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### Impact of Age, Gender, Body Mass Index, Platelet Counts and Glucose Levels on Brain-Derived Neurotrophic Factor Concentration among Saudi Population

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#### Abstract

**Background:** Brain-derived neurotrophic factor (BDNF), a member of the neurotrophin family, is a homodimeric protein that has been highly preserved in structure and function during growth. Generally, different influences have been offered as factors that affect the stored and circulating BDNF levels in peripheral blood, such as age, weight, and gender. The aim of the study is explaining the need for clinical research about factors affecting BDNF levels in the Saudi population.

**Materials and methods:** This was a prospective cross-sectional study, which was conducted at King Fahad Medical City, and King Salman Social Centre Riyadh, Saudi Arabia during the period between 2015-2016. Circulating serum levels of BDNF were determined with a commercially available enzyme-linked immunosorbent assay (ELISA) kit. The assay technique followed manufacturer's instructions. The data analysis for this study was carried out using Minitab 17 software.

**Results:** The study participants included 110 young and elderly participants. There was a wide range of BDNF concentrations in participant's serum. There was no significant correlation between BDNF levels and age ( $P=0.46$ ). Additionally, when evaluating the whole cohort ( $n=36$  female and 74 male), differences regarding BDNF levels in serum were not significantly different between males and females. Moreover, Spearman's correlation showed that there was no significance correlation ( $P=0.067$ ) between BDNF and BMI. However, there was a negative correlation between BDNF levels and blood glucose concentration ( $r=-0.22$ ,  $P=0.02$ ). Finally, serum BDNF showed no significant correlation with the number of platelets in peripheral blood.

**Conclusions:** The data obtained from this study suggest that parameters such as age, gender or body mass index, and platelets reactivity do not affect the serum BDNF concentrations in healthy volunteers. These factors therefore have little confounding effect when considering the effects of drugs on serum BDNF.

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