Lowering Depression and Anxiety: A Quantitative Research on the Relationship of Six Common Habits on Human's Mental Health

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I. INTRODUCTION AND PROBLEM STATEMENT

Depression and anxiety are two widespread types of disorders that endures a tremendous consequence on human life. The World Health Organization (WHO) has ranked depression as the fourth leading cause of human disability. By 2020, it reaches to second leading cause [9]. Many researches touch the symptoms of anxiety and depression. As an example, depression causes health complications [22], cardiovascular diseases [4], in some cases increases the risk of cardiovascular by 80% [15]. In case of anxiety, in average, up to 33.7% of the human populations experiences it in their life time [2]. Anxiety not only affects physically but causes learning and reasoning incapacities [17][5]. Clearly, they are two big risks factors for human life. This proposal analyzes data from the Behavioral Risk Factor Surveillance System (BRFSS) of several years. It tries to find a relationship between six habit factors (physical activity, eating disorder, smoking, drinking alcohol, social media, and education/technology) and depression and anxiety. It proposes a solution that could lead to reduction of depression and anxiety in the society.

II. OBJECTIVE

○ *What this research is trying to accomplish?*
Identifying the relation between the six factors and depression and anxiety. And provide guidelines based on the six factors to reduce depression and anxiety in human life.

○ *How is research in this field is done today; what are the limits of current practice?*
Majority of research papers on anxiety and depression covers few variables. This limits the scope of influence in exacerbating these disorder.

○ *What's new to this research? Why will it be successful?*
This research investigates more recent dominant habits. The outcome of the research provides guidance for larger body of human society. The key to success of this research is data and linking data to the right conclusion. BRFSS is a known data that would pave the path for success of the research.

○ *Who cares?*
The general public, medical society, insurance industry, and corporation. Depression and anxiety are felt in each and every part of the human life and it is in interest of all above mentioned to control or reduce outcome of anxiety and depression affect.

○ *If this research is successful, what difference and impact will it make, and how do you measure them?*
Different sectors of human society can use the guidance to avoid anxiety and depression and identify them at the early stages of the disease. It will provide recipes to various human resource organization on how to avoid anxiety and depression. Surveys such as BRFSS and local and internal surveys can provide a great measure on how this research impacted them.

○ *What are the risks and payoffs?*
The risk is to convince mass public, human resource organizations, and small to large companies that the results of this research will indeed assist them get better and faster results. The payoffs are happier work, happier life, happier families, and happier society.

○ *How much will it cost?*
The biggest cost is the time. The data is available, but it needs to be cleaned, information to be extracted and analyzed. At this stage, we anticipate 150 to 200 hours of scientific work.

○ *How long will it take?*
The research can be done in 3 to 6 months. But we are going to start with only 6 factors and hopefully start the spark for future research.

○ *How will progress be measured.*
The progress of this research is measured by first establishing a clear connection between the six habits and anxiety and depression. Second understanding the nature of the cause and effects. And third by providing the golden guidelines for various parties.

III. LITERATUR REVIEW

○ *The effects of physical activity?*
We have studied three research papers. The [20] paper provided a survey on the association between physical and therapeutic activity on depression and anxiety. The [11] paper analyzes multiple databases to identify factors causing depression as well as examine whether physical activity prevents depression. Both show that physical activity reduces and, in some cases, prevents depression and anxiety. The criticism on these papers are that they do not pay adequate attention to symptoms and approaches to deal with depression and anxiety as well as benefits of exercise training. Interestingly, the [21] found that there is no relation between

vigorous physical activity and mental health or well-being. We believe the reason of this results is the vigorous nature of physical activity.

○ *The effects of alcohol abuse and smoking?*
We picked four papers [8][19][1][14] , all corroborated our hypothesis that abusing alcohol and smoking leads to anxiety and depression. Two of the researches used the BRFSS data set. These are valuable research to us. Almost all of them did show a shortcoming that the effects on mental health goes beyond one to two variables. Interestingly, research [14] from 96 advised school to look into using smoke to help teenagers cope with depression. We are not going to use this paper. Smoking may temporarily alleviate depression but it leads to more mental and health symptoms.

○ *The effects of social media and knowledge?*
We have studied three research papers in this topic. They show a strong correlation between social media and depression and anxiety. The paper [10] emphasizes on the correlation between social media and depression while considering other environmental and other factors such as family and financial. The second paper [7] analyzes social networking sites and the relation to depression in older adolescents. The participants used have small age difference which lowers the risk of many environmental factors skewing the results. The third paper [23] analyzes the use of social media and how it relates to depression, anxiety, sleep quality and self-esteem in adolescents. The resreach does lack analyzing the effects on day time of the users

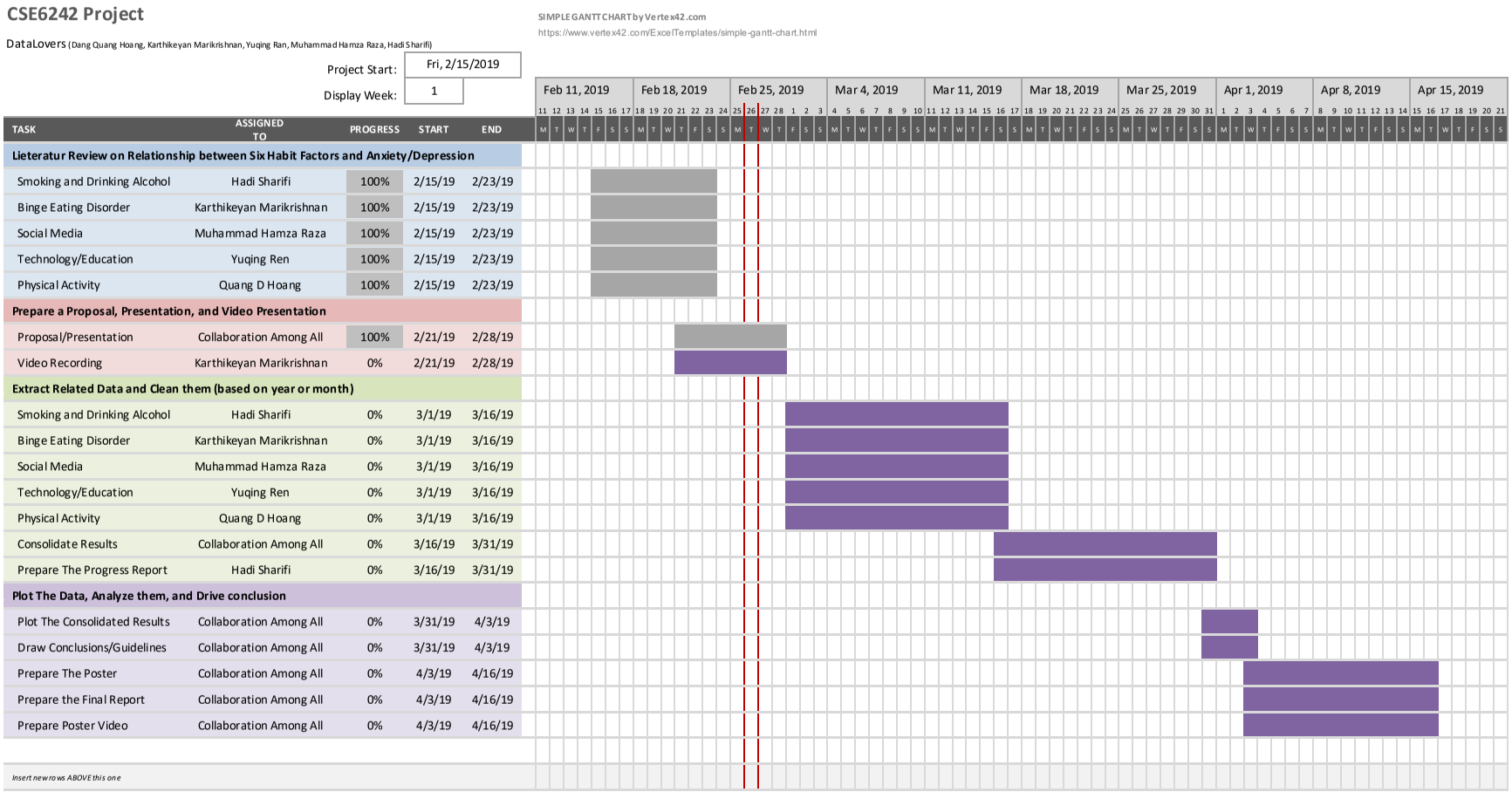
○ *The effects of technology/education?*
We have studied three papers [6][3][13]. All show positive correlation between factors such as high usage of smartphone, low education level and type 2 diabetes, and depression and anxiety. They have confirmed our hypothesis that smartphone/education/diabetes are among leading factors of depression disorder and anxiety. All three papers touch particular aspects of technology and we think we should follow the same trend. We may focus on a particular technology, such as cellphone, instead of "technology" in general.

○ *The effects of eating disorder?*
The first of the three papers [16] shows that eating disorder leads to stress and anxiety in high school girls. The second paper [12] shows that women with eating disorder get highly stressed and the stress led to anxiety behaviors. They also concluded that traditional female role causes these symptoms. The third paper [18] shows genetically some patients are showing symptoms of eating disorder. This genetic issue leads to other issues such as depression and anxiety. The criticism we have on these papers that they only pick female population. For our research we will use these papers nevertheless, we will make sure to use data for both male and female.

IV. METHODLOGY

At this point, We are planning to use python/pandas to program, openRefine to clean data, and D3 for visualization. This may change when the project evolves. Each member extract data of topic assigned to, clean it, and format it. From that point, we analyze the data, get conclusions, and produce the guidelines. Figure 1 shows the details on how various tasks are distributed among team members and how the timeline is formed to reach all the deadlines.

Figure 1: The schedule of the team for the research.



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