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T2D nursing and healthcare guide based on GH-Method: Math-physical medicine to develop simple but accurate conversion factors from annualized quantitative analysis of relationships among PPG, food and exercise

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Introduction: The author presents a simple, yet highly accurate estimation of conversion ratios between Postprandial Plasma Glucose (PPG) versus carbs/sugar intake amount and post-meal waking steps.

Methods: The author collected 12,249 data of PPG, carbs/sugar grams and post-meal walking steps for 1,361 days (6/1/2015 - 2/21/2019). He used his developed AI-tool to get predicted PPG values. Furthermore, he applied his acquired knowledge from his 9-year development process of the GH-Method: math-physical medicine, which contains impacts on PPG from both food nutrition (his 8-million food database) and exercise. Finally, he developed two simple conversion equations of PPG vs. Carbs/Sugar intake and PPG vs. post-meal walking which involved practical engineering methods of trial-and-error and curve fitting. He has named this simplified, yet highly accurate technique, as the Natural Intelligence (NI) approach.

Results: As shown in Figures 1 and 2, the PPG and its key formation factors, food and exercise, are waves which fluctuate violently. He has summarized these two graphs into Table 1 with the following observed facts:

1. Although all waves fluctuate violently, their annual averaged values are mostly within a narrow (healthy) range. This means that he has already learned how to control his PPG effectively through lifestyle management.
2. His averaged measured values are: PPG is ~118 mg/dL, carbs/sugar per meal is ~15 grams, post-meal walking is >4,000 steps.
3. His developed 2 equations: Each gram of carbs/sugar generated 2.4 mg/dL of PPG and each thousand steps of walking reduces 5 mg/dL of PPG.
4. Using these two simple but effective conversion equations, both of his AI-based and NI-based PPG predictions have achieved ~100% accuracy in comparison with 4,083 finger-piercing measured PPG data.

Conclusion: The author has developed a simple and practical, yet highly accurate PPG prediction method to provide as a nursing tool and healthcare guide to T2D patients. Once patients PPG (~70% to 85% of A1C formation) is under control, their A1C will most likely follow suit.

Biography

Gerald C Hsu has The author received an honorable PhD in mathematics and majored in engineering at MIT. He attended different universities over 17 years and studied seven academic disciplines. Metabolic diseases and food nutrition during 2010 to 2013, then conducted his own diabetes research during 2014 to 2018. His approach is "quantitative medicine" based on mathematics, physics, optical and electronics physics, engineering modeling, signal processing, computer science, big data analytics, statistics, machine learning, and artificial intelligence. His main focus is on preventive medicine using prediction tools. He believes that the better the prediction, the more control you have.

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