

The GH-Method

Revaluation of Predicted FPG & Its Major Influential Factor of Body Weight Using Frequency-Domain Analysis of GH-Method: Math-Physical Medicine (No. 020)

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Abbreviations: FPG: fasting plasma glucose

1. INTRODUCTION

The author seeks to reaffirm his earlier findings concerning the prediction of fasting plasma glucose in the early morning (FPG) and its dominant determinant, body weight. Instead of relying solely on time-domain and spatial analyses, this study employs a frequency-domain analysis.

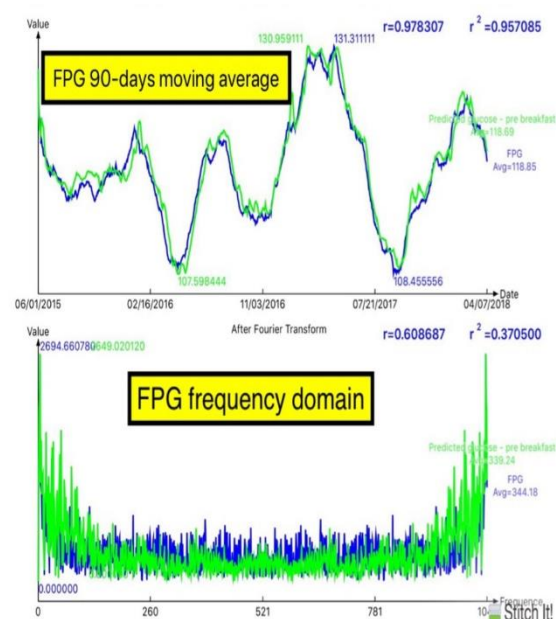
2. METHODS

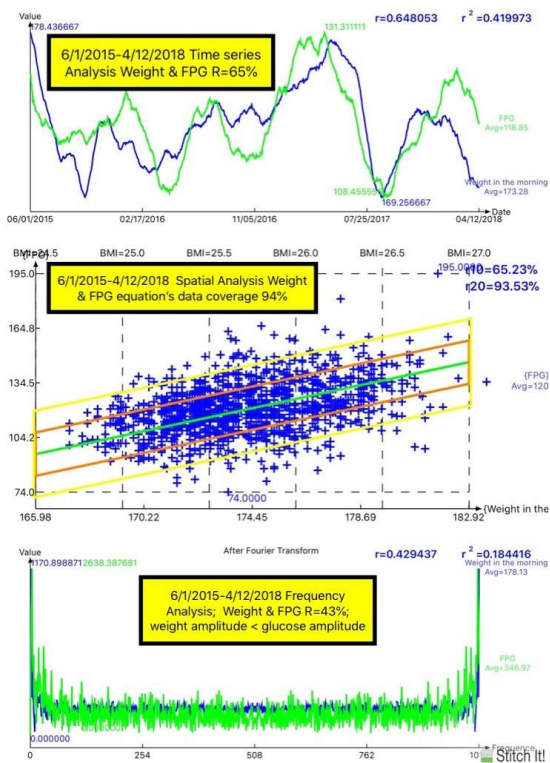
Over a span of 1,046 days (from June 1, 2015, to April 12, 2018), the author accumulated a substantial dataset encompassing both measured and predicted FPG values along with corresponding body weight measurements. The study originally employed time-domain and spatial analyses to achieve remarkable results, boasting 99.9% prediction accuracy, a 98% correlation, and a contribution margin exceeding 80% attributable to body weight. In this research, Fourier Transform technique was utilized to convert time-domain FPG and Body Weight waveforms into frequency-based representations for comparison.

3. RESULTS

In the time-domain analysis, outstanding results were observed, with 99.9% prediction accuracy and a 98% correlation, calculated using a 90-day moving average for FPG. Similarly, in the frequency-domain analysis, a strong correlation of 61% was identified

between predicted FPG and measured FPG. The examination of the dominant factor, body weight versus FPG, also yielded substantial correlations, with 65% in the time-domain analysis and 43% in the frequency-domain analysis. Spatial analysis provided substantial data coverage, with 94% falling within a +/- 20% range of the defined linear equation between Body Weight and FPG. As anticipated, the frequency-domain analysis revealed that the amplitude of the body weight waveform is smaller than that of the FPG waveform, indicating that the total energy associated with FPG exceeds that energy associated with body weight.





4. CONCLUSION

This frequency-domain analysis of Predicted FPG versus Measured FPG and Body Weight versus FPG effectively reaffirms previous findings regarding FPG, complementing the insights gained from both time-domain and spatial analyses.