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USING MATH-PHYSICS MEDICINE TO PREDICT FPG

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Based on his research, the author developed two glucose prediction tools, and he was able to reduce his FPG from 185 mg/dL to 119.6 mg/dL (28 lbs. weight reduction), daily glucose from 279 mg/dL to 117 mg/dL, and A1C from 10% to 6.1%. He examined correlations between FPG and PPG, carbs and sugar intake, and exercise amount but found all were below 7% (very low) and finally discovered the major cause - it is Weight. Based on 25,000 data of 1,449 days, (1/1/2014 - 12/20/2017), he found 85% correlation between FPG and Weight. In the time series diagram, there are two high peak periods and two low valley periods of Weight, and the FPG curve followed the Weight curve like its "twin". In the spatial analysis diagram of BMI vs. FPG (without time factor), there is a "quasi-linear" equation existing between two coordinates of BMI and FPG: from point A (24.5, 98.0) to point B (27.0,148.0). The stochastic (random) distribution of data has two clear "concentration bands" stretched from lower left corner toward upper right corner. The +/- 10% band covers 65% of total data and the +/- 20% band covers 93% of total data. Only the remaining 7% of total data are influenced by other five secondary factors. After capturing the basic characteristics, he then developed a practical tool to predict each day's FPG value. The final prediction accuracy is 98.3% with 85% correlation between predicted and actual FPG values.

Biography

Gerald C. Hsu received an honorable PhD in mathematics and majored in engineering at MIT. He attended different universities over 17 years and studied seven academic disciplines. He has spent 20,000 hours in T2D research. First, he studied six metabolic diseases and food nutrition during 2010-2013, then conducted research during 2014-2018. His approach is "math-physics and quantitative medicine" based on mathematics, physics, engineering modeling, signal processing, computer science, big data analytics, statistics, machine learning, and AI. His main focus is on preventive medicine using prediction tools.

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