A Mathematical Model for Lowering Cortisol Rates in Affected Persons with Comorbid Post-traumatic Stress Syndrome Using Log-normal Distributions

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ABSTRACT

The survival analysis distribution is divided into three functions: survival function, probability density function, and hazard rate function. The hazard rate function is used to examine extreme values in a distribution's probability model. The log-normal distribution, which is used to simulate system maintenance, is one of the intriguing distributions. Post-traumatic stress syndrome (PTSS) is frequently associated with severe bouts of depression (SBD), and both illnesses are associated with an increased risk of suicidal conduct. Both diseases and suicidal conduct are connected with hypothalamic-pituitary-adrenal (HPA) axis and serotonin disorders, although their interrelationship is unknown. Cortisol responses to placebo or fenfluramine were measured in SBD, SBD+PTSS, and healthy volunteers (HVs), and the relationship between cortisol levels and suicidal thoughts was investigated. There were no variations in cortisol reaction to fenfluramine across groups. Suicidal behaviour, sex, and previous instances of maltreatment as a child were not predictive of baseline or post challenge serum cortisol. Cortisol levels rise with aging. Using log-normal distributions, this study demonstrates elevated levels of cortisol in MDE and reduced cortisol levels in MDE+PTSS. Finally, we deduce that the application element corresponds to a mathematical model. This research will be valuable in the medical field in the future.

Keywords: Log-normal distribution, Post-traumatic stress syndrome, Cortisol