

JOINT EVENT

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&amp;

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**Relationship between serum zinc, glycemic status and HOMA2 parameters in a regional Australian hospital population**Sarah Lim<sup>1</sup>, Abul Hasnat Milton<sup>4</sup>, Vasudha Iyengar<sup>1,2,3,5</sup> and Md. Rafiqul Islam<sup>1,2,3,5</sup><sup>1</sup>Goulburn Valley Health, Australia<sup>2</sup>The University of Melbourne, Australia<sup>3</sup>Deakin University, Burwood, Australia<sup>4</sup>The University of Newcastle, Australia<sup>5</sup>Rumbalara Aboriginal Cooperative Limited, Australia

**Background:** Previous studies demonstrated lower serum zinc among prediabetics and diabetics, compared to normoglycemic. There is no current epidemiological data available in regional Australia examining the association between serum zinc and glycemic status. This study was conducted to determine the relationship between serum zinc, glycemic status and Homeostasis Model Assessment (HOMA-2) parameters in a regional Australian hospital population.

**Methods:** A retrospective review was conducted among all adult patients who presented to a regional Australian hospital between June 2004 and April 2017. Patients were included if they had either fasting blood glucose (FBG) and serum zinc; or FBG, serum zinc and fasting insulin done. Serum zinc, FBG, fasting insulin, lipid profile, vitamin D and other demographic information were collected. Beta-cell function, insulin resistance and insulin sensitivity were calculated using the HOMA-2 calculator. All data were analyzed using Stata 11.

**Results:** A total of 313 patients' record was retrieved. According to American Diabetic Association classification, 74.8% (234) were normoglycemic, 18.8% (59) prediabetics and 6.4% (20) diabetics. Data for 84 patients were available to calculate HOMA-2 parameters. Mean serum zinc was found to be lower in prediabetics than normoglycemic (14.68±3.05 vs 14.96±4.01 µMol/L). In simple linear regression among all participants, higher serum zinc was associated with an increased insulin sensitivity (coefficient 2.67, 95% CI: -1.3 and 6.7), decreased insulin resistance (coefficient -0.03, 95% CI: -0.12 and 0.57) and decreased beta-cell function (coefficient -3.2, 95% CI: -6.2 and -0.2).

**Conclusion:** Consistent with the current literature, we observed lower serum zinc in prediabetics than normoglycemic. Higher zinc levels are associated with greater insulin sensitivity and lower insulin resistance. Low serum zinc may have a role in the pathogenesis of insulin resistance. Further evaluations are warranted regarding zinc supplementation in prediabetics to prevent or delay the progression to type 2 diabetes.

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