INCIDENT NEW ONSET DIABETES AFTER COVID-19 INFECTION: A NATIONAL MULTICENTER COHORT

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BACKGROUND

It is known that **survivors of acute SARS-CoV-2** infection can experience a complex disease known as **post-acute sequelae of COVID-19 (PASC)**. The clinical manifestations of acute COVID-19 have been well characterized however less is known about the **risk of new onset diabetes mellitus (DM)** in the **post-acute phase** of **COVID-19**.

METHODS

- An **adult cohort** with confirmed **COVID-19** (by diagnosis or positive test) and **without COVID-19** was sampled from a **large national health research network** between **January 1st, 2020 and July 8th, 2022.**
- We investigated the **outcomes of a new diagnosis of DM (type I or II)** occurring **after COVID-19 through 12 months after infection.**
- Risk estimates **[incidence, relative risk (RR), attributable risk]** were used to describe the probability of **incident post-COVID diabetes**.
- **Hazard ratios and 95% confidence intervals** were used to describe **risk factors associated with new diabetes.**

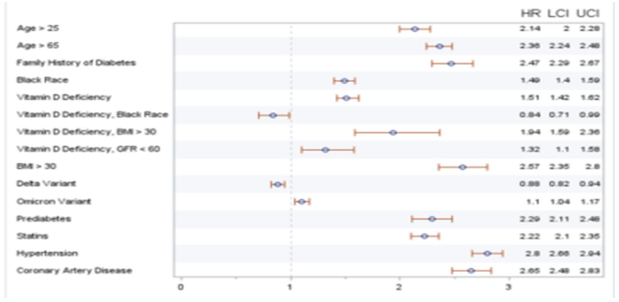

Fig 1. Risk factors associated with new diabetes at 3 months post-acute COVID phase
Hazard Ratio (HR) & 95% Confidence Interval (CI)

- COVID-19 infection **increases the risk of new diabetes months** after infection, with the **highest risk 12 months** post-acute

- Vitamin D deficiency increases the risk of **incident T1DM** and **T2DM**

RESULTS

- The **3-month probability** of new diabetes was **2.48/1,000** among COVID+
- The **relative risk (RR)** of new diabetes was **highest at 12 months** [8.94 (8.54, 9.36)].
- **Vitamin D deficiency** [HR: 1.52 (95% CI: 1.42, 1.63)] was associated with **increased risk of T2DM**
- **Vitamin D deficiency** with **either obesity** (BMI > 30 kg/m2) or **kidney dysfunction (GFR < 60)** was associated with more than **five times increased risk of T1DM.**

CONCLUSIONS

- We observed a large proportion of excess diabetes **starting at 3 months** post COVID infection.
- **Traditional risk factors for diabetes, omicron variant, and vitamin D deficiency** are associated with increased risk of new diabetes outcome.
- PASC care should involve **identification and management of diabetes.**

ADDITIONAL KEY INFORMATION

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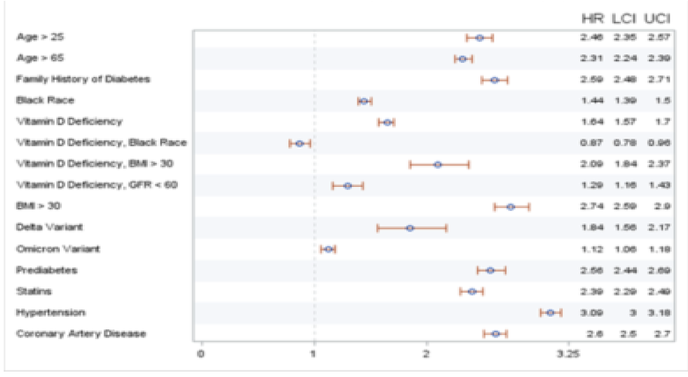

Fig 2. Risk factors associated with new diabetes at 12 months post-acute COVID phase
Hazard Ratio (HR) & 95% Confidence Interval (CI)