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All around the world there is an illness infecting a number of people. However this is not an illness like the flu, HIV/AIDS or even heart problems. This is an illness that affects the mind and unlike most illnesses this is not contagious, or something you just wake up with. This illness affects the mental state of people and whether it’s a small case or large case of “Mental Disorder”, each case is as important as the next which is why we should support the treatment of these mental diseases.

In the United States there were exactly 9.6 million adults from ages 18 and up in 2012 that were diagnosed with a serious mental illness. That totals up to 4.1 percent of all US adults, which is a pretty significant percent. Of the 4.1 percent of adults diagnosed with SMI (serious mental illness) just about 58.7 percent of them were receiving some type of treatment. (National Survey on Drug Use and Health, 2008) In order to properly treat those 58.7 percent (NSDUH, 2008) and possibly expand the percentage of adults getting treatment, one must be sure that today's treatment for SMI is effective. Currently the treatments for mental illness prove highly efficient with 70-90% of people experiencing symptoms to a lesser degree and an improved lifestyle. (http://www.nami.org) Such a great percentage proves that today’s mental disorder treatments such as medication, psychotherapy, brain stimulation treatment, and others is effective. To show this one must first learn how a normal brain unaffected by mental illness functions, then compare the results to how a brain with mental illness works. A look must then be taken at the variety of treatments for theses illnesses and how each one works to treat the many different illnesses and how effective they are.

<http://www.nimh.nih.gov/Statistics/3USE_MT_ADULT.shtml>

<http://www.nami.org/template.cfm?section=about_mental_illness>

A healthy brain functions smoothly and without problems that would tend to occur in a brains affected by mental diseases. Before one can understand how the brain functions one must first know what the brain consists of. The human brain can be categorized into three main parts; the forebrain, midbrain, and hindbrain. (<http://www.ninds.nih.gov>) Each section of the brain does different things, controls different things, and stores different things.

The forebrain is in charge of getting and processing sensory information, controlling motor function, thinking, and perceiving; to name a few. It can be divided into two sections; the diencephalon (which contains the hypothalamus and thalamus) and the telencephalon. The hypothalamus, located in the inner brain, directs many important functions such as waking you up and is an essential emotion center. Also located in the forebrain section is the cerebrum (cerebral cortex), the largest part of the brain.

The cerebrum lies in the telencephalon and is in charge of higher brain functions. The cerebrum is also the largest and uppermost portion of the brain. The Cerebrum consists of the cerebral hemisphere and accounts for two-thirds of the total weight of the brain. One hemisphere, usually the left, is functionally dominant, controlling language and speech. The other hemisphere interprets visual and spatial information. The left and right hemisphere can be broken up into two sections each, coming to a total of four sections called lobes. Each lobe is in charge of a different function, the names of each of these lobes are the temporal lobe, frontal lobe, occipital lobe, and parietal lobe.

The midbrain helps with visual and auditory responses and motor control. The midbrain combined with the hindbrain is the brainstem. The portion of the brainstem that lies in the midbrain connects the forebrain and hindbrain. What extends from the spinal cord is called the hindbrain. Made up of the myelencephalon and metencephalon; it is responsible for digestion, breathing, and maintaining equilibrium and balance. The cerebellum also is located in the hindbrain and coordinates movement. (Regina Bailey)

The brain consists of neurotransmitters that can correctly send messages between neurons smoothly and without problems. A neuron consists of three basic parts, the cell body, dendrites, and axon. In the cell body is the nucleus, where molecules necessary to neuronsare made.The dendrites branches off from the cell body act as a neuron's point of interaction for receiving electrical and chemical signals referred to as impulses from neighboring neurons. They send signals to the axon, which are in charge of meeting and delivering impulses to other nerve cells. Once the signals have reached the end of the axon tiny sacs are released into the synapse called neurotransmitters. Neurotransmitters play an important part in a chemical synapse, which refers to the junction point between two neurons. (<http://www.ninds.nih.gov>) The process of synapse starts off with neurotransmitters located in the terminal button of the presynaptic neuron's axon. More specifically in the spherical vesicles that the terminal button contains. These neurotransmitters go through a process called exocytosis where they are secreted into the synaptic gap. They then cross the gap and attach to the membrane receptors.

Acetylcholine is one of the more popular known neurotransmitters. It's widely distributed and initiates muscle contraction and affects the excretion of specific hormones. A lack of acetylcholine tends to relate to Alzheimer's disease. Dopamine is a neurotransmitter active in controlling posture and movement. It inflects moods and plays an important role in dependency and positive reinforcement. A common trait of Parkinson’s disease known as muscle rigidity is typically caused by loss of Dopamine in the brain. GAMBA (gamma-amino butyric acid) is another popular neurotransmitter and is inhibitory. It is located in the neurons of the cortex and aids in certain cortical functions such as vision, motor control, and other cortical functions. Drugs that cause an increase in levels of GAMBA can be used to treat symptoms of Huntington’s disease and treat epilepsy. (Bruno Dubuc) After the points stated in my first defense, this leads to my second defense.  
The brain functions differently when affected with mental disorders such as anxiety, mood, and personality disorders. There are changes to the neurotransmitters when the brain is affected by a mental disorder. Mental illness, such as depression, can occur when the process of neurotransmitters send chemical messages between neurons does not work properly. Communications between neurons can also be electrical, and electrical signals are abnormal, they may cause symptoms found in Parkinson's Disease.

Glutamate, the most common neurotransmitter, has many roles throughout the brain and problems in making or using glutamate have been linked to many mental disorders such as Obsessive Compulsive Disorder (OCD), depression, and schizophrenia. The different regions in the brain such as the Amygdala, Hippocampus, and Prefrontal Cortex react and work differently when ridden with certain mental disorders. Research shows people affected by Post Traumatic Stress Syndrome (PTSD) or Attention Deficit Hyperactivity Disorder (ADHD), have decreased activity in their Prefrontal Cortex, where judgment and decision making happens. The Anterior cingulate cortex, in charge of many roles such as controlling blood pressure and managing proper emotional reactions, when experiencing reduced activity or damage may be linked to certain disorders such as depression or schizophrenia.

The hippocampus helps create and file new memories, and when it becomes damaged it can prevents a person from creating new memories. It may be involved in mood disorders through control of the hypothalamic-pituitary-adrenal (HPA) axis, a major mood circuit. The neurons are affected in a brain with a mental disorder. Imbalance in specific types of neurotransmitters can cause abnormalities in the communication among neurons. Numerous brain disorders such as depression are linked to an excess or shortage of neurotransmitters. Neurotransmission is the constant exchange of messages between neurons. And it is common for many mental illnesses to be linked to a disruption in this brain circuitry. Transition Sentence: Now that my first and second defenses have been stated, this will lead to my third and final defense.

There are many treatments for mental diseases such as medication, psychotherapy, brain stimulation treatment, and others. Before getting treatment for a mental disorder, you must first get diagnosed. You can do this by taking certain exams and/or tests such as a physical exam, lab tests, or a physiological evaluation. There are several different categories of mental disorders you could be diagnosed under. These include; mood, anxiety, psychotic, personality and other disorders. A lab test may include a screening of alcohol or drugs or checking your thyroid function.

A pharmacological evaluation consists of a doctor or mental health provider talking to you about your symptoms and behavior pattern so he can best diagnose you. Today's treatments range from medications, psychotherapy, brain simulation treatment, and more. Psychiatric medications do not cure mental illness, but rather focuses on improving the symptoms. In short, medication helps the effected person go about their daily lives with a major reduction of the symptoms of their illness making their lives better and more manageable. Psychotherapy is the process of treating mental illness by talking about your condition and related issues with a mental health provider. The mental health care provider or therapist helps the person identify the origin of the illness and provide a possible solution. This approach is meant to make the person take on their illness and become a stronger person. Psychotherapy can often be successfully completed within a couple months. Psychotherapy can also go hand in hand with medication. The combination of medication and psychotherapy can help a person figure everything out faster and increase the likelihood of success. Brain-stimulation treatments are typically reserved for those who have unsuccessfully tried medication and psychotherapy. There are several different types of brain-stimulation therapy such as Electroconvulsive therapy (ETC), Repetitive transcranial magnetic stimulation (RTMS), Vagus nerve stimulation (VNS), Magnetic seizure therapy (MST), Deep brain stimulation (DBS).

First developed in 1938, electroconvulsive therapy (ECT) for years had a poor reputation with many negative depictions in popular culture. However, the procedure has improved significantly since its initial use and is safe and effective. People who undergo ECT do not feel any pain or discomfort during the procedure. Repetitive transcranial magnetic stimulation (rTMS) uses a magnet instead of an electrical current to activate the brain. First developed in 1985, rTMS has been studied as a possible treatment for depression, psychosis and other disorders since the mid-1990's. Vagus nerve stimulation (VNS) works through a device implanted under the skin that sends electrical pulses through the left vagus nerve. The vagus nerves carry messages from the brain to the body's major organs like the heart, lungs and intestines and to areas of the brain that control mood, sleep, and other functions. Magnetic seizure therapy (MST) borrows certain aspects from both ECT and RMTS like RMTS; it uses a magnetic pulse instead of electricity to stimulate a precise target in the brain. However, unlike RMTS, MST aims to induce a seizure like ECT. So the pulse is given at a higher frequency than that used in RMTS. Therefore, like ECT, the patient must be anesthetized and given a muscle relaxant to prevent movement. The goal of MST is to retain the effectiveness of ECT while reducing the cognitive side effects usually associated with it. Deep brain stimulation (DBS) was first developed as a treatment for Parkinson's disease to reduce tremor, stiffness, walking problems and uncontrollable movements. In DBS, a pair of electrodes is implanted in the brain and controlled by a generator that is implanted in the chest. Stimulation is continuous and its frequency and level is customized to the individual.

These are the different types of treatment for mental disorders, as you can tell each treatment works in its own way. The medication treatment focuses on correcting the chemical imbalances within the brain. Psychotherapy focuses on having the person talk things out and come to solutions to their problems through the psycho analysis of a therapist. Then there is brain-stimulation which covers a variety of treatment methods, including the very first treatment method. With this my third and final defense is now complete.

In conclusion,

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