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Using GH-Method: Math-Physical Medicine to Conduct Segmentation Analysis to Investigate the Impact of both Weight and Weather Temperatures on Fasting Plasma Glucose (FPG)

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INTRODUCTION

This paper is based on a big data collected from a period of 1,420 days (from 6/1/2015 to 4/21/2019) with a total of 4,260 data, including morning weight in pounds (lbs.), highest ambient temperature (weather) of each day in degree Fahrenheit (°F) and fasting plasma glucose or FPG (mg/dL). The dataset is provided by the author, who uses his own type 2 diabetes metabolic conditions control, as a case study via the "math-physical medicine" approach of a non-traditional methodology in medical research.

Math-physical medicine (MPM) starts with the observation of the human body's physical phenomena (not biological or chemical characteristics), collecting elements of the disease related data (preferring big data), utilizing applicable engineering modeling techniques, developing appropriate mathematical equations (not just statistical analysis), and finally predicting the direction of the development and control mechanism of the disease.

METHOD

In this analysis, the author defines his ideal weight at 170 lbs. (BMI 25) and the following three weather temperature ranges:

(1) Chilly: <67°F

(2) Comfortable: 67-77°F

(3) Warm: >77°F

The author used the GH-Method: math-physical medicine (MPM) approach to discover the impact on FPG by both weight and weather temperature in 2016. His published papers have indicated that weight contributes ~85% of FPG formation and temperature contributes ~10%. Currently, he conducted a detailed segmentation analysis to further validate his earlier findings.

RESULTS

Based on the chilly temperature range (average: 59°F) and normal weight condition (average: 169.8 lbs.), he achieved an average FPG at 99 mg/dL.

The similarity of data patterns and FPG impact distinction between primary factor (weight) and secondary factor (temperature) can also be visually observed from three graphs in Figure 2.

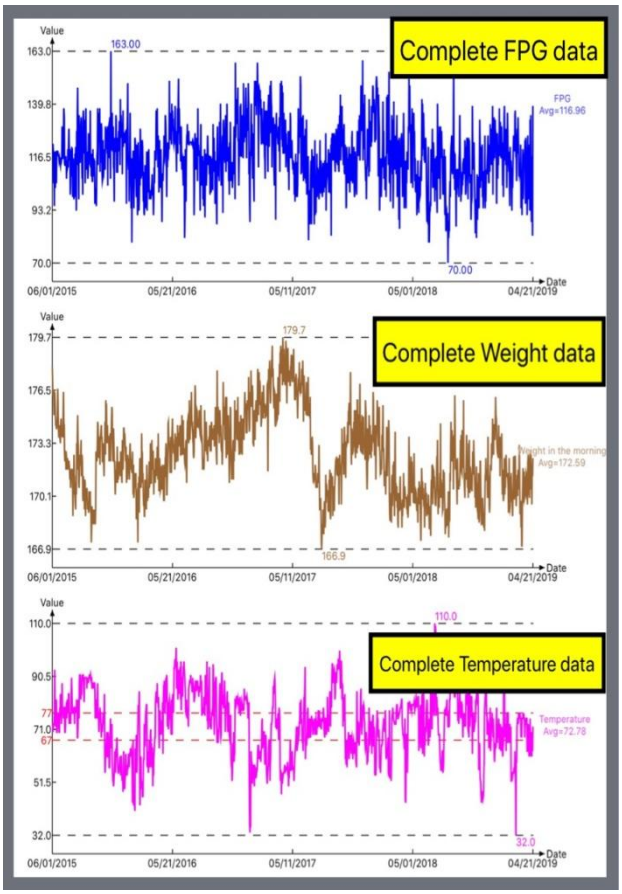

Figure 1: *Complete datasets of FPG, Weight, & Weather Temperature*

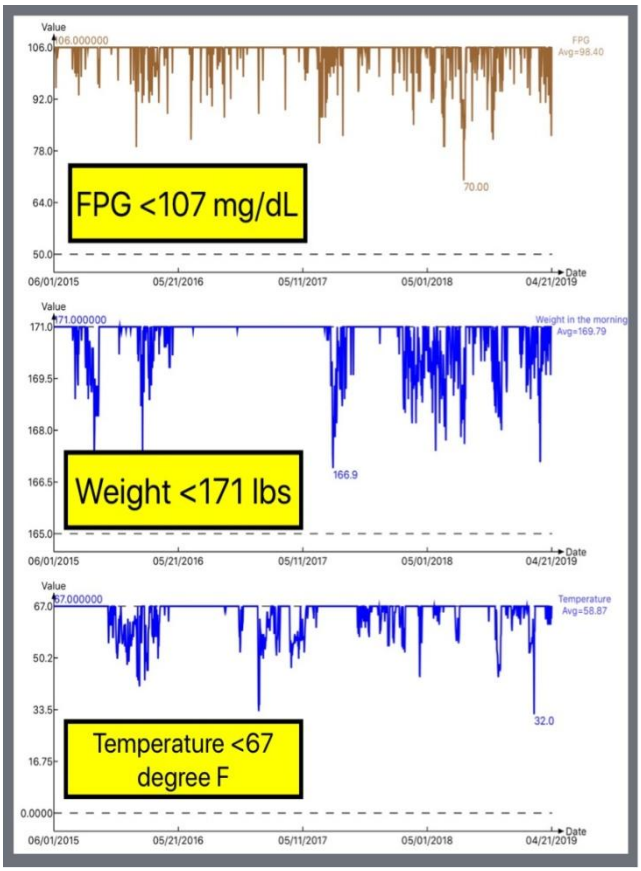

Figure 2: *Data for Chilly weather temperature (<67-degree°F), normal weight (<171 lbs.), and lower FPG (<107 mg/dL)*

CONCLUSION

By using the GH-Method: math-physical medicine on this big data, the author proved again that the correlation of weight/temperature and FPG by this segmentation analysis. The important role of weight on FPG has been demonstrated repeated via different clinical cases. However, due to unknown biological reactions of human body and unavailability of applicable data from individuals who reside in either tropical or freezing zones, the author cannot draw the same conclusions of temperature impact on FPG formation.

REFERENCES

[1] Hsu, Gerald C. (2018). Using Math-Physical Medicine to Control T2D via Metabolism Monitoring and Glucose Predictions. *Journal of Endocrinology and Diabetes, 1*(1), 1-6.

[2] Hsu, Gerald C. (2018). Using Signal Processing Techniques to Predict PPG for T2D. *International Journal of Diabetes & Metabolic Disorders, 3*(2), 1-3.

[3] Hsu, Gerald C. (2018). Using Math-Physical Medicine and Artificial Intelligence Technology to Manage Lifestyle and Control Metabolic Conditions of T2D. International *Jo*urnal of Diabetes & Its Complications, 2(3), 1-7.

[4] Hsu, Gerald C. (2018). Using Math-Physical Medicine to Study the Risk Probability of having a Heart Attack or Stroke Based on Three Approaches, Medical Conditions, Lifestyle Management Details, and Metabolic Index. *EC Cardiology*, *5*(12), 1-9.

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