

Introduction

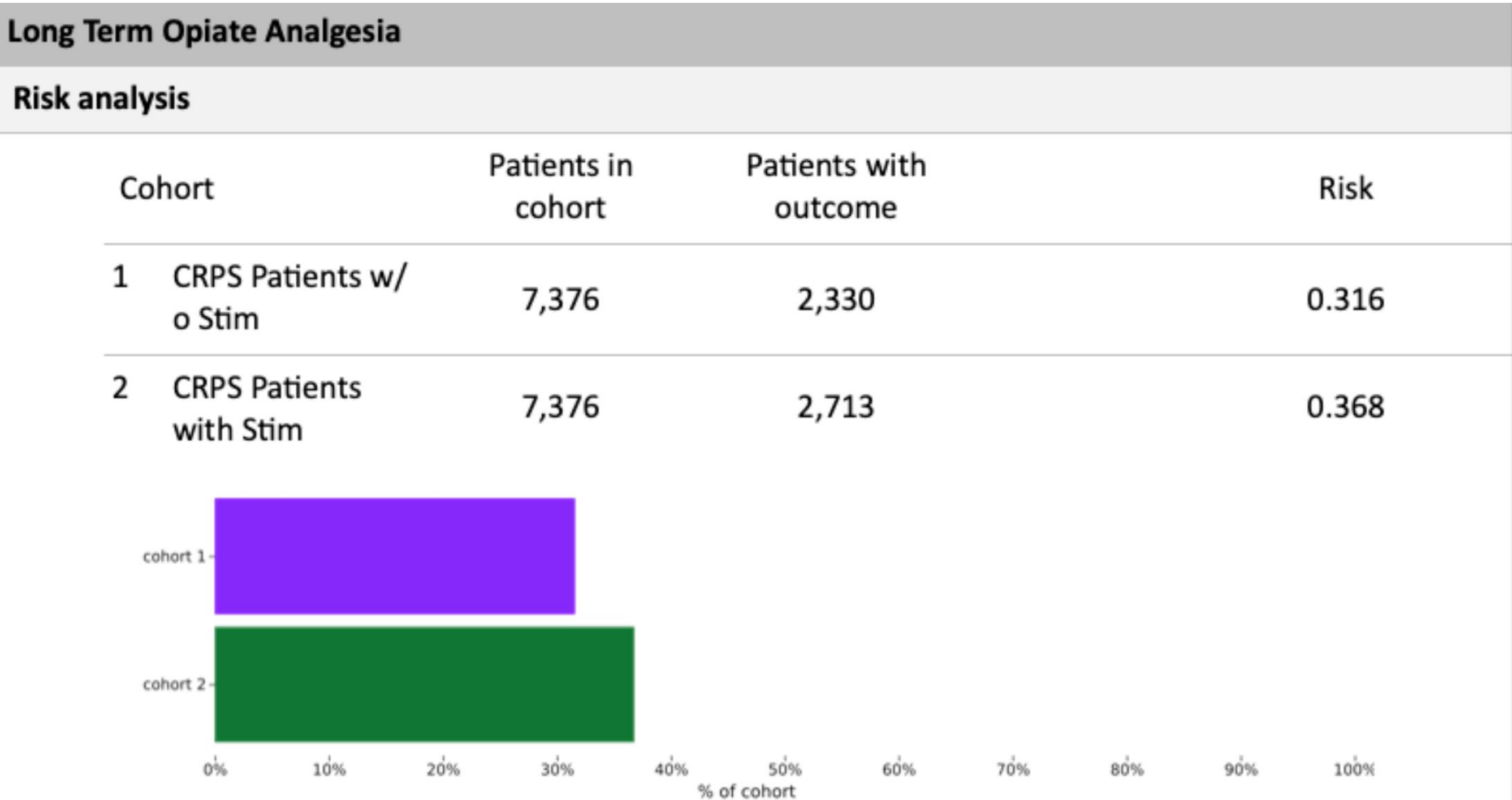
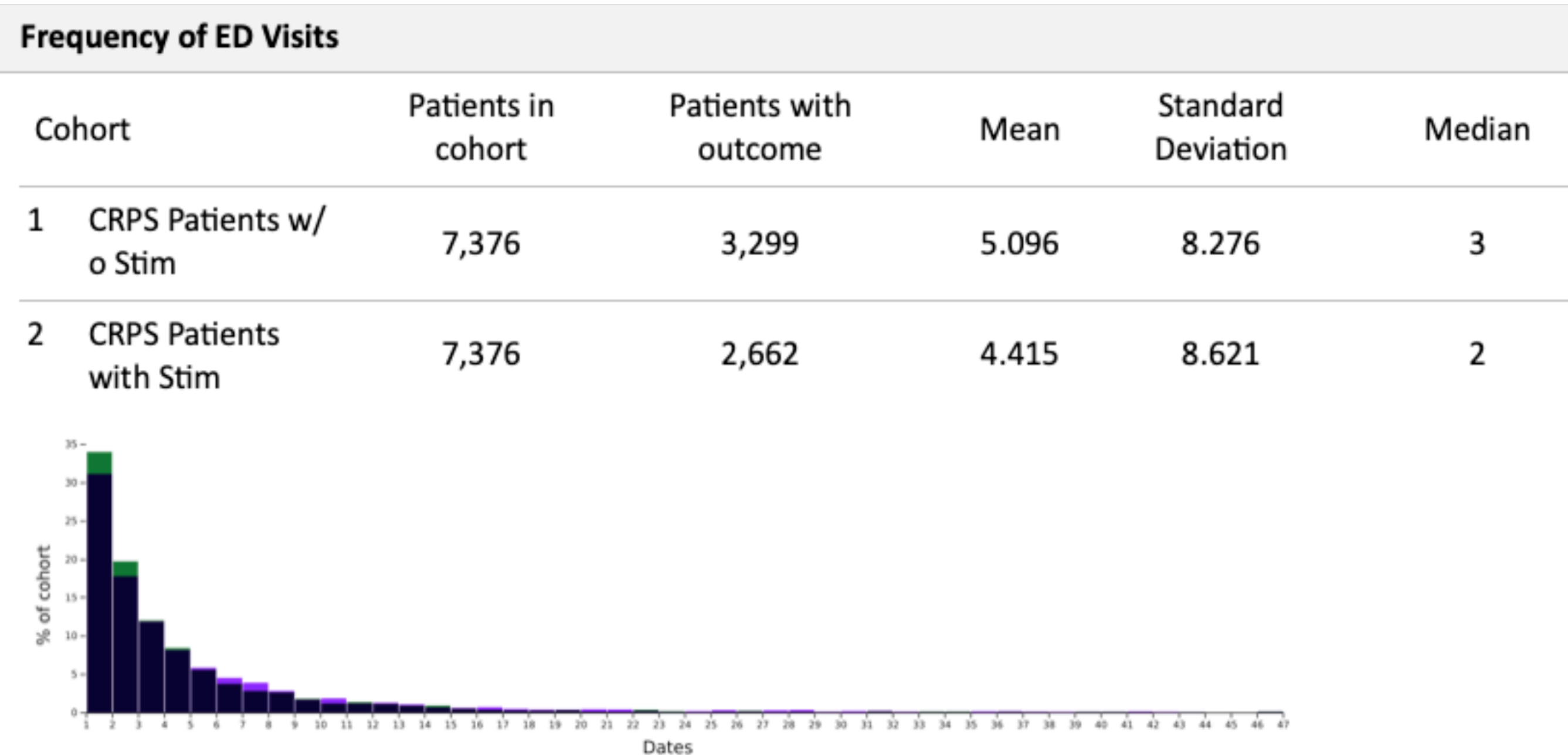
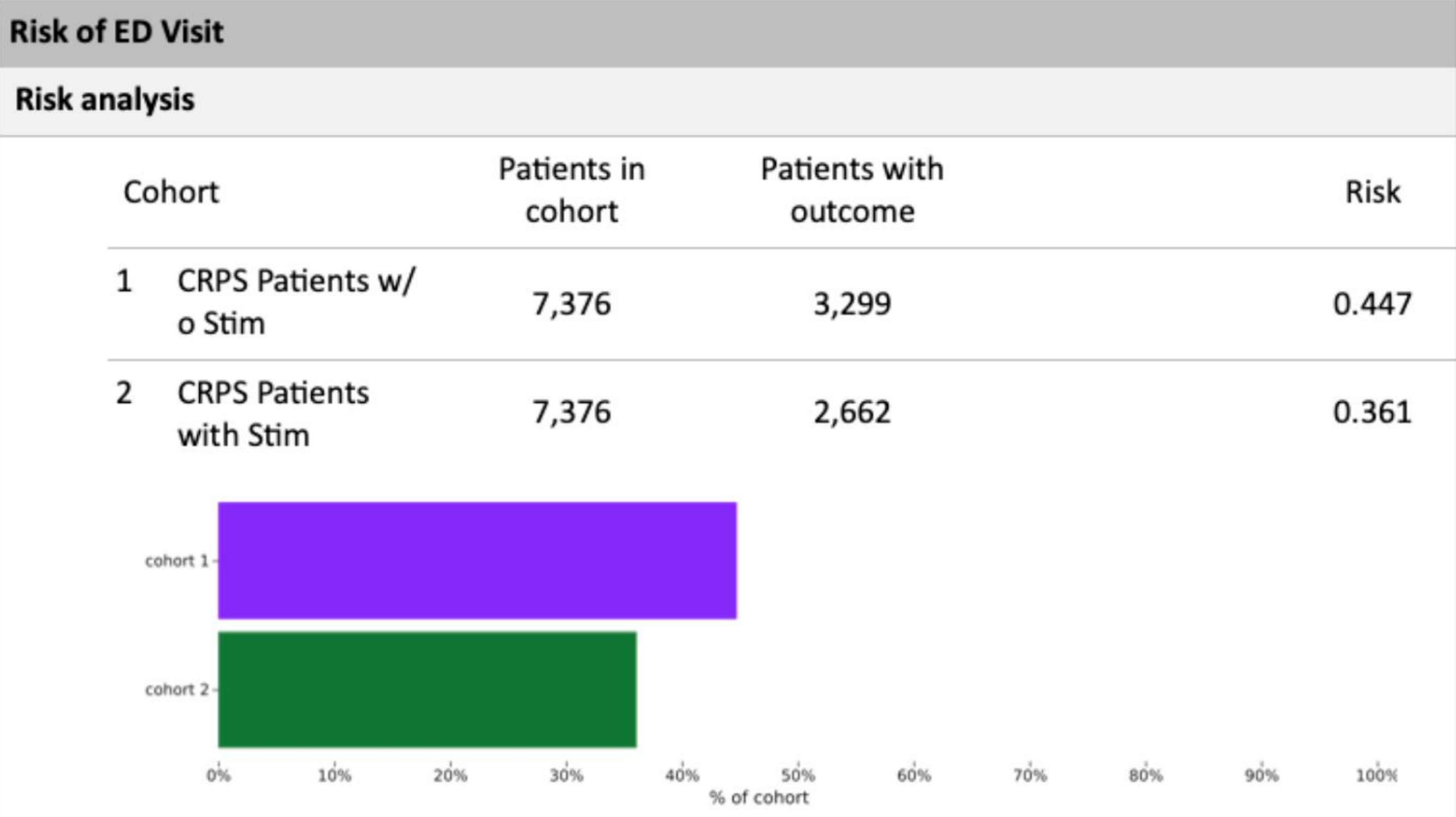
Complex regional pain syndrome (CRPS) is a chronic, debilitating pain condition characterized by sensory, autonomic, and motor dysfunction. For refractory cases, neuromodulation in the form of Spinal cord stimulation (SCS) and dorsal root ganglion (DRG) stimulation targets pain pathways and has emerged as an effective option. This large retrospective cohort study aims to evaluate the effect of neuromodulation on Emergency Department (ED) visits and chronic opiate usage in patients with CRPS

Methods

Data was sourced from the TriNetX Network database which is devoid of patient identifiable information. It is exempt from IRB review requirements as per TriNetX . Using ICD-10 and CPT codes, we identified 2 cohorts of patients that had been diagnosed with CRPS as an index event. Patients in cohort 1 had not undergone percutaneous implantation of neurostimulator electrodes (CPT 63650) and patients in cohort 2 had undergone this procedure as an index event. To balance the cohorts, we propensity score matched patients for analgesic medications including opiates and diseases of the nervous system, musculoskeletal system and connective tissue, and mental, behavioral, and neurodevelopment disorders to create even cohorts of 7,736 matched patients. We then compared outcomes of ED visits and long-term opiate usage within 6 months to 5 years of the index event using measures of association including risk, odds ratio, and risk difference with 95% CI and T-test.

Results

CRPS patients treated without neuromodulation had a 44.7% risk of presenting to the ED within the time frame of 6 months to 5 years. Patients treated with neuromodulation had a 36.1% risk of this outcome. For this comparison there was an odds ratio of 1.433 [95% CI, 1.341, 1.531] that was statistically significant. When studying number of instances analysis on patients that did present to the ED, there was a skewed distribution pattern towards...



Results Cont.

a lower number of ED visits so median values were prioritized for comparison. CRPS patients treated without neuromodulation (M=5.1, SD=8.3) had a median of 3 ED visits within the time frame. Patients treated with neuromodulation (M=4.4, SD=8.6) had a median of 2 ED visits, t(5959), p<.01. We then compared cohorts on the long term and current use of opiate analgesia. CRPS patients treated without neuromodulation had a 31.6% risk of being on long term opiate analgesia within the time frame of 6 months to 5 years. Patients treated with neuromodulation had a 36.8% risk of this outcome. There was an odds ratio of 0.794 [95% CI, 0.741, 0.850] that was statistically significant.

Discussion

Neuromodulation with DRG and SCS was associated with a lower risk and frequency of emergency department visits among patients with CRPS, suggesting improved symptom control and fewer acute pain crises. These findings support the effectiveness of neuromodulation in stabilizing refractory CRPS. However, patients treated with neuromodulation remained more likely to require long-term opioid therapy, likely reflecting disease severity and the need for continued multimodal pain management in this complex population.

References

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