Eurometabolomics-2019: GH-Method: Methodology of math-physical medicine - Gerald C. Hsu -eclaireMD Foundation

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Abstract:

Introduction: This paper describes the math-physical medicine approach (MPM) of medical research utilizing mathematics, physics, engineering models and computer science instead of the current biochemical medicine approach (BCM) that mainly utilizes biology and chemistry

Methodology of MPM: At first, the creator went through four years of self-examining six incessant ailments and food sustenance to pick up inside and out clinical space information. During 2014, he characterized digestion as a nonlinear, dynamic, and natural scientific framework having 10 classifications with ~500 components. He at that point applied topology idea with incomplete differential condition and nonlinear polynomial math to develop a digestion condition. He further characterized and determined two factors, digestion file and general wellbeing status unit. During the past 8.5 years, he has gathered and handled 1.5 million information. Since 2015, he created expectation models, for example conditions, for both postprandial plasma glucose (PPG) and fasting plasma glucose (FPG). He recognized 19 compelling elements for PPG and five components for FPG. Each factor has an alternate commitment edge to the glucose development. He created PPG model utilizing optical material science and sign preparing. Moreover, by utilizing both wave and vitality speculations, he expanded his investigation into the hazard likelihood of respiratory failure or stroke. In this hazard appraisal, he applied basic mechanics ideas, including flexibility, dynamic plastic, and break mechanics, to reproduce conduit crack and applied liquid elements ideas to recreate supply route blockage. He further disintegrated 12,000 glucose waveforms with 21,000 information and afterward re-incorporated them into three particular PPG waveform types which uncovered distinctive character attributes and mental practices of type 2 diabetes patients. For single time-stepped factors, he utilized conventional time-arrangement investigation. For communications between two factors, he utilized spatial investigation. Besides, he likewise applied Fourier Transform to direct recurrence space examinations to find some shrouded qualities of glucose waves. He at that point built up an AI Glucometer instrument for patients to foresee their weight, FPG, PPG, and A1C. It utilizes different software engineering apparatuses, including huge information investigation, AI (self-learning, remedy, and improvement), and man-made brainpower to accomplish extremely high exactness (95% to 99%).This investigation sums up Gerald's examination discoveries on 33,523 glucose information gathered by means of a Continuous Blood Glucose Observing Device (CBGM) applied on his arm (Sensor).The accentuation is to consider glucose moving examples or glucose wave shapes in examination with 1,688 glucose information gathered by means of finger-puncturing and test strip (Finger) utilizing connection coefficients (R) from time-arrangement investigation . The dataset is given by the creator, who utilizes his own kind 2 diabetes metabolic conditions control, as a contextual analysis by means of the Math Physical Medicine (MPM)" approach of a non-conventional approach in clinical examination. c Math-physical medication (MPM) begins with the perception of the human body's physical marvels (not natural or then again compound attributes), gathering components of the ailment related information (favouring huge information), using pertinent building displaying methods, creating suitable scientific conditions (not simply measurable investigation), and at last foreseeing the bearing of the turn of events and control component of the illness To sum up conspicuous discoveries from the glucose information examination dependent on his previous 4 to 5 years' understanding, he has seen two "inverse" marvels. For the principal perception, his pinnacle PPG esteem around an hour after the main chomp of his supper every so often reaches to 200-300 mg/dL when he doesn't follow his severe eating regimen and exercise rules. This shows the current seriousness of his diabetes conditions as far as insulin opposition or absence of insulin creation flexibly. For the subsequent perception, from checking his enormous information since 2014, his regular wellbeing condition of pancreatic beta cells is by all accounts recuperated fairly, despite the fact that it may be taking things down a notch.

Results: In 2010, his average glucose was 280 mg/dL and A1C was >10%. Now, his glucose value is 116 mg/dL and A1C is 6.5%. Since his health condition is stable, he no longer suffers from repetitive cardiovascular episodes.

Conclusion: Instead of utilizing traditional biology, chemistry, and statistics the methodology of GH-Method: math-physical medicine uses advanced mathematics, physics concept, engineering modelling, and computer science tools (big data analytics, artificial intelligence), which can be applied to other branches of medical research in order to achieve a higher precision and deeper insight.