

## **Role of Acute and Chronic Glycemic Control on COVID-19 Severity and Length of Hospital Stay in Hospitalized Patients**

ALI MOSSAYEBI<sup>1</sup>, HELEN KREIT<sup>2</sup>, SUNDAR CHERUKURI<sup>2</sup>, ROSHNI A. MANDANIA<sup>3</sup>, JEANNIE B. CONCHA<sup>4</sup>, HYEJIN JUNG<sup>5</sup>, AMY WAGLER<sup>6</sup>, AKSHAY GUPTE<sup>7</sup>, ABHIZITH DEOKER<sup>3</sup>, SUDIP BAJPEYI<sup>1</sup>

<sup>1</sup>Department of Kinesiology, University of Texas at El Paso, El Paso, TX

<sup>2</sup>Department of Internal Medicine, Texas Tech University Health Science Center, El Paso, TX

<sup>3</sup>Paul L. Foster School of Medicine, Texas Tech University Health Science Center, El Paso, TX

<sup>4</sup>Department of Public Health, University of Texas at El Paso, El Paso, TX

<sup>5</sup>Department of Social Work, University of Texas at El Paso, El Paso, TX

<sup>6</sup>Department of Mathematical Sciences, University of Texas at El Paso, El Paso, TX

<sup>7</sup>Department of Neurosurgery, University Medical Center, El Paso, TX

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*Category: Masters*

*Advisor / Mentor: Bajpeyi, Sudip (sbajpeyi@utep.edu)*

### **ABSTRACT**

COVID-19 patients with diabetes have greater morbidity and mortality. Glycated hemoglobin (A1c) indicates chronic glycemic control and is considered a standard of care in the diagnosis and management of diabetes. Whereas, fasting blood glucose (FBG) indicates acute glycemic control and is also recommended option to diagnose diabetes. **PURPOSE:** The purpose of this study was to determine the effects of acute and chronic glycemic control on severity and length of hospital stay among hospitalized patients with COVID-19. **METHODS:** This retrospective study used medical records from patients admitted to the University Medical Center, El Paso, TX with COVID-19 (n=364; age 60.0 ± 0.8 years; BMI 30.3 ± 0.4 kg/m<sup>2</sup>). Chronic and acute glycemia were assessed by A1c and FBG at the time of hospitalization. The severity of the COVID-19 outcome was measured by quick sepsis-related organ failure assessment (qSOFA) and the length of hospitalization was determined by the number of days spent in the hospital. Patients were categorized into 4 groups based on chronic and acute glycemia defining diabetes status. G1: diagnosed no diabetes by both A1c and FBG (A1c<6.5%, FBG<126 mg/dl), G2: diagnosed diabetes by FBG but no diabetes by A1c (A1c<6.5%, FBG≥126 mg/dl), G3: diagnosed diabetes by A1c but no diabetes by FBG (A1c≥6.5%, FBG<126 mg/dl), and G4: diagnosed diabetes by both A1c and FBG (A1c≥6.5%, FBG≥126 mg/dl). One-way ANOVA with posthoc Tucky test was used to determine the statistical differences among groups. **RESULTS:** Patients diagnosed as diabetes by FBG but not A1c (G2) had a greater COVID-19 severity, measured by qSOFA, compared with the other 3 groups. (G2: 0.61 ± 0.14 vs. G1: 0.24 ± 0.05; P<0.004, G2: 0.61 ± 0.14 vs. G3: 0.16 ± 0.06; P<0.001, and G2: 0.61 ± 0.14 vs. G4: 0.31 ± 0.04; P<0.015). Additionally, this study found a greater length of hospitalization in G2 to compare with G1 (G2: 12.91 ± 1.99 vs. G1: 6.36 ± 0.56 days; P<0.002). **CONCLUSION:** Patients with acute glycemia represent higher severity and longer length of hospital stay among hospitalized COVID-19 patients. Management of FBG should be considered in the treatment of hospitalized COVID-19 patients.