Modeling Biological Rhythms to Predict Mental and Physical Readiness

The Utilization of Telemedicine to treat Mental Illnesses in Patients with Chronic Diseases

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis – Related Assignments

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Mental Health Rates

As our society continues to advance over time, the prevalence of mental health disorders in our population has become more apparent. In 2001, the World Health Organization (WHO) estimated that around 25 percent of the world's population is affected by a mental health disorder at some point in his or her life.[1] To put that into perspective, that means nearly 2 billion people will be affected by a mental health disorder throughout their lives. In the United States alone, this number is just as astonishing with nearly 57 million people affected by mental and behavioral health conditions.[2] Other sources site the number of people affected by mental illnesses as high as a staggering 46 percent of adults in the United States. Even though the exact number of people who experience mental illnesses throughout their lifetime may be challenging to calculate, these numbers shed light on something that has historically not been talked about. Millions of people around the world live with some form of mental illness, and addressing the elephant in the room has the potential to benefit billions of lives. By spreading awareness about the prevalence of mental health illnesses, our society can eliminate the stigma and touch the lives of so many that feel they are alone.

Stigma of mental health

Although mental health illnesses within the US and around the world are experienced at an alarmingly high rate, the stigma surrounding mental health remains in our society. A study published in 2002 in World Psychiatry, a journal of the World Psychiatric Association, looked to examine the stigma associated with those who have

mental illnesses. The paper highlights two major types of stigmas associated with those with mental illnesses: public stigma and self-stigma.[3] First, public stigma accounts for the stigma a general population or society has towards mental illnesses. And secondly, self-stigma, which accounts for people with mental illnesses who will "believe they are less valued because of their psychiatric disorder".[3] Both forms of stigma can have immense impacts on those living with mental health illnesses, and each hampers peoples' ability to feel welcomed into society.

Many additional studies have been conducted to demonstrate the stigma surrounding mental health illnesses. A paper published in the Journal of Youth and Adolescence referenced a study by the US Public Health Service in 2000 stating, "more than 70% of teens who require mental health care do not receive services".[4] This statistic is extremely high and points to the problem that individuals are reluctant to receive help for their mental health illnesses. Societal and personal stigmas are likely to play a role in why those numbers are so high, and eliminating those stigmas could help millions of people who are in need of help but don't receive treatment.

While it is clear that societal stigmas surrounding mental health illnesses still exist, there has been an increase in efforts in pop culture and entertainment to raise awareness. For example, one powerful song by the rapper Logic titled *1-800-273-8255* featuring other famous artists Alessia Cara and Khalid looks to bring attention to suicide rates in the US and around the world. The title of the song itself is the suicide hotline number in the United States, and it hopes to decrease the stigma and encourage people to call if necessary. A live performance of the song was done at the 2017 Video Music Awards and involved attempted suicide survivors that rang a powerful message around

the world.[5] Additionally, Kanye West, one of the most well known artists in the world, has frequently talked about his struggle with mental illnesses in interviews and through music. In his 2018 album titled *Ye*, the album cover reads, "I hate being Bi-Polar its awesome". Acts such as these shed light on the various types of mental illnesses experienced by people, and all try to spread the message that people struggling with mental illnesses are not alone.

Occurrence of Chronic Diseases

While many people in the United States are affected by mental illnesses, one population that stands out is people with chronic diseases. In 2009, it was reported that nearly half of all people in the United States, 145 million, were living with a chronic condition.[6] These can include common diseases such as heart disease, arthritis, diabetes, and many others. Due to high stress from chronic disease treatments, cost of medical care, and uncertainty about the future, many people with chronic diseases report having related mental illnesses. For example, the National Center for Chronic Disease and Health Promotion reported that patients with cardiovascular diseases, cerebrovascular diseases, and cancer, also experienced depression at rates of 17%, 23%, and 40% respectively.[7] As demonstrated by these numbers, living with chronic diseases can be taxing on individuals' mental health, and living with chronic diseases can often lead to mental illnesses such as depression. However, mental illnesses resulting from chronic diseases are by no means confined to depression. Another common mental illness that results from other diseases is anxiety. For example, in a study published in Science Direct, people with epilepsy reported having anxiety rates as high as 20%.[8] Additionally, a different study published in Biomedcentral concluded that in a sample population of

people with type 2 diabetes, 57.9% of patients reported experiencing anxiety, depression, or both.[9] The presence of mental illnesses in patients with chronic diseases is not limited to the mentioned conditions, but the overall message remains the same: patients with chronic diseases are at high risk of developing mental health illnesses. Since this segment of the US population is so immense, there is a tremendous amount of opportunity to help millions of people deal with mental health illnesses caused by chronic diseases.

Use of Telemedicine to Treat Mental Health Illnesses

With such high rates of mental illnesses around the world, the question still remains: "how should we address the exceedingly high rates of mental illnesses"? Like many other aspects of our lives, technology has potential to provide many benefits in the world of mental illnesses. One use case in particular is the rising emergence of telepsychiatry in the world of medicine. As defined by the American Psychiatric Association's website, telepsychiatry is defined as the follows, "Telepsychiatry, a subset of telemedicine, can involve providing a range of services including psychiatric evaluations, therapy (individual therapy, group therapy, family therapy), patient education and medication management".[10] This branch of telemedicine has become increasingly popular in the age of advanced technology, and it has become a critical part of peoples' mental healthcare routine.

Through the use of telepsychiatry, a new age of addressing mental health illnesses has started to blossom. With the improvements in modern day technology, physicians can see patients virtually and complete everything they would in an in-person screening through videos, web conferencing, and other methods. Although it seems that evaluating

patients virtually through web conferencing and other means may be bizarre, the benefits

shown through practices such as telepsychiatry are tremendous. First, as the American

Psychiatric Association website sites, "some people may be more relaxed and willing to

open up from the comfort of their home or a convenient local facility".[10] Not only does

this point speak to the benefits of virtual mental health care, but it also highlights the

different treatment methods for physical versus mental illnesses. While it would be

foolish to try and treat a broken arm over a computer screen, addressing mental health

illnesses virtually is a completely different story. Throughout the treatment of mental

illnesses, making sure the patient is comfortable to talk about his or her experiences is

critical, and virtual health care has been shown to do exactly that. This can be beneficial

to millions of people around the world, and help those who suffer from mental illnesses

tremendously.

An additional benefit of telepsychiatry is the ability to increase care to

populations that would otherwise not have mental health treatments. Yet another

population that can benefit from virtual mental health care is people who live in rural

areas. Having the ability to call a physician without having to travel hours for care is

critical for some people, and could be the difference between receiving care and not

receiving care. Lastly, the benefits of virtual mental health care can be seen in settings

such as emergency rooms. As another benefit of telepsychiatry, the American Psychiatry

Association states, "Telepsychiatry is helping bring more timely psychiatric care to

emergency rooms. An estimated one in eight emergency room visits involves a mental

health and/or substance use condition, according to the Agency for Healthcare Research

and Quality. Many emergency rooms are not equipped to handle people with serious

mental health issues and do not have psychiatrists or other mental health clinicians on staff to assess and treat mental health problems. A 2016 poll of emergency room physicians found only 17 percent reported having a psychiatrist on call to respond to psychiatric emergencies".[10] In the case of emergency rooms, there is a clear need for additional mental health care, and the use of telepsychiatry and other technologies could be a phenomenal stepping stone into addressing those problems.

With respect to the population of individuals that live with a chronic disease and experience mental illnesses because of it, telemedicine can be transformative. While these people have been living with a chronic illness for a while, it may still be difficult to discuss their mental health. The implementation of telemedicine in these patients' lives may be able to resolve those problems. One example could be the practice of sending out virtual surveys or questionnaires frequently to patients who live with a chronic illness. Through virtual surveys, these patients could be checked on and scanned more frequently without them having to travel to a doctor's office or wait to talk about their mental health illnesses the next time they go in to see their physician. Additionally, an exceptional benefit is the ability to connect with people all around the world virtually. One of the most amazing feats of modern day technology is the ability to connect with other people around the world that one would not have had an interaction with otherwise. Through telemedicine, patients living with a chronic disease such as diabetes or cancer could connect with others who are going through similar challenges and be able to talk about their shared experiences. This could help millions of people who feel they are alone going through such events and change many peoples' overall outlook on life.

<u>Utilization of STS Frameworks</u>

In evaluating the system of people who live with a chronic disease and also struggle with mental health illnesses, it is useful to utilize STS frameworks. One valuable framework in particular is Actor Network Theory. When examining mental health illnesses in our modern day society, there are so many components to evaluate in the network. Of course, the interaction between those who struggle with mental health illnesses and society cannot be ignored. As mentioned above, society plays a major role in determining whether or not people seek out treatment, and many do not search for treatment options because of the stigma placed on patients with mental health illnesses. Furthermore, the collaboration of trading zones and telemedicine could be life changing for those who would not originally have access to mental health care. For example, if someone were from a region of the world where there is no mental health care available, the spread of information through telemedicine could open up so many new doors. With the click of a button, a person suffering from mental health illnesses could be exposed to endless resources to help them live a better life and connect them with needed physicians. Although how these systems can be implemented all throughout the world has yet to be solved, the foundation continues to grow, and the potential to help more and more people increases every day. Through these frameworks, one can examine the interactions between new technology and mental health care and become one step closer to a world where anyone who needs help can be helped.

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