Research Article

Summary Report from Diet through Obesity, Diabetes to Six Mortality Diseases Using the Viscoplastic Energy Model of Gh-Method: Math-Physical Medicine (No. 957, VMT #356, 11/17/2023)

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Abstract

The author's weight, initially 220 lbs (100 kg, BMI 32.5) in 2010, decreased to 165 lbs (75 kg, BMI 24.4) by 2013. In 2010, his daily glucose (eAG) was 280 mg/dL, and morning fasting glucose (FPG) was 180 mg/dL. In 2023, the author's eAG is 100 mg/dL, and FPG is 89 mg/dL, without taking diabetes medications since 2015.

Experiencing 5 cardio episodes from 1994 to 2005, kidney conditions in 2010, and neuropathy (foot ulcer) in 2015, the author is fortunate enough to show no signs of dementia diseases or cancers thus far.

From 2010 to 2023, he has progressively reduced his food portions:
- *Y10-Y14 food portion: > 100%*
- *Y15-Y17 food portion: 90%*
- *Y18-Y20 food portion: 76%*
- *Y21-Y23 food portion: 51%*

His recent five research papers investigate his body weight (BW), glucoses (FPG and PPG), and risks of having six deadly diseases (CVD, CKD, Cancers, AD, PD, DN) based on inputs of four metabolic biomarkers and six lifestyle details respectively. He employed statistical correlation methods initially, studying waveform similarities between output and inputs. Subsequently, the space-domain Viscoplastic Medicine model (SDVMT) was applied to his personal data collected over 11 years (1/1/2013 to 11/12/2023), revealing more hidden insights into energies between disease symptom and multiple influential inputs.

In summary, a roadmap is outlined from diet (specifically food portion) to weight, through diabetes (FPG and PPG), ultimately leading to the risk reduction of six mortality diseases.

The author selected the top three or four influential factors to conduct his viscoplastic energy analysis, yielding the following key findings:

1. ***Obesity Control:***
   - *Food portion is the strongest influential factor of body weight at 36%.*
   - *Nighttime sleep and daytime exercise contribute 32% each.*
2. ***FPG Control:***
   - *Body weight contributes 49% of total energy.*
   - *Body temperature (another biomarker related to FPG) contributes 39%.*
   - *Sleep contributes 21%.*
3. ***PPG Control:***
   - *Morning fasting glucose (FPG) contributes 50% as the baseline.*
   - *Carbs/sugar intake amount contributes 31%, and post-meal walking exercise level contributes 19% (with a ratio of 1.6 between diet and exercise).*
4. ***Averaged Energy Contribution to 6 Deadly Diseases from 4 Metabolic Biomarkers:***
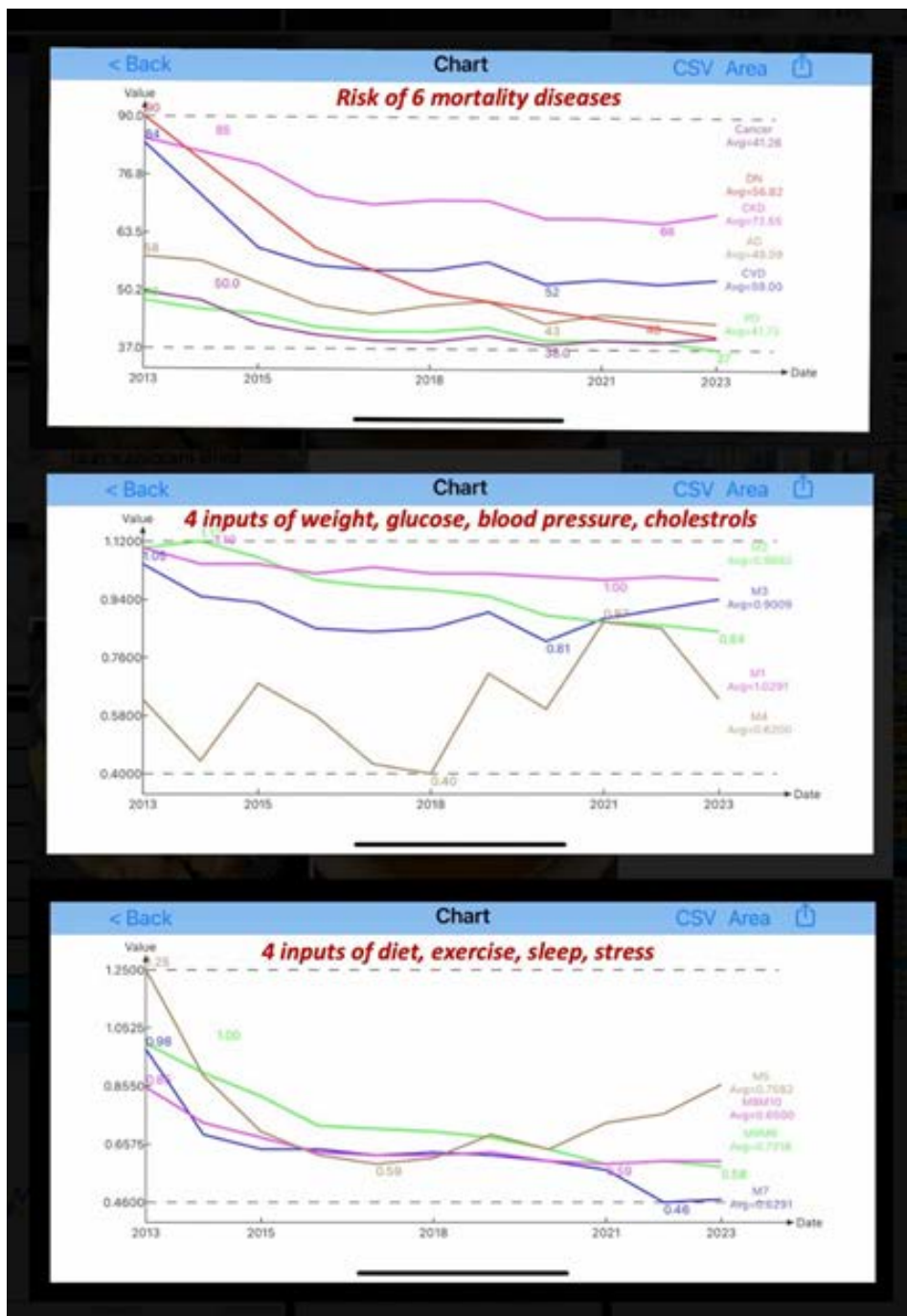   - *Obesity and diabetes each contribute 29%.*

- • Blood pressure contributes 25%.   - Cholesterols contribute 16%.
5. ***Averaged Energy Contribution to 6 Deadly Diseases from 4 Lifestyle Details:***
- • *Food and drinking water contribute 28%.*
- • *Walking exercise contributes 26%.*
- • *Stress and daily routines contribute 24%.*
- • *Sleep contributes 23%.*

Messages of Primary Influences
Food portion and meal size dictate body weight which is closely linked to morning fasting glucose. FPG serves as the baseline for amplitude of PPG.
Controlling obesity and diabetes will significantly reduce the risks of having six deadly diseases.
In the realm of lifestyle, diet, exercise, sleep, and stress constitute the four pillars supporting the table of our health and longevity.

Output	Inpit 1	Inpit 2	Inpit 3
BW	Food Size	Sleep	Steps
	36%	32%	32%
FPG	BW	BT	Sleep
	40%	39%	21%
PPG	FPG	Carbs	Steps
	50%	31%	19%

Correlation	M1	M2	M3	M4
CVD	92%	80%	81%	-22%
CKD	91%	94%	73%	-32%
Cancer	86%	81%	84%	-18%
AD	87%	92%	74%	-25%
PD	92%	96%	62%	-28%
DN	94%	95%	65%	-33%
Average	90%	90%	73%	-26%

Correlat	Food/H2O	Strs/Rout	Steps	Sleep
CVD	94%	99%	84%	90%
CKD	98%	94%	66%	83%
Cancer	92%	96%	83%	80%
AD	96%	93%	67%	82%
PD	98%	91%	55%	86%
DN	99%	94%	64%	87%
Average	96%	95%	70%	85%

VMT Energy	M1	M2	M3	M4
CVD	29%	30%	26%	15%
CKD	29%	29%	25%	17%
Cancer	29%	29%	25%	17%
AD	29%	29%	25%	17%
PD	30%	29%	25%	16%
DN	29%	30%	26%	16%
Average	29%	29%	25%	16%

VMT En	Food/H2O	Strs/Rout	Steps	Sleep
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CKD	28%	24%	25%	23%
Cancer	28%	24%	25%	23%
AD	28%	24%	25%	23%
PD	27%	24%	26%	23%
DN	28%	24%	26%	23%
Average	28%	24%	26%	23%

1. Introduction

The author's weight, initially 220 lbs (100 kg, BMI 32.5) in 2010, decreased to 165 lbs (75 kg, BMI 24.4) by 2013. In 2010, his averaged daily glucose (eAG) was 280 mg/dL, and morning fasting glucose (FPG) was 180 mg/dL. Near the end of 2023, the author's eAG is 100 mg/dL, and FPG is 89 mg/dL, without taking diabetes medications since 2015.

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From 2010 to 2023, he has progressively reduced his food portions:

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His recent five research papers investigate his body weight (BW), glucoses (FPG and PPG), and risks of having six deadly diseases (CVD, CKD, Cancers, AD, PD, DN) using four metabolic biomarkers and six lifestyle details respectively. He employed statistical correlation methods initially, studying waveform similarities between output and inputs. Subsequently, the spacedomain Viscoplastic Medicine model (SD-VMT) was applied to his personal data collected over 11 years (1/1/2013 to 11/12/2023), revealing more hidden insights into energies between disease symptom and multiple influential inputs.

2. Biomedical Information

The following sections contain excerpts and concise information drawn from multiple medical articles, which have been meticulously reviewed by the author of this paper. The author has adopted this approach as an alternative to including a conventional reference list at the end of this document, with the intention of optimizing his valuable research time. It is essential to clarify that these sections do not constitute part of the author's original contribution but have been included to aid the author in his future reviews and offer valuable insights to other readers with an interest in these subjects.

Please refer to the author's excerpts of pathophysiological explanations and statistical data of various subjects in the Introduction Section of his paper number 952 through 956 (5 papers).
Methods:

3. 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 (Reference 1) describes his MPM methodology in a general conceptual format. The second paper, No. 387 (Reference 2) outlines the history of his personalized diabetes research, various application tools, and the differences between biochemical medicine (BCM) approach versus the MPM approach. The third paper, No. 397 (Reference 3) depicts a general flow diagram containing ~10 key MPM research methods and different tools.

4. 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 an 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 to develop 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 fingerpiercing glucose from 250 mg/dL to 120 mg/dL, and A1C from 10% to ~6.5%. One of his major accomplishments is that he no longer takes any diabetes-related medications since 12/8/2015.

In 2017, he achieved excellent results on all fronts, especially his glucose control. However, during the preCOVID 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 selfquarantined 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 indepth knowledge of chronic diseases, sufficient practical lifestyle management experiences, and his own 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 5minute intervals from every 15minute interval for a total of 96 glucose data each day stored in his computer software.

Through the author's medical research work over 40,000 hours and read 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 wellbalanced 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.

5. Energy Theory
The human body and organs have around 37 trillion live cells which are composed of different organic cells that require energy infusion from glucose carried by red blood cells; and energy consumption from laborwork or exercise. When the residual energy (resulting from the plastic glucose scenario) is stored inside our bodies, it will cause different degrees of damage or influence to many of our internal organs.

According to physics, energies associated with the glucose waves are proportional to the square of the glucose amplitude. The residual energies from elevated glucoses are circulating inside the body via blood vessels which then impact all of the internal organs to cause different degrees of damage or influence, e.g. diabetic complications. Elevated glucose (hyperglycemia) causes damage to the structural integrity of blood vessels. When it combines with both hypertension (rupture of arteries) and hyperlipidemia (blockage of arteries), CVD or Stroke happens. Similarly, many other deadly diseases could result from these excessive energies which would finally shorten our lifespan. For an example, the combination of hyperglycemia and hypertension would cause micro-blood vessel's leakage in kidney systems which is one of the major cause of CKD.

The author then applied Fast Fourier Transform (FFT) operations to convert the input wave from a time domain into a frequency domain. The y-axis amplitude values in the frequency domain indicate the proportional energy levels associated with each different frequency component of input occurrence. *Both output symptom value (i.e. strain amplitude in the time domain) and*

output symptom fluctuation rate (i.e. the strain rate and strain frequency) are influencing the energy level (i.e. the Y-amplitude in the frequency domain).

Currently, many people live a sedentary lifestyle and lack sufficient exercise to burn off the energy influx which causes them to become overweight or obese. Being overweight and having obesity leads to a variety of chronic diseases, particularly diabetes. In addition, many types of processed food add unnecessary ingredients and harmful chemicals that are toxic to the bodies, which lead to the development of many other deadly diseases, such as cancers. For example, ~85% of worldwide diabetes patients are overweight, and ~75% of patients with cardiac illnesses or surgeries have diabetes conditions.

In engineering analysis, when the load is applied to the structure, it bends or twists, i.e. deform; however, when the load is removed, it will either be restored to its original shape (i.e, elastic case) or remain in a deformed shape (i.e. plastic case). In a biomedical system, the glucose level will increase after eating carbohydrates or sugar from food; therefore, the carbohydrates and sugar function as the energy supply. After having labor work or exercise, the glucose level will decrease. As a result, the exercise burns off the energy, which is similar to load removal in the engineering case. In the biomedical case, both processes of energy influx and energy dissipation take some time which is not as simple and quick as the structural load removal in the engineering case. Therefore, the age difference and 3 input behaviors are "dynamic" in nature, i.e. time dependent. *This time-dependent nature leads to a "viscoelastic or viscoplastic" situation.* **For the author's case, it is "viscoplastic" since most of his biomarkers are continuously improved during the past 13-year time window.**

Time-dependent output strain and stress of (viscous input* output rate):
Hooke's law of linear elasticity is expressed as:
Strain (ε: epsilon)
 = **Stress (σ: sigma) / Young's modulus (E)**

For biomedical glucose application, his developed linear elastic glucose theory (LEGT) is expressed as:
PPG (strain)
= **carbs/sugar (stress) * GH.p-Modulus (a positive number)**

+ post-meal walking ksteps * GH.w-Modulus (a negative number)
Where GH.p-Modulus is reciprocal of Young's modulus E.

However, in viscoelasticity or viscoplasticity theory, the stress is expressed as:
Stress
= **viscosity factor (η: eta) * strain rate (dε/dt)**
Where strain is expressed as Greek epsilon or ε.

In this article, in order to construct an "ellipse-like" diagram in a stressstrain space domain (e.g. "hysteresis loop") covering both the positive side and negative side of space, he has modified the definition of strain as follows:
Strain
= **(body weight at certain specific time instant)**

He also calculates his strain rate using the following formula:
Strain rate
= **(body weight at next time instant) - (body weight at present time instant)**

The risk probability % of developing into CVD, CKD, Cancer is calculated based on his developed metabolism index model (MI) in 2014. His MI value is calculated using inputs of 4 chronic conditions, i.e. weight, glucose, blood pressure, and lipids; and 6 lifestyle details, i.e. diet, drinking water, exercise, sleep, stress, and daily routines. These 10 metabolism categories further contain ~500 elements with millions of input data collected and processed since 2010. For individual deadly disease risk probability %, his mathematical model contains certain specific weighting factors for simulating certain risk percentages associated with different deadly diseases, such as metabolic disorderinduced CVD, stroke, kidney failure, cancers, dementia; artery damage in heart and brain, micro-vessel damage in kidney, and immunity-related infectious diseases, such as COVID death.

Some of explored deadly diseases and longevity characteristics using the **viscoplastic medicine theory (VMT)** include stress relaxation, creep, hysteresis loop, and material stiffness, damping effect **based on time-dependent stress and strain** which are different from his previous research findings using **linear elastic glucose theory (LEGT) and nonlinear plastic glucose theory (NPGT).**
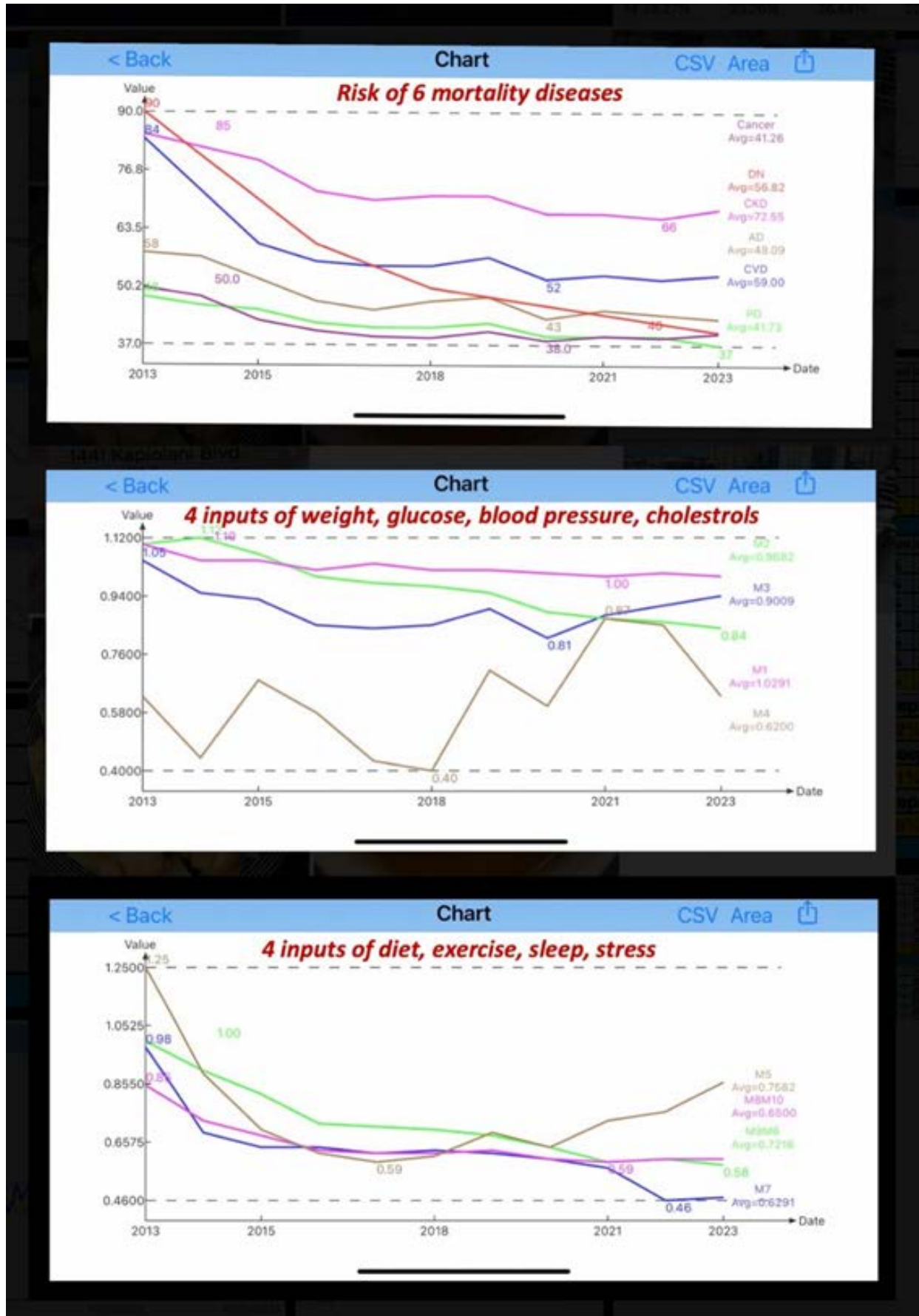
8. Results

Figure 1: Time-domain Curves

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Averag	28%	24%	26%	23%

Figure 2: Conclusion Data Tables

7. Conclusions

In summary, a roadmap is outlined from diet (specifically food portion) to weight, through diabetes (FPG and PPG), ultimately leading to the risk reduction of six mortality diseases.

The author selected the top three or four influential factors to conduct his viscoplastic energy analysis, yielding the following key findings:

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• Food portion is the strongest influential factor of body weight at 36%.
• Nighttime sleep and daytime exercise contribute 32% each.

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• Body weight contributes 49% of total energy.
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7.4 Averaged Energy Contribution to 6 Deadly Diseases from 4 Metabolic Biomarkers:
• Obesity and diabetes each contribute 29%.
• Blood pressure contributes 25%.   - Cholesterols contribute 16%.

7.8 Averaged Energy Contribution to 6 Deadly Diseases from 4 Lifestyle Details:
• Food and drinking water contribute 28%.
• Walking exercise contributes 26%.
• Stress and daily routines contribute 24%.
• Sleep contributes 23%.

8. Key Messages

Food portion and meal size dictate body weight which is closely linked to morning fasting glucose. FPG serves as the baseline for amplitude of PPG.

Controlling obesity and diabetes will significantly reduce the risks of having six deadly diseases. In terms of lifestyle, diet, exercise, sleep, and stress form the four pillars sustaining the table top of our health and longevity.

References

For editing purposes, majority of the references in this paper, which are self-references, have been removed for this article. Only references from other authors' published sources remain. The bibliography of the author's original self-references can be viewed at www.eclairemd.com. Readers may use this article as long as the work is properly cited, and their use is educational and not for profit, and the author's original work is not altered.

For reading more of the author's published VGT or FD analysis results on medical applications, please locate them through platforms for scientific research publications, such as ResearchGate, Google Scholar, etc.