

The GH-Method

A Comparison Study of Body Weight in Early Morning, Daily Averaged Glucose, Postprandial Plasma Glucose, Fasting Plasma Glucose in Early Morning between a 40-Days COVID Period and an Adjacent 40-Days Travel Period Using GH-Method: Math-Physical Medicine (No. 847)

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Abstract

The author started his COVID self-quarantined lifestyle since 1/18/2020. During this period of ~3.5-years, he has mainly stayed in both Nevada and Hawaii to avoid much of human contacts. From this spring time, after many nations lifting their border controls, he started to take air travel to Europe, Midwest of USA, and Eastern Asia. During his current trip to Japan, he notices both of his measured body weight (BW) and glucoses (T2D) values are moving upward. This is not a new surprise to him since he had already analyzed the traveling impact on his overall health conditions. During the 2-years of 2018 to 2019, he attended 68 medical conferences in 53 cities and made 120+ oral presentations. Therefore, his health conditions were influenced toward an “unhealthy” direction. Therefore, he resumes his close track regarding his overall health conditions resulted from his traveling. Thus far, his post-COVID travel has last only ~40 days. But, he hopes that he can identify certain traveling details which directly relates to his health conditions, especially BW, T2D, and pancreatic beta cells health state. He has selected two time periods with 40 days for each period. The first “COVID period” started from 3/1/2023 to 4/10/2023. The second “Travel period”

started from 4/11/2023 to 5/18/2023. There are 4 comparison studies of body weight (BW), daily averaged sensor based glucose (eAG), postprandial plasma glucose (PPG), and fasting plasma glucose in early morning (FPG). FPG value was selected as one of his important biomarkers due to his specific concerns regarding his health states of pancreatic beta cells, i.e. insulin resistance . Body weight influences FPG level which is further served as the baseline level of both PPG and eAG. Obesity and type 2 diabetes (T2D) are key players for other metabolic disorders and even certain dangerous complications, such as CVD, stroke, CKD, or certain deadly cancers. The analysis methods in this study are simple straightforward statistical tools of averaged numbers with waveform comparison using correlations. In summary, there are 2 findings from this particular comparison study: (1) Although the averaged values of these two periods are very close to each other, but both of his body weight and glucoses are higher during his Japan trip in May than his UK trip in April. (2) His FPG values during sleeping hours in Travel period is higher than COVID period which is a warning sign regarding his overall health concerns.

Keywords: Diabetes; Body weight; Postprandial plasma glucose; Fasting plasma glucose

Abbreviations: T2D: type 2 diabetes; BW: body weight; PPG: postprandial plasma glucose; FPG: fasting plasma glucose

1. INTRODUCTION

The author started his COVID self-quarantined lifestyle since 1/18/2020. During this period of ~3.5-years, he has mainly stayed in both Nevada and Hawaii to avoid much of human contacts. From this spring time, after many nations lifting their border controls, he started to take air travel to Europe, Midwest of USA, and Eastern Asia. During his current trip to Japan, he notices both of his measured body weight (BW) and glucoses (T2D) values are moving upward. This is not a new surprise to him since he had already analyzed the traveling impact on his overall health conditions. During the 2-years of 2018 to 2019, he attended 68 medical conferences in 53 cities and made 120+ oral presentations. Therefore, his health conditions were influenced toward an “unhealthy” direction. Therefore, he resumes his close track regarding his overall health conditions resulted from his traveling. Thus far, his post-COVID travel has last only ~40 days. But, he hopes that he can identify certain traveling details which directly relates to his health conditions, especially BW, T2D, and pancreatic beta cells health state.

He has selected two time periods with 40 days for each period. The first “COVID period” started from 3/1/2023 to 4/10/2023. The second “Travel period” started from 4/11/2023 to 5/18/2023. There are 4 comparison studies of body weight (BW), daily averaged sensor based glucose (eAG), postprandial plasma glucose (PPG), and fasting plasma glucose in early morning (FPG). FPG value was selected as one of his important biomarkers due to his specific concerns regarding his health states of pancreatic beta cells, i.e. insulin resistance . Body weight influences FPG level which is further served as the baseline level of both PPG and eAG. Obesity and type 2 diabetes (T2D) are key players for other metabolic disorders and even certain dangerous complications, such as CVD, stroke, CKD, or certain deadly cancers.

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2. METHODS

2.1 MPM background

To learn more about his developed GH-Method: math-physical medicine (MPM) methodology, readers can read the following three papers selected from his published 760+ papers.

The first paper, No. 386 describes his MPM methodology in a general conceptual format. The second paper, No. 387 outlines the history of his personalized diabetes research, various application tools, and the differences between the biochemical medicine (BCM) approach versus the MPM approach. The third paper, No. 397 depicts a general flow diagram containing ~10 key MPM research methods and different tools.

2.2 The author’s diabetes history

The author was a severe T2D patient since 1995. He weighed 220 lb. (100 kg) at that time. By 2010, he still weighed 198 lb. with average daily glucose of 250 mg/dL (HbA1C at 10%). During that year, his triglycerides reached 1161 (high risk for CVD and stroke) and his albumin-creatinine ratio (ACR) at 116 (high risk for chronic kidney disease). He also suffered from five cardiac episodes within a decade. In 2010, three independent physicians warned him regarding the need for kidney dialysis treatment and the future high risk of dying from his severe diabetic complications.

In 2010, he decided to self-study endocrinology with an emphasis on diabetes and food nutrition. He spent the entire year of 2014 developing a metabolism index (MI) mathematical model. During 2015 and 2016, he developed four mathematical prediction models related to diabetes conditions: weight, PPG, fasting plasma glucose (FPG), and HbA1C (A1C). Through using his developed mathematical metabolism index (MI) model and the other four glucose prediction tools, by the end of 2016, his weight was reduced from 220 lbs. (100 kg) to 176 lbs. (89 kg), waistline from 44 inches (112 cm) to 33 inches (84 cm), average finger-piercing glucose from 250 mg/dL to 120 mg/dL, and A1C from 10% to ~6.5%. One of his major accomplishments is that he has no longer taken any diabetes-related medications since 12/8/2015.

In 2017, he achieved excellent results on all fronts, especially his glucose control. However, during the pre-COVID period, including both 2018 and 2019, he traveled to ~50 international cities to attend 65+ medical conferences and made ~120 oral presentations. This hectic schedule inflicted damage to his diabetes control caused by stress, dining out frequently, post-meal exercise disruption, and jet lag, along with the overall negative metabolic impact from the irregular life patterns; therefore, his glucose control was somewhat affected during the two-year traveling period of 2018-2019.

He started his COVID-19 self-quarantined life on 1/19/2020. By 10/16/2022, his weight was further reduced to ~164 lbs. (BMI 24.22) and his A1C was at 6.0% without any medication intervention or insulin injection. In fact, with the special COVID-19 quarantine lifestyle since early 2020, not only has he written and published ~500 new research articles in various medical and engineering journals, but he has also achieved his best health conditions for the past 27 years. These achievements have resulted from his non-traveling, low-stress, and regular daily life routines. Of course, his in-depth knowledge of chronic diseases, sufficient practical lifestyle management experiences, and his developed high-tech tools have also contributed to his excellent health improvements.

On 5/5/2018, he applied a continuous glucose monitoring (CGM) sensor device on his upper arm and checks his glucose measurements every 5 minutes for a total of 288 times each day. Furthermore, he extracted the 5-minute intervals from every 15-minute interval for a total of 96 glucose data each day stored in his computer software.

Through the author’s medical research work of over 40,000 hours and reading over 4,000 published medical papers online in the past 13 years, he discovered and became convinced that good life habits of not smoking, moderate or no alcohol intake, avoiding illicit drugs; along with eating the right food with well-balanced nutrition, persistent exercise, having a sufficient and good quality of sleep, reducing all kinds of unnecessary stress, maintaining a regular daily life routine contribute to the risk

reduction of having many diseases, including CVD, stroke, kidney problems, micro blood vessels issues, peripheral nervous system problems, and even cancers and dementia. In addition, a long-term healthy lifestyle can even “repair” some damaged internal organs, with different required time-length depending on the particular organ’s cell lifespan. For example, he has “self-repaired” about 35% of his damaged pancreatic beta cells during the past 10 years.

3. RESULTS

Figure 1 shows daily value comparison of body weight and glucose between COVID period and travel period.

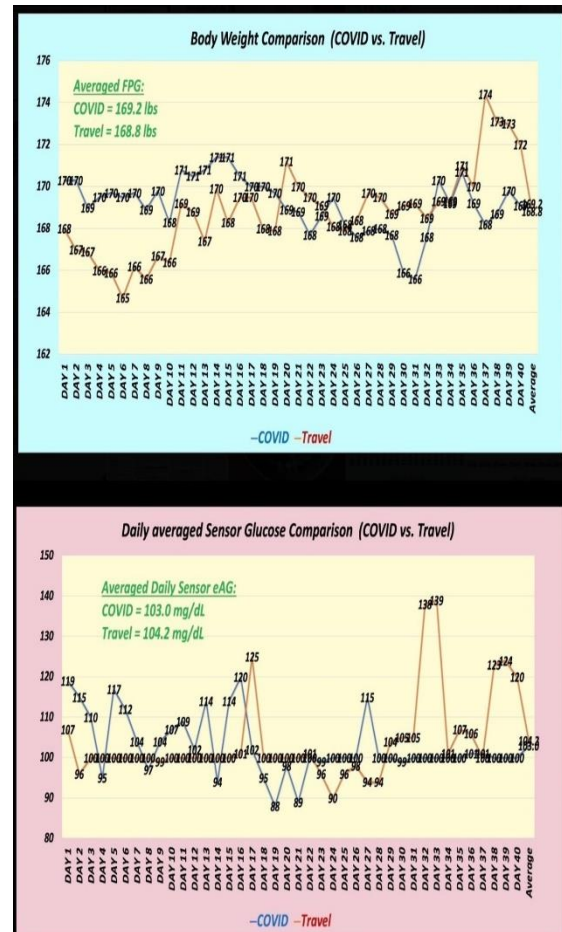


Figure 1: Daily value comparison of body weight and glucose between COVID period and travel period.

Figure 2 shows waveform comparison of FPG, PPG, eAG between COVID period and travel period.

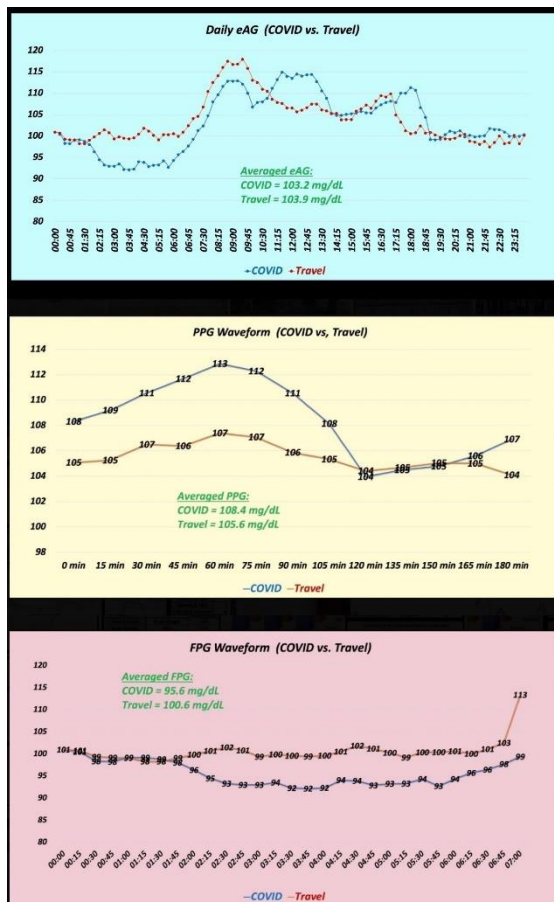


Figure 2: Waveform comparison of FPG, PPG, eAG between COVID period and travel period.

4. CONCLUSION

In summary, there are 2 findings from this particular comparison study:

(1) Although the averaged values of these two periods are very close to each other, but both of his body weight and gluces are higher during his Japan trip in May than his UK trip in April.

(2) His FPG values during sleeping hours in Travel period is higher than COVID period which is a warning sign regarding his overall health concerns.

5. REFERENCES

For editing purposes, the majority of the references in this paper, which are self-references, have been removed. Only references from other authors' published sources remain. The bibliography of the author's original self-references can be viewed at www.eclaircmd.com.

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