD-related groups. The severity can be quantified to predict the length of stay (LOS) days, the readmission rate, and the mortality. Such an integrated crisis prediction would help doctors and nurses provide optimal treatment to in-hospital patients and prevent COVID-19 transmission among SUD groups.