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Protecting Patients with Chronic Diseases and/or Psychological Disorders From Covid-19

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Introduction
This paper describes qualitatively and quantitatively what the author has done for protecting some patients with chronic diseases and/or psychological disorders during this COVID-19 period.

Methods
Background
The author is a medical research scientist in the field of both abnormal psychology, specializing in borderline personality disorder (BPD), and endocrinology, concentrating in diabetes and its complications. He is also a professionally trained mathematician, physicist, and engineer. The patients in this case report include the following five individuals:

1. Patient A: male, 73-years-old, 3 chronic diseases and other 6 complications over 25 years (the author himself).
2. Patient B: female, 72 years old, 3 chronic diseases and CVD over 22 years.
3. Patient C: male, 47 years old, obese and 3 chronic diseases over 4 years
4. Patient E: female, 73 years old, 3 chronic diseases and many complications over 15 years.
5. Patient D: female, 44 years old, with borderline personality disorder.

The author evaded the 2003 SARS threat in China and Taiwan. In early January of 2020, when the strange "Wuhan pneumonia" rumors suddenly appeared on certain Asian news network, he immediately recognized the danger associated with this newly found virus. He then started his "self-quarantine" in the United States on 1/19/2020, earlier than the majority of Americans who became aware of its potential damage and severity.

Over these past 97 days, the author has maintained his personal contacts with other four patients using the internet only.

COVID-19 is a disease caused by SARS-CoV-2 virus which uses ACE-2 for cell entry [1]. Currently, we thought that it is spread through respiratory droplets, though the transmission is still under investigation. Also, the virus has been found in blood and stool. Figure 1 illustrates that COVID-19 is a spectrum of diseases. Approximately 80% of confirmed cases are uncomplicated SARS-CoV-2 infection which may lead to mild pneumonia. About 15% would lead into severe pneumonia, with the remaining ~ 5% ending up as acute respiratory distress syndrome (ARDS). Incidentally, this 5% percentage just falls into the range for the current death rate of COVID-19, which is about 4% to 10%.

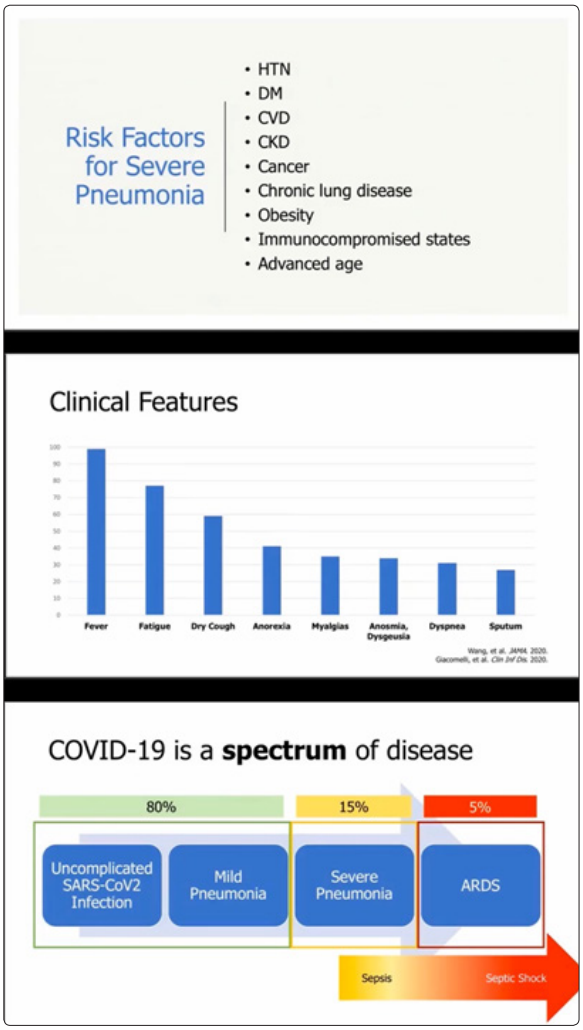

Figure 1: COVID-19 information

Epidemic Information

The author's first personal rule is that he does not trust any politician's statements regarding this virus. Most politicians in various governments are concerned more about politics, economics, or even "saving face" and not relying on scientific truths and medical facts. He is a scientist and only trust scientific knowledge and professional statements from medical experts. Therefore, he decided to conduct his own data analysis (a sample analysis shown in Figure 2). He does not need any complex equations or fancy mathematical models to analyze COVID-19, but he must look into the situation from a "correct" cutting-angle or entry-point. In this virus-fighting business, having correct information is our first important battlefield.

(3/25/2020)	Area	Confirmed	Confirmed	Death	Death %	Density (people/sq km)
Zone 1	Europe	257,105	0.035%	14,655	5.70%	73
Zone 2	US	69,194	0.021%	1,050	1.52%	34
Zone 3	UK	9,529	0.014%	465	4.88%	275
Zone 4	Korea/Taiwan/Singapore	10,176	0.013%	135	1.33%	591
Zone 5	Australia/NZ/Canada	6,486	0.010%	48	0.74%	4
	Subtotal of Transparancy	342,961	0.028%	15,888	4.63%	34
Zone 6	China	82,034	0.006%	3,293	4.01%	149
Zone 7	Japan	1,398	0.001%	47	3.36%	336
	WHO	484,087	0.006%	21,981	4.54%	52

Back — Report

	A	B	C	D	E	F	G
2	Zone 1	Europe	1,179,718	0.1594%	116,123	9.84%	73
3	Zone 2	US	870,468	0.2638%	50,031	5.75%	34
4	Zone 3	UK	143,464	0.2158%	19,506	13.6%	275
5	Zone 4	Korea/Taiwan/Singapore	23,211	0.0287%	258	1.11%	591
6	Zone 5	Australia/NZ/Canada	50,531	0.0753%	2,290	4.53%	4
7		Subtotal	2,123,928	0.1744%	168,702	7.94%	
9	Zone 6	China	84,313	0.0059%	4,642	5.51%	149
10	Zone 7	Japan	12,859	0.0103%	345	2.68%	336
11	Zone 8	India	23,452	0.0018%	723	3.08%	450
13		WHO	2,706,316	0.0348%	193,074	7.13%	5

Stitch It!

Figure 2: The author's own partial data analysis of COVID-19

The spread of this disease depends mainly on the physical contact among people. Therefore, the population density is his first key factor. Since the combined inhabitants of China and India make up 38% of the world's total population, both of their data reliability and accuracy are questionable due to different reasons. He decided not to look into the data provided by the World Health Organization (WHO). For example, he did not look at the number of confirmed cases, but rather focused on the confirmed case percentage (i.e. confirmed case number divided by population). This confirmed percentage could offer a better and clearer picture regarding whether that particular country was hiding the truth or providing inaccurate numbers. He found that certain nations hid the truth by controlling the data "influx", for example, by reducing the number of confirmed cases through different layers of government bureaucracy or refusing additional tests to be performed on the population. However, most underdeveloped or some developing nations, they are in short supply of virus test kits.

Ironically, he discovered that the death percentage (death number divided by confirmed number) was consistent from nation to nation, in a range between 4% to 10%. This death rate usually reflects that particular country's healthcare conditions and power in terms of their facility availability and expertise level.

Chronic Diseases

Specifically, for seniors over the age of 70, who have existing chronic diseases or history of complications, their death probability due to COVID-19 is much higher than younger, healthier people (Figure 3). This category applies to Patients A, B, C, and D.

As indicated in "Linkage among metabolism, immune system, and various diseases using GH-Method: math-physical medicine (MPM)", the most effective defense of COVID-19 is our *immunity* [2]. Furthermore, our immune system is closely related to our overall *metabolic* conditions. In order to strengthen our metabolism, we must manage our daily *lifestyle* well in order to build up a strong and firm foundation for our health. The author's research specialty is in the area of metabolic disorders. In this article, he will summarize his knowledge and experiences in a quantitative manner.

Age of Coronavirus Deaths

We are collecting and analyzing the data from all US States. In the meantime, below we show the data provided by New York City Health as of April 14:

AGE	Number of Deaths	Share of deaths	With underlying conditions	Without underlying conditions	Unknown if with underlying cond.	Share of deaths of unknown + w/o cond.
0 - 17 years old	3	0.04%	3	0	0	0%
18 - 44 years old	309	4.5%	244	25	40	1.0%
45 - 64 years old	1,581	23.1%	1,343	59	179	3.5%
65 - 74 years old	1,683	24.6%	1,272	26	385	6.0%
75+ years old	3,263	47.7%	2,289	27	947	14.2%
TOTAL	6,839	100%	5,151	137	1,551	24.68%

Data from initial studies in China

At the end of February, there were two sources that provided age, sex, and comorbidity statistics:

AGE	DEATH RATE confirmed cases	DEATH RATE all cases
80+ years old	21.9%	14.8%
70-79 years old		8.0%
60-69 years old		3.6%
50-59 years old		1.3%
40-49 years old		0.4%
30-39 years old		0.2%
20-29 years old		0.2%
10-19 years old		0.2%
0-9 years old		no fatalities

Figure 3: Mortality of COVID-19 by age group

Psychological Disorders

The fear of possible death caused by COVID-19, boredom associated with quarantined life, or maintaining social-distancing with outsiders, sometimes drive a normal person to be "crazy", let alone a patient with existing psychological disorder conditions such as BPD. Most BPD patients have suffered severe abandonment in their childhood. In addition, they might also suffer from some emotional and/or verbal abuse and sometimes suffer from physical abuse. During this COVID-19 period, this group of patients need extra emotional care and love to avoid having some "flash back" to cause more anxieties and emotional swings. Not only would they feel more stressed, they also transfer stress to their loved ones and create a life pattern similar to "walking on eggshells".

Results

Epidemic Information

Figure 1 shows the author's own data analysis of COVID-19. He focuses on zones (a single nation or an area with multiple nations) having transparent information, such as the US, UK, and Europe. Within Zones including Europe, US, and UK, he found a confirmation percentage of 0.16% to 0.26% and a death rate of 5.8% to 9.8%. With regard to this virus death percentage, most countries in the world have a similar death rate percentage of

about 4% to 10%. Two exceptionally virus well-controlled zones are: (1) dense nations (591 people per square km; Taiwan, South Korea, and Singapore have 0.013% confirmation rate with a 1.33% death rate) and sparse nations (4 people per square km; Canada, Australia, and New Zealand have 0.01% confirmation rate with a 0.74% death rate). As a caveat, he could easily figure out which nations were hiding the truth about their confirmed case numbers or distorting into an inaccurate disease number.

Once he developed his trusted information of confirmation rate and death rate, he then tried to figure out the death rates associated with age groups (Figure 2). For a senior patient who has existing chronic diseases would have an extremely high death rate in the range of 44% to 48% (NYC data) or 23% (China data).

Chronic Disease

Figures 4 and 5 summarized Patient A's metabolic record for the last 6 to 8 years and ***this COVID-19 period (1/19/2020 - 4/24/2020)***.

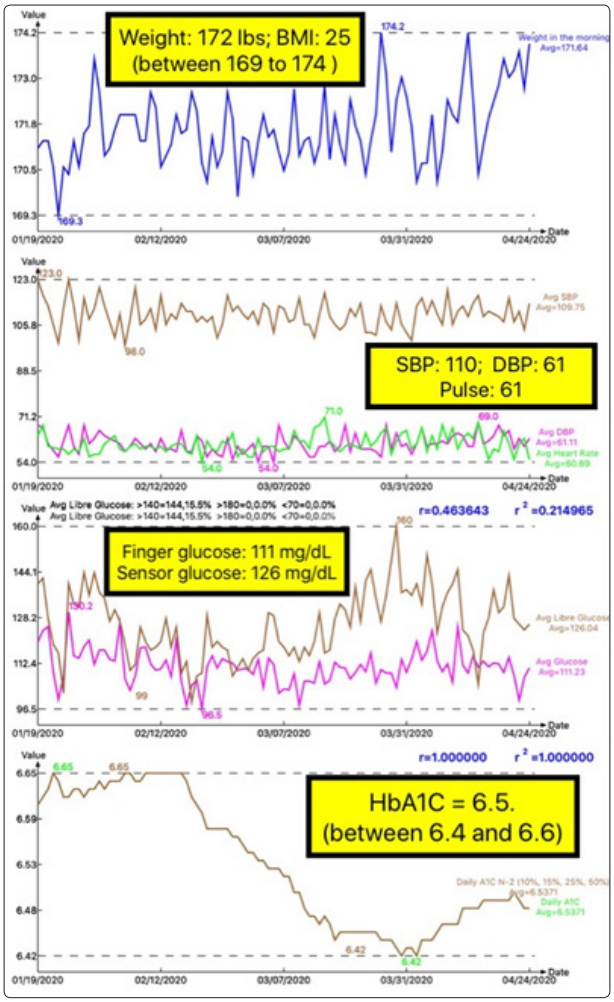

Figure 4: Metabolism outputs (M1 through M4) during COVID-19

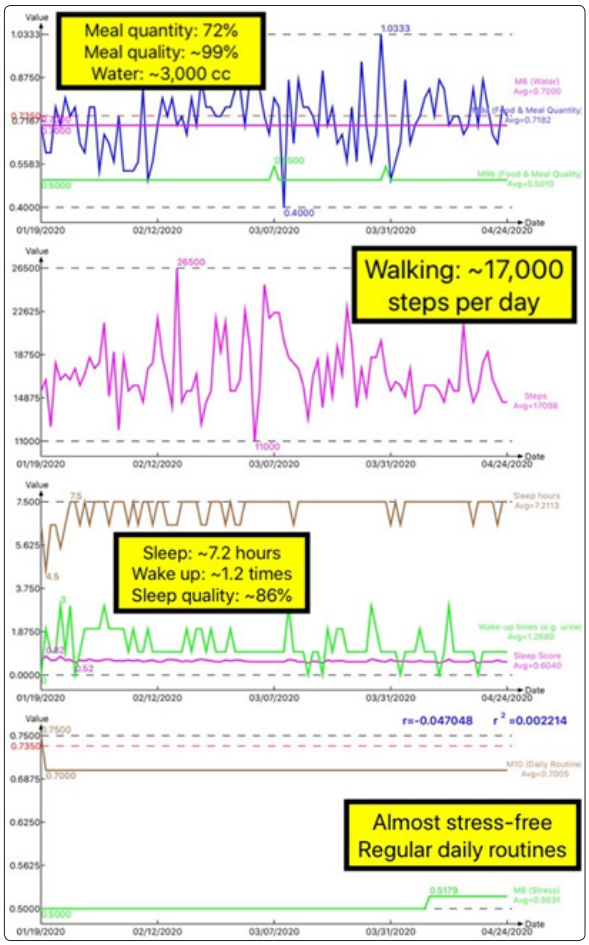

Figure 5: Metabolism inputs (M5 through M10) during COVID-19

The bold italic statements are for COVID-19 period.

M1 (weight): 176.7 lbs. (decreased from 198 lbs.) and ***172 lbs. (BMI 25)***

M2 (glucose): 124 mg/dL (decreased from 280 mg/dL) and ***111 mg/dL***

M3 (blood pressure: SBP/ DBP): 111/68 (decreased from 139/96) and ***110/61***

M4 (lipid: triglyceride/HDL/LDL/total cholesterols): 125/39/96/144, ***no lipid data available due to virus***

M5 (exercise): 15,800 walking steps (increased from ~5,000 steps / day) and ***17,000 steps***

M6 (drinking water): 2,837 cc / day (increased from ~500 cc / day) and ***3,000 cc / day***

M7 (sleep): 83% satisfaction level; with 7 hours of sleep time and 1.5 wakeup times per night and ***7.2 sleeping hours with 1.2 wake up times***

M8 (stress): 95% stress satisfaction level, almost lived a "stress-free" life and ***99.4% stress satisfaction level***

M9 (food & meal): 68% satisfaction level; with a daily food portion at 84% of previous food intake per meal and 95% satisfaction level of food and meal quality standard and ***72% food quantity (portion control) with 99% food quality (very well-balanced nutritious food)***

M10 (daily routine): 96% satisfaction level; have a very stabilized and regular daily normal routine life pattern and ***99% high regularity of daily life routines***

The author's overall metabolism index (MI) score has decreased from 102% prior 2014 to below 60% after 2015 and furthermore ***down to 53% of MI during this COVID-19 period***.

In summary, three basic lifestyle rules have been followed:
1. Eat high protein foods and fresh vegetables, avoid processed, starchy, and sugar-content foods
2. Walk 4-8 miles (9,000-18,000 steps or 6-11 km) per day
3. Sleep well, avoid stress (e.g. avoid listening or reading too many virus-related negative news), and keep a normal life-routines (except social-distance).

Patients B, C, and D have been advised to follow the similar lifestyle management guidelines; therefore, during this COVID-19 period, Case B and Case C are able to keep their weight (no weight gain) and glucose (< 120 mg/dL) conditions under control without taking any diabetes medications. Case D has just started her daily routines by following these guidelines.

He also believes that those efforts on metabolic maintenance and improvement should ultimately strengthen their overall immunity to protect themselves against threats from COVID-19 infection.

Psychological Disorder

Patient E has BPD since her childhood but without any chronic disease. The following items list her behaviors, stimulators, and treatments:
1. Abnormal behaviors: including anxiety, depression, mood swings, anger, and fear of abandonment.
2. Possible stimulators: including negative news of virus, mortality of COVID-19, flashbacks, normal routine life pattern changes, school-aged children staying at home for a long period.
3. On-going treatments: including verbal expression of care and love, non-abandonment reassurance, additional financial assistance for online purchase of livelihood items, telemedicine with a remote psychotherapist.

As a result, Patient E is living a calmer life during COVID-19 epidemic.

Borderline personality disorder is a life-time issue and it cannot be cured. Childhood abandonment and long-term emotional abuse has already caused "permanent" damage and emotional scars on her personality and behaviors. Showing love and care by her loved ones can definitely comfort her emotional ups and downs. It took many years to earn the patient's partial trust and conditional acceptance. How can we blame a child when her own parents abandoned her either emotionally or physically when she was so young? When a new traumatized event suddenly occurs later in her life, such as the life-threatening COVID-19, it brings back an internal feeling or some vivid memories or images. This situation is difficult for a psychological disorder patient to deal with. Only unconditional love, emotional care, and persistent real actions (i.e. patience) can eventually calm down and help this patient, whether during COVID-19 period or not.

Conclusions

COVID-19 is more than 100 times worse as compared to SARS in 2003, in terms of its spreading scope, mortality rate, and emotional impact on the world. People belonging to "weaker" groups, such as age (elderly), physical (existing chronic diseases and their complications history), or psychological (personality disorder), require additional attention, care, and assistance. Unfortunately, some ridiculous opinions have appeared and circulated on the internet that COVID-19 can wipe out these weak people in order to reduce the government's social welfare burden. Only an immoral person can think this way.

On the other hand, the author also saw positive signs of the human spirit when he read the following news items:
1. An old person in New York volunteered his hospital bed to rescue a younger patient.
2. 76,000 retired healthcare professionals went back to their old post to fight against the virus in New York City.
3. 25,000 retired healthcare professionals signed up on the first day to go back to their old post to fight against the virus in California.
4. Due to limited information, estimated thousands of healthcare professionals from all over China have already died in Wuhan to rescue COVID-19 patients.

This article is based on the author's own knowledge and specific practices to protect certain patients, either physiological or psychological, over the past 97 days in United States. He hopes his knowledge in this field can help other patients to strengthen their metabolism and immunity to fight against COVID-19 effectively. His knowledge and past working experiences on helping BPD patients can offer some guidance to provide emotional help or assistance to other PD patients in order to survive through this difficult period.

References

1. Joshua A. Davis New York-Presbyterian Hospital, New York, NY., "COVID-19 at NYPH: What Are the Basics of the Disease, Symptoms and Risk Factors for Non-Critically Ill Patients?"
2. Gerald C. Hsu (2020) Linkage among metabolism, immune system, and various diseases using GH-Method: math-physical medicine (MPM). Archives of Infectious Diseases & Therapy 4: 23-25.