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FORCED EXPIRATORY VOLUME FACTORS OF STAGE III NON-SMALL CELL LUNG CANCER PATIENTS

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Objectives: Forced expiratory volume in 1 (FEV1) second is known as the amount of air volume that can forcibly be blown out in one second, after full inspiration. Average FEV1 values between 80% and 120% are considered as normal. The determinants of FEV1 are aimed to identify in the report for stage III non-small cell lung cancer (SIIINSCLC) patients.

Background: Previous research articles have reported that the average FEV1 values in healthy individuals depend on height, age, body mass index, sex and ethnicity. Little studies have been performed regarding the FEV1 determinants for SIIINSCLC patients.

Materials & Methods: Published records on 239 SIIINSCLC patients with 23 study characters (variables/factors) are considered in the present study. The study variable FEV1 is positive and heterogeneous. Statistical analysis technique namely, joint generalized linear Log-normal models is used for analyzing the response FEV1.

Results: The mean FEV1 (MFEV1) is higher for SIIINSCLC patients who are current smoker (P=0.0601), or who have lower body mass index (BMI) (P=0.0599). Location of tumor is positively partially related (P=0.2365) with the MFEV1. The MFEV1 is higher for SIIINSCLC patients with histology level at squamous cell carcinoma (P=0.1088), or T-stage at level (T2=2) (P=0.1752), or N-stage at level (N2=3) (P=0.1440) and (N4 or Nx=4) (P=0.0142) than the other levels. The MFEV1 is higher for SIIINSCLC patients with chemotherapy at levels (standard sequential=3) (P<0.0001) and (standard concurrent=4) (P<0.0001), than the patients with no chemo level. The FEV1 variance (FEV1V) is higher for SIIINSCLC patients at older ages (P=0.1282), or never/ex-smoker patients (P=0.2985). The FEV1V increases as the number of positive lymph node stations increases (P=0.0017). The FEV1V is inversely related with T-stage at level (T2=2) (P=0.0172) and at level (T4 or Tx=4) (P=0.0240). The FEV1V decreases at the higher equivalent dose (P=0.1822), or at larger gross tumor volume (P=0.0003), or at higher survival times (P=0.0451).

Conclusion: The FEV1 determinants for both the mean and variance have been identified for SIIINSCLC patients. These results may help the lung cancer specialists. The current findings of FEV1 (related to SIIINSCLC patients) are new addition to the lung cancer literature.

BIOGRAPHY

Rabindra Nath Das is a Professor in the Department of Statistics, The University of Burdwan, Burdwan, West Bengal, India. He holds PhD in statistics, from The University of Burdwan, India, and Post-Doc from Seoul National University, Seoul, Korea. He has authored about 85 research articles, and along with a research monograph entitled- Robust Response Surfaces, Regression, and Positive Data Analyses, published from CRC Press, Taylor and Francis, Chapman and Hall. He wrote research articles on design of experiments, Regression Analysis, Demography, Quality Engineering, Civil Engineering, Epidemiology, Medical sciences, Environmental, Natural sciences etc. His special area of interest is on Design of experiments, Regression analysis, Quality Engineering and Epidemiology. He has received 'Gopal Kanji Prize 2009' by the Journal of Applied Statistics and Routledge publications' for the best article published in the journal, entitled– A measure of robust slope-rotatability for second-order response surface experimental designs. He has received certificate of appreciation for outstanding research by the Editor-In-Chief, Journal of Thyroid Science.

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