

The Relationship Between Trace Elements Intake (Zinc, Copper, Selenium) and Stress Levels With Glucose Levels of Type 2 Diabetes Mellitus Patients at RSU Kaliwates Jember

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ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is one of the most prevalent diseases, ranking fourth at RSU Kaliwates Jember. This high prevalence underscores the importance of controlling blood glucose levels, which are influenced by various factors, including the intake of trace elements (zinc, copper, selenium) as antioxidants, as well as psychological factors such as stress levels. This study aimed to analyze the correlation between trace element intake (zinc, copper, selenium) and stress levels with random blood glucose (RBG) levels in T2DM patients at the Internal Medicine Polyclinic of RSU Kaliwates Jember. This study was an analytical quantitative observational study with a cross-sectional design. The research sample consisted of 59 subjects selected using a purposive sampling technique, with inclusion criteria including patients aged 21–60 years, diagnosed with T2DM by a physician, and willing to participate until completion. Dietary intake data were obtained through the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ), stress levels were measured using the Perceived Stress Scale (PSS), and random blood glucose levels were measured using a glucometer. Data analysis was performed using the Spearman Rank correlation test. Bivariate analysis results showed no significant correlation between zinc intake ($p=0,901$; $r= 0,017$), copper intake ($p=0,104$; $r= 0,214$), or selenium intake ($p=0,117$; $r= -0,206$) and RBG levels. However, a significant positive correlation was found between stress levels and RBG levels ($p=0,009$). This correlation indicated a positive direction, meaning that higher stress levels in patients were associated with increased RBG levels. Based on the correlation coefficient ($r=0,399$), the strength of the correlation fell into the low category. In conclusion, this study demonstrates that stress level is a psychological factor significantly correlated with the control of blood glucose levels in T2DM patients.

Keywords: DMT2, random blood glucose, trace elements, stress levels