

Mental disorder, a diagnosis of a behavioral or mental pattern that may cause suffering and/or impact one's ability to function on a day-to-day basis. Causes of mental disorder are unclear with theories incorporating findings from a range of fields. They are often defined by a combination of how a person behaves, feels, perceives, or thinks and is associated in a social context.

In 2015, the National Institute of Mental Health (NIMH) presented a survey looking at the prevalence of mental disorders in U.S. adults aged 18 and older. Assessing mood, anxiety, eating, impulse control, substance use, adjustment disorders, and psychotic symptoms and found an estimate of 43.4 million adults, about 17.9% of the adult population had a mental disorder. Additionally, the survey looked at the prevalence of serious mental disorders which involved a mental disorder that had a serious functional impairment which substantially interferes with or limits one or more major life activity and estimated that 9.8 million adults diagnosed.

This is important to talk about, and we don't want to just focus on the treatments but rather on what is causing people to experience mental disorder(s)? Why is it that some people are diagnosed with a mental disorder and others are not? We believe that if these questions are answered, then we will be better off in finding appropriate preventative and treatment measures.

Are we born with it?

A lot of times we hear that medical abnormalities or disorders are caused by our genetic inheritance. The genetic composition that one acquires through inherited parental chromosomes. We often hear or say something like "addiction runs in my family, so I'll probably have it" – but is this assumption accurate? Is it already predetermined that I will suffer from addiction because my parents do?

Our understanding behind molecular makeup is relatively new, arguably the first scientific proof that a human disease is caused by abnormalities within the DNA that result in protein structure change was found in 1949 by Linus Pauling and publishers of "Sickle Cell Anemia, a Molecular Disease". With this success, Pauling went off to speculate such molecular influence could be responsible for other diseases, including mental disorders.

Are we a product of our environment?

A secondary contributing factor regarding mental disorder diagnosis or prevalence can be described through epigenetics. This looks at the heritable changes in gene expression (active vs. inactive genes) that does not involve changes to the underlining DNA sequence. Essentially it is a change in the phenotype without a change in the genotype, which affects how the cells read these genes. Epigenetic change is a regular and natural phenomenon but can also be influenced by several external factors such as age, lifestyle, environment, and physical/medical state.

Epigenetics is also relatively new, originally coined in 1942 by Conrad H. Waddington which was derived from the Greek term "epigenesis", describing the influence of genetic processes on development.

We want to focus on the influencing factors associated with epigenetic change, that is more specifically how one's lifestyle and environment contributes to the likelihood of being diagnosed with a mental

disorder. This is a never-ending list, but for simplicity we will only discuss nutrition. We believe that there is a strong impact on one's mental health and is something that we have control over.

Starting off with a quote, "let food be thy medicine and medicine be thy food" Hippocrates, 431 B.C.

Food has been cited for its healing properties by cultures worldwide throughout history and within the last few decades, there has been a growing interest in clinical research that looks at the specific health benefits food can offer and identify the various nutrients associated with these benefits. However, despite this enriched history advocating healthy eating and healthy living, it is disturbing how, especially in westernized cultures, we are seeing the society neglect food. That many of us are guilty of ignoring one of the most vital parts of our existence. We need to eat. Food is just as important as our need to breathe oxygen and drink water. And we are eating, a lot, but with little to no recollection of what we are putting in our bodies or how much we are actually eating. This is reflective in the obesity report rating in Canada within 2010-2014 showing the progression of prevalence in adults aged 18 and over. The report showed a total obesity percentage in both men and women was at 54% in 2014, with males showing higher prevalence than females at 62 to 46%, respectively. And these numbers continue to grow.

I had the pleasure in meeting an independent academic scientist, Dr. Bonnie Kaplan who has championed micronutrient research and its effects on mental health. Her main focus of interest is brain chemistry, which is how our brain's chemical messaging can occur and what factors influence them? In her research and public talks she highlights the significance of what we eat and its impact on our mental health.

The brain only accounts for about 2% of our body weight but it represents 20-50% of our metabolic demands, this means that about half of what we eat is being used by our brains. So eating is important! Unfortunately, the weight of what we are eating is heavily disproportionate. For more context, our diet consists of macronutrients including fats, proteins and carbohydrates; micronutrients – vitamins and minerals; and water. All of which can be consumed in either one or all of the 4 food groups: vegetables and fruits, meat and alternatives, grains, and milk and alternatives. A 5<sup>th</sup> group is added called "other" and consists of high processed, sugary, salty and fatty foods with very little to no nutritional value.

Statistics Canada identified that a majority of Canadians in 2004 eat fewer than the recommended daily intake of grains, vegetables and fruit and milk and alternative foods per day. Consumption of meat and alternatives was the only food group that showed adequate values, however it is speculated that intake is primarily meat products and often excludes alternative sources like nuts and legumes. Food in the "other" category accounted for 22% of total caloric intake.

What does this tell us? That Canadians are not eating enough whole foods, we are eating too much animal based meat products and high processed sugary, salty and fatty foods. But how does this affect our mental health.

Dr. Kaplan discussed with me on the chemical breakdown of foods with an example using Tryptophan, an amino acid found in food, into serotonin, the neurotransmitter associated with mood regulation. In this example, she highlights only a small segment of the chemical process to show the number of vitamins

and minerals required for this breakdown to occur: copper, vitamin B6, and iron. If someone were to only eat foods from the “other” food group, they would deplete themselves of these nutrients. However the ones identified in the example comes from meat and alternatives which as mentioned before is not an issue.

In her talk, she notes previous studies, some of which she took part in. one being a longitudinal study of diet quality and mood, the study set a baseline of commercial baked goods and fast foods. They divided the sample into 3rds at low, medium and high risk of depression based on what dietary baseline they had and followed them for years to determine the risk for developing depression. What they found was at an average of 6.2 years and about 9000 people those listed in group 1 had the lowest risk and those in group 3 had the highest risk.

Even though there is a mountain of evidence linking diet and mental health, why are people who eat a diet of “other” foods don’t experience mental disorders? Dr. Kaplan believes there is defiantly something else at play.

As we conclude this podcast, we like to thank you for listening, we understand that mental disorders is a broad and complex subject so we encourage you to keep the conversation going. What do you think? Is it something inherited or is it influenced by our environment and lifestyle? Before we go we’d like to pass on some services for those suffering from mental disorder. In Alberta you can reach Alberta Health Link at 811, its open 24/7 and provides confidential services. For specific Alberta mental health services there is the mental health helpline at 18773032642, again its open 24/7. At Mount Royal University Wellness Center, it offers great mental health support including counseling which can be contacted at 4034406362, it offers 1 on 1 and peer counseling. For serious emergencies, you can also contact 911.