Mental Well Being and Depression Among BS-MS Students at Institute of National Importance

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A dissertation submitted for the partial fulfilment of

BS-MS dual degree in science.

Indian Institute of Science Education and Research Mohali

April 2019

Certificate of Examination

This is to certify that the dissertation titled "Mental Well Being and Depression Among BS-MS Students at Institute of National Importance" submitted by **Mr. Sreenath. S.S (Reg. No. MS14163)** for the partial fulfilment of BS-MS dual degree programme of the Institute, has been examined by the thesis committee duly appointed by the Institute. The committee finds the work done by the candidate satisfactory and recommends that the report be accepted.

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Dated: April 18, 2019

Declaration

The work presented in this dissertation has been carried out by me under the guidance of Dr. Anu Sabhlok at the Indian Institute of Science Education and Research Mohali.

This work has not been submitted in part or in full for a degree, a diploma, or a fellowship to any other university or institute. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due acknowledgement of collaborative research and discussions. This thesis is a bonafide record of original work done by me and all sources listed within have been detailed in the bibliography.

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Dated: April 18, 2019

In my capacity as the supervisor of the candidate's project work, I certify that the above statements by the candidate are true to the best of my knowledge.

Dr. Anu Sabhlok

(Supervisor)

Acknowledgement

My first and foremost thanks is to my thesis supervisor Dr. Anu Sabhlok. It was a great experience to work under her guidance on a nice challenging problem. I appreciate her unique way of handling a student's doubt by providing him/her the correct line of thought and then allowing one to figure out by oneself, as it helped me learning many new things during the process. Along with her significant inputs, she also provided me enough freedom to approach the problem differently by encouraging new ideas.

I am grateful to Dr. V. Rajesh of IISER Mohali for helping with valuable suggestions, comment, and discussions and for providing guidance. I am thankful to Dr.N.G.Prasad of IISER Mohali for his valuable suggestions, discussions and guidance.

I am grateful to Dr. Sharvan Sehrawat of IISER Mohali who guided me in my PRJ501.

I thank my Jayashree Mazumder, Avinesh Kumar, Jorawar Singh, Sekhar M.A, Pardeep Kumar, Umang Gupta, Vishal Kumar Porwal, Samant Manas Arun, Asrith Krishna R, K M Sooraj Murali, former lab members for always being there for me and supporting me through up's and downs of my life.

I would like to sincerely acknowledge Department of Science and Technology (DST), Government of India for providing me INSPIRE fellowship. I am much thankful to IISER Mohali for providing me infrastructure and all technical support.

No acknowledgement would ever adequately express my gratitude to my family. Their moral support has always boosted my confidence and motivated me to achieve goals in my life. It is their love and affection which gives me a reason to succeed.

Sreenath. S.S

Dated: April 18, 2019

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Notation

- ANOVA - Analysis of Variable
- IISER Mohali - Indian Institute of Science Education and Research Mohali
- BS-MS - Bachelor of Science – Master of Science
- BECK-II - BECK-II Inventory
- NCBI - National Centre for Biotechnology Information
- WHO - World Health Organization
- HRD - Human Resource Development
- GBD - Global Burden of Disease
- KVPY - Kishore Vaigyanik Protsahan Yojana
- JEE Advanced - Joint Entrance Examination – Advanced
- IAT - IISER Aptitude Test
- NIMH - National Institute of Mental Health
- UNFPA - United Nations Population Fund

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Abstract

The study is to find out the emotional, mental health and depression among BS- MS students of Indian Institute of Science Education and Research Mohali (IISER Mohali). IISER Mohali student community is unique population as students from all over the India study together. The faculty and students are staying in the same campus. This study will help to understand the student community better and how they are doing mentally. To know the mental state of students BECK II inventory was used. The 633 students have volunteered out of which 608 students provided complete information. From the study it is found that 25.33% students have mild mood disturbance, 12.44% students have borderline clinical depression, 16.74% students have moderate depression, 4.97% students have severe depression and 2.03% students have extreme depression. The first and second year students are the most depressed with the figures reading 11.99% and 9.05% respectively. Final year students are the least depressed (2.04%). Among female students, 20.58% are depressed and among male students 15.61% are depressed, female students are more depressed than male students. 9 in every 22 female students and 8 in every 24 male students are either under borderline or moderate or severe or extreme depression. Financial instability is not a major cause for depression. Students from Northern Region of India are the most depressed (18.55%), followed by Southern Region of India (8.37%), Western Region of India (3.85%), Eastern Region of India (3.17%), Central Region of India (1.81%), and North-East region of India (0.45%). Students from the North-East Region of India are the least depressed. 151 students volunteered for in-depth interview out of which 46 interview was conducted by randomly picking them. The contributing factors for depression according to survey and in-depth interviews are academic pressure, almost or daily quarrel between parents, always worried about future, failing to have friend or friends, break up, cheated by your best friend or friends, cultural shock, high expectation from yourself, hopelessness, lack of dependable friend or friends, lack of involvement in extracurricular activities like sports, athletics , cultural and others, obsession or dislike with your appearance, social media addiction, stress related to choosing a major and poor academic performance, alcohol abuse, pornography, pressure from parents, friends and thesis guides.

Chapter 1: Introduction

1.1.Introduction

This thesis inquires into the mental health of students enrolled in an institute of national importance in India. These students secure admission through a highly competitive process and are considered often as "the cream of the nation." Does academic achievement translate into a well-balanced mental state? In what ways does mental health affect academic performance and bodily health? These are some of the questions that form the basis of this thesis.

The word mental health was introduced in the year 1946 (Bertolote *et. al.*, 2008*).* According to the National Centre for Biotechnology Information (NCBI) mental health means emotional, psychological, and social well-being of an individual or group. According to World Health Organization (WHO), mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (Galderisi *et. al*, 2015). This definition, while representing a substantial progress with respect to moving away from the conceptualization of mental health as a state of absence of mental illness, raises several concerns and lends itself to potential misunderstandings when it identifies positive feelings and positive functioning as key factors for mental health.

In fact, regarding well-being as a key aspect of mental health is difficult to reconcile with the many challenging life situations in which well-being may even be outwardly physically unhealthy: most people would consider an individual to be mentally unhealthy if the person experiences a state of well-being while killing several persons during a war action. It was also seen that a healthy person feeling desperate after being fired from his/her job in a situation in which occupational opportunities are scarce was also considered to be mentally ill.

People with good mental health are often sad, unwell, angry or unhappy, and this is part of a fully lived life for a human being. In spite of this, mental health has been often conceptualized as a purely positive affect, marked by feelings of happiness and sense of mastery over the environment (Waterman *et. al*, 1993, Diener *et. al,* 1999, Lamers *et.al*, 2011)

Concepts used in several papers on mental health include both key aspects of the WHO definition, i.e. positive emotions and positive functioning. Scholars have identified three components of mental health: emotional well-being, psychological well-being and social well-being. Emotional well-being includes happiness, interest in life, and satisfaction; psychological

well-being includes liking most parts of one's own personality, being good at managing the responsibilities of daily life, having good relationships with others, and being satisfied with one's own life; social well-being refers to positive functioning and involves having something to contribute to society (social contribution), feeling part of a community (social integration), believing that society is becoming a better place for all people (social actualization), and that the way society works makes sense to them (social coherence) (Keyes *et. al*, 2006, Bauer *et.al*, 2014).

However, such a perspective of mental health, influenced by hedonic and eudaimonic traditions, champions mostly positive emotions and excellence in functioning, respectively (Deci *et. al*, 2008). In this process, there is a high risk of excluding most adolescents, many of whom are somewhat shy, those who fight against perceived injustice and inequalities or are discouraged from doing so after years of useless efforts, as well as migrants and minorities experiencing rejection and discrimination.

The concept of positive functioning is also translated by several definitions and theories about mental health into the ability to work productively (Satcher *et. al*, 2000; WHO, 2004). This may lead to the wrong conclusion that an individual at an age or in a physical condition preventing her/him from working productively is not by definition in good mental health. There exists a gap in understanding how lack of interest in doing various things (like doing a job one doesn't like etc.) gives an outlook that one isn't mentally healthy. In reality it isn't. So sometimes people mistakenly relate the same person with someone who are physically and mentally healthy. This study has been designed to bridge this gap and understand the mental health of students and the various circumstances or symptoms describing the condition. A person who isn't mentally healthy may work and looks happy and this is the main reason why most of the students think that other person is much happier than him/her. Another example of the same is the masked depression. In both these instance people misjudge that the other person is mentally healthy and doing well. Working productively and fruitfully is often not possible for contextual reasons to understand the mental condition of the person who show least interest in contributing to their community or work (e.g., for migrants or for discriminated people).

Study of mind is as old as the age of human species. From ancient times people has relied on psychology to determine to know each other better like to know who is reliable, dependable and trust worthy. Psychological studies was not only limited to understand humans and human nature alone but it went beyond the concept of knowing personality and had taken steps in

studying dreams, mental illness and emotions. The earliest studies conducted by, Plato and Aristotle elaborated theories, and attempted to account for processes such as memory, perception and learning. This could be consider as one of the pioneer works from which the current modern history of psychology can be traced.

Early consideration of mental illness are based on up normal human behaviour like having suicidal thoughts or self-mutilation, unrealistic thoughts and perceptions mainly delusions and hallucinations, inappropriate emotions like extreme fear, sadness or joy etc. having an unpredictable behaviour means sudden shift in one's beliefs and emotions been considered as sings of psychopathology.

Early explanations of mental illness are mainly: biological explanations constructs abnormal behaviour in the medical model of mental illness. Psychological explanations means psychological events are the causes of abnormal behaviour. Supernatural explanations means during contributing super human forces as causal entities, for example, some people thought attack by wild animals, falling down or an enemy or drunkenness by mysterious forces. The thought of people before was that people who are having abnormal mental conditions is due to the activities of supernatural power or curses. Greeks naturalistic approach to abnormal mental conditions through medication has overthrown the thought of supernatural powers and curses. When Greeks collapsed and Roman Empire became dominant the ideology of supernatural mental illness again start appearing and it persisted till 18th century.

Early approaches to the treatment of mental illness was psychological approach means when the factors such as fear, frustration, guilt, anxiety or conflict were viewed as cause of mental illness, treatment was aimed at those factors. Interestingly there was thought that was common during 18th century is natural law which stated that that you get what you deserve in life. The supernatural approach had three ways of treating a patient by using sympathetic magic, homeopathic magic and contagious magic. Later in 19th century with advancement of psychology people has start using hypnotism and Franz Anton Mesmer was behind this idea.

Psychology today is a well-established area of study. American Psychological Association (APA) has 54 diverse divisions. APA was formed in 1892 with the aim of promoting psychology as science. In 1896 Witmer, founder of clinical psychology ideas had little common with modern psychology. The trend was to administer psychological tests and evaluate the performance till World War II. The applied psychologists worked on industrial or military

applications. During that time World War veterans needed psychotherapy and a lot of fund has been invested in psychological and to train psychologists as psychotherapists.

Psychology continues to respond to questions of early Greek philosophers. According to Popper, *even if psychology's persistent questions are scientific rather than philosophical, they may still have no final answers* and, on this point, Popper and many other scholars agree. Gradually, psychotherapy became the primary function of clinical psychologists. Later they have started course in psychology from school to college to doctorate of philosophy (PhD).

The Indian philosophical tradition is mainly focused on the reflection and process of humans mentally. They focused on human consciousness, self, mind-body relations, and a variety of mental functions such as cognition, perception, illusion, attention and reasoning, etc. The philosophical roots of Indian tradition couldn't influence the modern psychology in India as it largely remains dominated by the western psychology.

The modern era of Indian psychology began in Calcutta University as it was the first university to introduce the subject of Psychology in 1916. An Indian psychologist Dr. N.N. Sengupta who was trained in USA has influenced modern experimental psychology in the Calcutta University. He was trained in the experimental tradition of Wundth, which dealt with the understanding of human nature.

In India, Professor G. Bose has influenced the early development of psychology and he was trained in Freudian psychoanalysis. He established Indian Psychoanalytical Association in 1922. University of Mysore and Patna served as one of the early centers of teaching psychology in their own established departments. From these two institutes modern psychology developed and eventually flourished as a strong discipline. The University Grand Commission has been supporting two centers of excellence in psychology Utkal University, Bhubaneswar and at the University of Allahabad, to conduct studies on human mental health and behaviour, and in India about 70 universities offer courses in psychology.

In Indian modern psychology history there are four phases. Those are first phase is till independence, during this period they have emphasized on experimental, psychoanalytic and psychological testing research and these development was influenced by western world. The second phase was till 1960s where different branches of psychology developed. Also during

this time Indian psychologist saught the identity of Indian psychology by linking to the western world by borrowing ideas from western world. Realising the need for indigenisation of western psychology and the need for our own identity which started during 1970s is the marking of the third phase. The trend changed such that it is applicable to India based on culture and social. In the fourth psychological approaches based on Indian ancient texts, scriptures and traditional knowledge system being started shaping. Durganand Sinha in his book Psychology in a Third World Country: The Indian Experience published in 1986 explains about this. As the development continues psychology in India is making significant contributions to the field of psychology in the world which has contextual emphasising. New research studies involving interfaces with neurobiological and health sciences are being carried out in India.

Psychology in India is now being applied in diverse professional areas. Not only have psychologists been working with children having special problems, they are employed in hospitals as clinical psychologists, in corporate organisations in the Human Resource Development (HRD) and advertising departments, in sports directorates, in the development sector and in IT industry.

In the past years, various researchers have undergone descriptive studies to understand mental health more. Here, scholars (Galderisi *et. al*, 2015) have subdivided mental health into three domains: self-realization, in that individuals are able to fully exploit their potential; sense of mastery over the environment; and sense of autonomy, i.e. ability to identify, confront, and solve problems. Then later argued that these ideas were laden with cultural values considered important by North Americans. However, even for a North American person, it is hard to imagine, for example, that a mentally healthy human being in the hands of terrorists, under the threat of beheading, can experience a sense of happiness and mastery over the environment. Although the concept put forward by Murphy has been criticized to be irrelevant in Indian context, it still cannot be nullified totally because in India as they are people who is more oriented towards religious beliefs and practices. If tomorrow even if the Government of India says that killing people isn't crime, I don't think that majority of the people will be living their normal life as they have their own individual morals and ethic.

The definition of mental health is clearly influenced by the culture that defines it. However, as advocated by many others, common sense should prevail and certain elements that have a universal importance for mental health might be identified (Galderisi *et. al*, 2015). For

example, in spite of cultural differences in eating habits, the acknowledgement of the importance of vitamins and the four basic food groups is universal.

Till date the research done in this field has enabled us to know mental health and depression in the context of western countries like United States but there is a dearth of study on mental health and depression among the adolescents from India. Such studies could help in understanding the community better, and could also help in developing new social policies as well help in understand the symptoms and causes behind the development of a mental condition.

New definition of mental health redefining mental health.

To date mental health has undergone a series of re-definition. This is very important as differences across countries in values, cultures and social background may hinder the achievement of a general consensus on the concept of mental health, we aimed at elaborating an inclusive definition, avoiding as much as possible restrictive and culture-bound statements.

The concept that mental health is not merely the absence of mental illness (Satcher *et. al,* 2000; WHO, 2004) which had been unanimously endorsed. It is rather the equivalence between mental health and well-being/functioning, leaving behind a room for defining a variety of emotional states and for "imperfect functioning". This lead to the re define what mental health could be and in the year. According to the new proposed definition on mental health, it was considered that

Mental health is a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium (Galderisi *et. al*, 2015).

In this definition, a note has been added which explains what universal values could be and what is its importance.

The values we are referring to are: respect and care for oneself and other living beings; recognition of connectedness between people; respect for the environment; respect for one's own and others' freedom. In a contemporary context, the term universal expression has been wrongly presented. In the light of the misleading scenario the use of this expression in certain political and social circumstances, mental health has been defined as individuals who are having everything like an expensive car, and bungalow, having lots of money, highest paying job etc. or they have become more materialistic. The point I want to make is that it has become that the word “luxury” is treated as good mental health.

The concept of “dynamic state of internal equilibrium” is meant to reflect the fact that different life epochs require changes in the achieved equilibrium. These life epochs are: adolescent crises, marriage, becoming a parent or retirement are good examples of life epochs requiring an active search for a new mental equilibrium. This concept also incorporates and acknowledges the reality that mentally healthy people may experience appropriate human emotions this may include feelings such as fear, anger, sadness and grief – whilst at the same time possessing sufficient resilience to timeously restore the dynamic state of internal equilibrium.

All components proposed in the definition are important but not mandatory aspects of mental health. Even while knowing that these components might contribute to a varying degree and also contribute to the state of equilibrium, that helps in fully development of functions bit it also could offset an impairment in another aspect of mental functioning. For instance, a very empathetic person, highly interested in mutual sharing, may compensate for a moderate degree of cognitive impairment, and still find a satisfactory equilibrium and pursue her/his life goals.

The main reasons underlying the choice of the components included in the definition are provided here after. Here, it is very important to clearly understand what these components are. These are- basic cognitive and social skills, emotional regulation, empathy, flexibility and ability.

Basic cognitive and social skills are regarded as an important component of mental health in the light of their impact on all aspects of everyday life (Artero *et. al*, 2001; Gigi *et. al*, 2014;

Moritz *et. al*, 1995; Warren *et. al*, 1989). Cognitive skills include the ability to pay attention, remember and organize information, solve problems, and make decisions; social skills involve the ability to use one's own repertoire of verbal/non-verbal abilities to communicate and interact with others. All these abilities are interdependent and allow people to function in their environment. Reference to the "basic" level of these abilities is meant to clarify that mild degrees of impairment are compatible with mental health, while moderate to severe degrees of impairment, especially if not balanced by other aspects, may require support by other members of the society and a number of social incentives, such as facilitated job opportunities, financial benefits or ad hoc training programs.

Emotional regulation, i.e. the ability to recognize, express and modulate one's own emotions, is also regarded as an important component of mental health (Gross *et. al*, 1995). It has been proposed as a mediator of stress adjustment (Galderisi *et. al*, 2015), and a link between inappropriate or ineffective emotional regulation and depression has been found in clinical and neuroimaging studies (Galderisi *et. al*, 2015). A variety of modulated emotional response options, that can be flexibly employed, contribute to an individual's mental health, and alexithymia (i.e., an inability to identify and express one's own emotions) is a risk factor for mental and physical disorders (Galderisi *et. al*, 2015).

Another very important factor is "empathy", which means the ability to experience and understand what others feel without confusion between oneself and others, enables individuals to communicate and interact in effective ways and to predict actions, intentions, and feelings of others (Galderisi *et. al*, 2015). The absence of empathy is not only a risk factor for violence and a feature of antisocial personality disorder, but also impairs social interactions at all levels.

Although empathy is considered to be very important, it cannot exist alone. Here, flexibility and ability to cope with adverse events are also deemed important to mental health maintenance. Flexibility refers to the ability to revise a course of action in the face of unpredicted difficulties or obstacles, change one's own ideas in the light of new evidence, and adapt to changes that different life epochs or contingent situations may require. Lack of flexibility may result in great distress for a person undergoing sudden and/or important life

changes, and is an important aspect of several psychiatric disorders, such as obsessive personality or delusional disorder (Klanker *et. al*, 2013).

The definition of mental health drafted by various scholars and organisations is aimed to overcome perspectives based on ideal norms or hedonic and eudaimonic theoretical traditions, in favour of an inclusive approach, as free as possible of restrictive and culture-bound statements, and as close as possible to human life experience, which is sometimes joyful, and at other times sad or disgusting or frightening; sometimes satisfactory, and at other times challenging or unsatisfactory.

The proposed definition is also compatible with the recovery movement perspective, in which recovery after an illness is seen as a process aimed to attain a fulfilled and valued life by building on the functions spared by the illness, in spite of the fact that other functions have been impaired

The basic ability to function in social roles and to participate in meaningful social interactions is an important aspect of mental health and particularly contributes to resilience against distress; however, social exclusion and stigmatization often impair social participation, so any definition of mental health alluding to this aspect has to avoid "blaming the victim" and to carefully analyse social patterns of stigmatization, discrimination and exclusion that impair participation (Heinz *et. al*, 2010).

It is known that the inclusion of a harmonious relationship between body and mind is based on the concept that mind, brain, organism and environment are heavily interconnected, and the overall experience of being in the world cannot be separated from the way in which one's body feels in its environment (Fuchs *et. al*, 2009). Disturbances of this interaction may result in psychotic experiences, eating disorders, self-harm, body dysmorphic disorder or poor physical health.

Reports on mental health have portrayed it to be a very important public health issues throughout the world and India. World Health Organisation (WHO) has addressed depression to be the third leading cause of diseases, illness and disability among adolescents (WHO, 2017).

According to the survey and study conducted by Global Burden of Disease (GBD) Study 2015 it has predicted that by 2020 it will be the second leading cause of diseases (GBD, 2015), because half of all mental health conditions start by 14 years of age but most cases are undetected and untreated.

People treat physical health issues very seriously and seek cure and advice without feeling shy or without any fear. In the case of mental health it is neglected or understudied, with many people not even knowing that they are actually facing health issues related to their emotions, which till date has not been well defined. Around the world, there is a growing evidence which deals with the importance of mental health for economic, social and human capital. In spite of this people with mental health problems, mental health services and professionals, and even the very concept of mental health, receive negative publicity and are stigmatised in public perceptions (Vijayalakshmi, P et al.,2013). When compared with other parts of the world, the prevalence of mental disorders in India is high (Kermode et al., 2010). It is estimated that at least 58/1000 Indians have a mental illness and about 10 million suffer from severe mental illness (Vijayalakshmi, P et al.,2013). These issues were mainly depression, stress and anxiety. Here it is very important to understand the effect of culture in order to understand the cause behind the state of being mentally ill/ unhealthy. Every section of society has its unique way of perceiving mental illness, particularly the young generation and college-going students. Colleges may be the best place to develop a comprehensive mental health programme, because the attitude and values of college-going students tend to influence society the most (Vijayalakshmi, P et al., 2013). In India about 5% people are living with depression and anxiety disorders. In India psychological problem like depression among students is neglected public health problem as we have just one psychiatrist for four lakh citizens. We have only about 4,000 psychiatrists, 1,000 psychologists and 3,000 social workers for the whole of the country (Wani et al., 2016). According to World Health Organisation, globally, the total number of people with depression was estimated to exceed 322 million in 2015 (WHO, 2017). Depression is ranked by WHO as the single largest contributor to global disability (7.5% of all years lived with disability in 2015) (WHO, 2017). Depression is also the major contributor to suicide deaths, which number close to 800 000 per year (WHO, 2017). At a global level, over 322 million people are estimated to suffer from depression, equivalent to 4.4% of the world's population (WHO, 2017). The number of persons with common mental disorders globally is going up, particularly in lower-income countries, because the population is growing and more people are living to the age when depression and anxiety most commonly occurs (WHO, 2017).

Depression is more common among females (5.1%) than males (3.6%) (WHO, 2017). The total number of people living with depression in the world is 322 million. Nearly half of these people live in the South-East Asia Region and Western Pacific Region, reflecting the relatively larger populations of those two Regions (which include India and China, for example) (WHO, 2017). The total estimated number of people living with depression increased by 18.4% between 2005 and 2015(GBD, 2015); this reflects the overall growth of the global population, as well as a proportionate increase in the age groups at which depression is more prevalent (WHO, 2017). WHO Global Health Estimates provide a comprehensive assessment of mortality due to diseases and injuries for all regions of the world. In the year 2015, it is estimated that 788 000 people died due to suicide; many more than this number attempted (but did not die by) suicide. Suicide accounted for close to 1.5% of all deaths worldwide, bringing it into the top 20 leading causes of death in 2015. Suicide occurs throughout the lifespan and was the second leading cause of death among 15-29 year olds globally in 2015 (WHO, 2017). The suicide rate varies by WHO Region and by sex, ranging from below 5 per 100 000 population among females in low- and middle-income countries of the Eastern Mediterranean and American Regions, to 20 or more among males in high-income countries and also in the low and middle-income countries of the African, European and South-East Asian Regions. 78% of global suicides occurred in low- and middle income countries in 2015 and depression has been a major role player (WHO, 2017).

All the studies done this far, has spoken about the role of sex and regions in understand depression but the role played by age and culture is still under represented. It is very important to understand that the journey from child to adulthood is not a linear one. It has lots of ups and downs. The transformation that happens that is physically and mentally during the puberty is enormous. Puberty is also the time when most of the students are in institute or college. It has been proven time and again that college has a big role in shaping students into adults. The physical and mental changes happens is also due to the hormonal changes. It at this time students makes more friendship bond and explore new things in their life own their own. Since they live being confined to oneself with very less experience or knowledge, they have to take many decisions in a dynamic fashion which at times turn out to have a negative impact on them. Due to this they encounter real failures for the first time in life, as it is the case with most of the students for example aspiration to have a medical or engineering degree, pressure from family, struggle to prove oneself etc.

In India studying in universities demand a person to be comparatively more adaptable. Universities do not only have shortage of funds, but they also have a huge scarcity of accommodation. In addition to that, scholarships, as well as admission is more tiring and time consuming. Also, in a university, study system is also very hectic, but it is something overlooked.

Indian Institute of Science Education and Research Mohali (IISER Mohali) is unique in that, since every student is treated the same way means that all the BS-MS student gets accommodations inside the campus, many of the students gets scholarship, students are given lots of freedom, admission process isn't tiresome, and many more. They are provided with equal facilities in terms of studies, athletics, cultural, sports, health, food and accommodation etc. The students who gets selected to IISERM are through three channels. They are Kishore Vaigyanik Protsahan Yojana (KVPY), Joint Entrance Examination – Advanced (JEE-Advanced) and the direct channel of admissions called IISER Aptitude Test (IAT), where top 1% of students in each board is selected through exam conducted all around the India. Being the cream of the nation and provided with facilities and opportunities equally, they are exceptional group to look at. This curiosity has made me to study them. This is the first time in India a study is conducted about depression in an institute of national importance. Are these students who are the future of nation and science in India mentally healthy? Are they victim of mental health problems? Students from every background is here. Are they able to cope up with curriculum and focus on themselves to develop as an individual? And many more questions are addressed in this study.

According to World Health Organization and other source the age group from 13 to 27 is having depression worldwide. Lack of awareness about mental health is the main reason for it. Many don't know that they are undergoing depression and many hesitate to speak out loud in the public or seek medical help.

IISER Mohali is unique in many ways as students from all over the India are studying here in the BS-MS students. Studying this group provides us with the regional outlook on the distribution of mental health issues. These students are considered to be the future building block or the face of future of science from India. Most of the BS-MS students at IISER Mohali are within 17 to 24 years of age.

According to National Institute of Mental Health (NIMH) if you have been experiencing some of the following signs and symptoms most of the day, nearly every day, for at least two weeks, you may be suffering from depression. These are persistent sad, anxious, or “empty” mood, feelings of hopelessness, or pessimism, irritability, feelings of guilt, worthlessness, or helplessness, loss of interest or pleasure in hobbies and activities, decreased energy or fatigue, moving or talking more slowly, feeling restless or having trouble sitting still, difficulty concentrating, remembering, or making decisions, difficulty sleeping, early-morning awakening, or oversleeping, appetite and/or weight changes, thoughts of death or suicide, or suicide attempts, aches or pains, headaches, cramps, or digestive problems without a clear physical cause and/or that do not ease even with treatment.

Since adolescence to adulthood is a unique and formative time and most students at IISER Mohali are within this age range, the study will provide me the perfect environment to understand how various factors related to adolescence could have coupled up together to understand the mental health in this group. Whilst most adolescents have good mental health, multiple physical, emotional and social changes, including exposure to poverty, abuse, or violence, can make adolescents vulnerable to mental health problems. Promoting psychological well-being and protecting adolescents from adverse experiences and risk factors which may impact their potential to thrive are not only critical for their well-being during adolescence, but also for their physical and mental health in adulthood. To this end, I have hypothesized based on scholarly readings that male and female students are equally depressed, financial instability is a leading cause for depression, students from South and North- East region of India are the most depressed, lack of involvement in extracurricular activities like sports, athletics , cultural and others are correlated with depression.

1.2.References:

Aaron T. Beck, Robert A. Steer, Roberta Ball & William F. Ranieri (1996) Comparison of Beck Depression Inventories-IA and-II in Psychiatric Outpatients, Journal of Personality Assessment, 67:3, 588-597, DOI: 10.1207/s15327752jpa6703_13

Artero, Sylvaine, Jacques Touchon, and Karen Ritchie. "Disability and mild cognitive impairment: a longitudinal population-based study." International Journal of Geriatric Psychiatry 16, no. 11 (2001): 1092-1097.

B. R. Hergenhahn, Tracy Henley, An Introduction to the History of Psychology, 7th Ed., Cengage Learning (2013).

Bauer, Georg F., and Oliver Hämmig. "Bridging occupational, organizational and public health: A transdisciplinary approach." In Bridging occupational, organizational and public health, pp. 1-11. Springer, Dordrecht, 2014.

Bertolote, José. "The roots of the concept of mental health." World Psychiatry 7, no. 2 (2008): 113.

Deci, Edward L., and Richard M. Ryan. "Hedonia, eudaimonia, and well-being: An introduction." Journal of happiness studies 9, no. 1 (2008): 1-11.

Depression and Other Common Mental Disorders: Global Health Estimates. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

Diener, E., E. M. Suh, R. E. Lucas, and H. L. Smith. "Subjective Well-Being: Three Decades of Progress. Psycho-logical Bulletin, 125, 276-302." (1999).

Fuchs, Thomas, and Jann E. Schlimme. "Embodiment and psychopathology: a phenomenological perspective." Current opinion in psychiatry 22, no. 6 (2009): 570-575.

Galderisi, Silvana, Andreas Heinz, Marianne Kastrup, Julian Beezhold, and Norman Sartorius. "Toward a new definition of mental health." World Psychiatry 14, no. 2 (2015): 231-233.

GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, and others. Global, regional, and national incidence, prevalence, and years lived with disability for 310

diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet, 388: 10053.

Gigi, Karny, Nomi Werbeloff, Shira Goldberg, Shirly Portuguese, Abraham Reichenberg, Eyal Fruchter, and Mark Weiser. "Borderline intellectual functioning is associated with poor social functioning, increased rates of psychiatric diagnosis and drug use–A cross sectional population based study." European Neuropsychopharmacology 24, no. 11 (2014): 1793-1797.

Gross, James J., and Ricardo F. Muñoz. "Emotion regulation and mental health." Clinical psychology: Science and practice 2, no. 2 (1995): 151-164.

Heinz, Andreas, and Ulrike Kluge. "Anthropological and evolutionary concepts of mental disorders." The Journal of Speculative Philosophy 24, no. 3 (2010): 292-307.

http://www.iisermohali.ac.in/admissions/academics/bs-ms-dual-degree-program

https://www.ncbi.nlm.nih.gov/mesh/68008603

https://www.ncbi.nlm.nih.gov/mesh/68008603

https://www.nimh.nih.gov/health/topics/depression/index.shtml

Kermode, Michelle, Kathryn Bowen, Shoba Arole, Kaustubh Joag, and Anthony F. Jorm. "Community beliefs about causes and risks for mental disorders: a mental health literacy survey in a rural area of Maharashtra, India." International Journal of Social Psychiatry 56, no. 6 (2010): 606-622.

Keyes, Corey LM. "Mental health in adolescence: Is America's youth flourishing?." American journal of orthopsychiatry 76, no. 3 (2006): 395-402.

Klanker, M., M. Feenstra, and D. Denys. "Dopaminergic control of cognitive flexibility in humans and animals. Front. Neurosci. 7, 201." (2013).

Lamers, Sanne MA, Gerben J. Westerhof, Ernst T. Bohlmeijer, Peter M. ten Klooster, and Corey LM Keyes. "Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF)." Journal of clinical psychology 67, no. 1 (2011): 99-110.

Moritz, Deborah J., Stanislav V. Kasl, and Lisa F. Berkman. "Cognitive functioning and the incidence of limitations in activities of daily living in an elderly community sample." American Journal of Epidemiology 141, no. 1 (1995): 41-49.

National Council of Educational Research and Training (NCERT), Introduction to Psychology, Psychology class 11th, Shagun Offset Press (2018).

Satcher, David. "Mental health: A report of the Surgeon General--Executive summary." Professional Psychology: Research and Practice 31, no. 1 (2000): 5.

Vijayalakshmi, P., D. Reddy, S. B. Math, and R. Thimmaiah. "Attitudes of undergraduates towards mental illness: A comparison between nursing and business management students in India." South African Journal of Psychiatry 19, no. 3 (2013): 66-74.

Wani, Mohammad Amin, R. Sankar, P. Rakshantha, A. L. S. Nivatha, C. E. Sowparnika, and L. D. B. Marak. "Stress Anxiety and Depression Among Science and Arts Students." International Journal of Education and Psychological Research 5, no. 3 (2016): 48-51.

Warren, E. Janet, Adrian Grek, David Conn, Nathan Herrmann, Esther Icyk, Jack Kohl, and Michel Silberfeld. "A correlation between cognitive performance and daily functioning in elderly people." Topics in geriatrics 2, no. 2 (1989): 96-100.

Waterman, Alan S. "Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment." Journal of personality and social psychology 64, no. 4 (1993): 678.

World Health Organization. "Promoting mental health: Concepts, emerging evidence, practice: Summary report." (2004).

Chapter 2: Methodology

2.1. Methodology

This study was conducted among the BS-MS students of IISER Mohali, to understand if mental health and depression is prevalent among students and research on the causal factors. The proposed hypotheses of this study are:

- Male and female students are equally depressed.
- Financial instability is a leading cause for depression.
- Students from South and North-East region of India are the most depressed.
- Lack of involvement in extracurricular activities like sports, athletics, cultural and others are cause of depression.

These hypotheses are framed based on the knowledge of past research work that has been done on this field. IISER Mohali is unique as it gives equal opportunity to male and female students. So chances of male and females students having depression is hypothesised to be equal. Till MS15, all the students admitted at IISER was getting scholarship either through INSIRE or KVPY. From MS16 batch screening was done and only a minimal number of students were getting scholarships to support their studies. At the same time the fees of new batch students has been increased nearly to 300 % compared to MS14 batch. This was the root cause of the second hypothesis. Third hypothesis has been framed in the context that the students from South and North- East region of India visit their home only in 3-4 times per year compared to students from North, East and Central India. Since family play a big role in mental health of an individual. The fourth hypothesis is based on the observation that the new generation of students are either spending time playing games in phone or laptop. Or they are always active in various social media like Facebook, What'sapp, and Instagram to name a few.

For the proposed a questionnaire was made. This questionnaire consisted of two parts: Part A and Part B. The Part A of the questionnaire had questions which had the biographic details of the studied subjects. In addition to that it also consisted certain questions which dealt with the problems that the students face in their life as students. Part B of the questionnaire was BECK-II inventory, which was developed by Aaron Temkin Beck. Aaron Temkin Beck (born July 18, 1921) is an American psychiatrist. The father of cognitive therapy is him. His pioneering theories are widely used in the treatment of clinical depression. Beck developed self-report

measures of depression and anxiety, notably the Beck Depression Inventory (BDI) which became one of the most widely used instruments for measuring depression severity in 1960. After over 35 years of nearly universal use, the Beck Depression Inventory (BDI) has undergone a major revision. The revised version of the Beck, the BDI-II, represents a significant improvement over the original instrument across all aspects of the instrument including content, psychometric validity, and external validity. The score obtained by a patient in BDI has been used for psychotherapy and antidepressant treatments. This questionnaire consisted of 21-multiple-choice questions self-report inventory

This test is done for measuring the severity of depression. Score values range from 0-63. The scoring of the test was done in the following manner.

- 0-10 is the score for normal mental health
- 11-16 is the score for mild mood disturbance
- 17-20 is the score for the borderline clinical depression
- 21-30 is the score for the moderate depression
- 31-40 is the score for the severe depression
- Above 40 is extreme depression

The Beck Depression Inventory II created by Aaron T. Beck, is a 21-question multiple-choice self-report inventory, one of the most widely used psychometric tests for measuring the severity of depression. The BDI-II retains the 21-item format with four options under each item, ranging from not present (0) to severe (3). The BDI-II includes the following new items: agitation, worthlessness, loss of energy, and concentration difficulty. The current item content includes: (a) sadness, (b) pessimism, (c) past failure, (d) loss of pleasure, (e) guilty feelings, (f) punishment feelings, (g) self-dislike, (h) self-criticalness, (i) suicidal thoughts or wishes, (j) crying, (k) agitation, (l) loss of interest, (m) indecisiveness, (n) worthlessness, (o) loss of energy, (p) changes in sleeping pattern, (q) irritability, (r) changes in appetite, (s) concentration difficulty, (t) tiredness or fatigue, and (u) loss of interest in sex. The BDI-II retains the advantage of the BDI in its ease of administration (5-10 minutes) and the rather straightforward interpretive guidelines presented in the manual. The BDI-II also tell about the stage of depression a person has. Its development marked a shift among mental health professionals, who had until then, viewed depression from a psychodynamic perspective, instead of it being rooted in the patient's own thoughts. The BDI-II is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and

irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex. Authors of this research article has administrated to 160 students and found it displayed high internal consistency and construct validity. The BDI-II was a 1996 revision of the BDI, developed in response to the American Psychiatric Association's publication of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, which changed many of the diagnostic criteria for Major Depressive Disorder. The BDI-II contains four new symptom items: Agitations, Concentration Difficulty, Worthlessness, and Loss of energy. The time frame for the BDI-II ratings has been increased to 2 weeks so that it now corresponds to the temporal criteria found in the DSM-IV for Major.

The questionnaire was passed in the class before the lectures by taking prior permission from respective faculties of each course. The subject were first informed about the work and about the researcher and only after their voluntary response to get involved, data was collect. The students weren't told that they have been subjected to BECK II inventory. This was done to ensure that the collected data wasn't biased. 633 students volunteered out which 608 students provided complete information. Total number of female volunteers is 221 and total number of male volunteers is 387. The response was collected in hard copy. The same questionnaire was made on Google Form and the data was entered as per the response of each volunteer without any biasness. Later the data was downloaded as excel file format.

After collecting the data analysis of variance (ANOVA) is done to calculate the significance level under which the hypotheses could be studied. This was done by using R (programming language). R is a free software statistical computing and graphics supported by the R Foundation for Statistical Computing (Hornik *et. al*, 2018). According to the standard p value greater that 0.005 is considered to be significant.

Then Correlation studies has been done to describe the degree of relationship between two variables. The correlation plot has been made by using the PAleontological Statistics (PAST) version 3.23 is used. For making correlation plot two or more columns are required. A matrix is presented with the correlations between all pairs of columns. In the 'Statistic \ p(uncorr)' table format, correlation values are given in the lower triangle of the matrix, and the two-tailed probabilities that the columns are uncorrelated are given in the upper (Hammer *et. al*, 2001). Once the matrix has been made then the correlation plot was plotted. According to standard correlation plot a $p > 0.05$ was considered to be significant correlation.

Then in depth interview was conducted among students who volunteered. This was done to know their problems well and derive if there is a pattern etc.

Additionally I will also be using Statistical Package for the Social Sciences (SPSS) version 20, to run descriptive statistic on the collected data.

2.2. Reference:

Beck, Aaron T., Robert A. Steer, and Gregory K. Brown. "Beck depression inventory-II." San Antonio 78, no. 2 (1996): 490-498.

Hammer, Øyvind, David AT Harper, and Paul D. Ryan. "PAST: paleontological statistics software package for education and data analysis." Palaeontologia electronica 4, no. 1 (2001): 9.

Hornik, Kurt (November 26, 2015). "R FAQ". The Comprehensive R Archive Network. 2.1 What is R?. Retrieved 2018-08-05

Steer, Robert A., and David A. Clark. "Psychometric characteristics of the Beck Depression Inventory-II with college students." Measurement and Evaluation in Counseling and Development 30, no. 3 (1997): 128.

Chapter 3: Results

3.1. Results

The study was conducted from mid of February, 2019 to first week of March, 2019. Total 633 students voluntarily participated in the study out of which 608 students provided complete data. Out these 608 students 387 are male and 221 are female. The results of this study have been described under four main headings, with few more sub-headings. The primary research findings have been discussed in four broad categories. Under this sections, total 608 students have been surveyed, out of which 221 were females and 387 were males. To remove biased data collection an add-on named Ablebits Tools was used, which enabled me to sort data resulting in an in equal ratio of male and female. This tool has been used to randomly select 221 males out of 387. The following commands were used to select randomly 221 male. Ablebits Tools →Utilities →Random Generator →Select Randomly→Select Random Rows by putting the total number of rows and I have selected the first 221 male out of 387 male. Thus, now total number of subjects were 442. The results of this study have been described below-

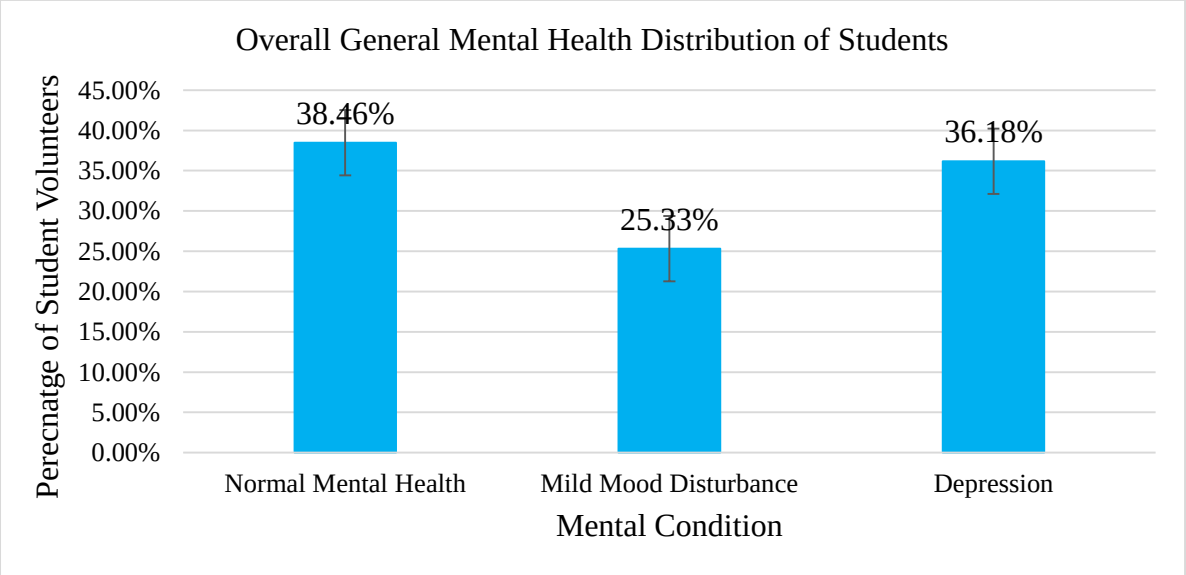

Figure 3.1: Overall General Mental Health Distribution of Students

According to the study 38.46% students have normal mental health (score 1-10, BECK-II). 25.33% students have mild mood disturbance (score 17-20, BECK-II) and 36.18% students are under depression, which is almost equal to the percentage of normal mental health students in the campus. The difference in the percentage of students having normal mental health to depressed is 2.28%. (Figure 3.1).

A. Hypothesis: Male and female are equally depressed.

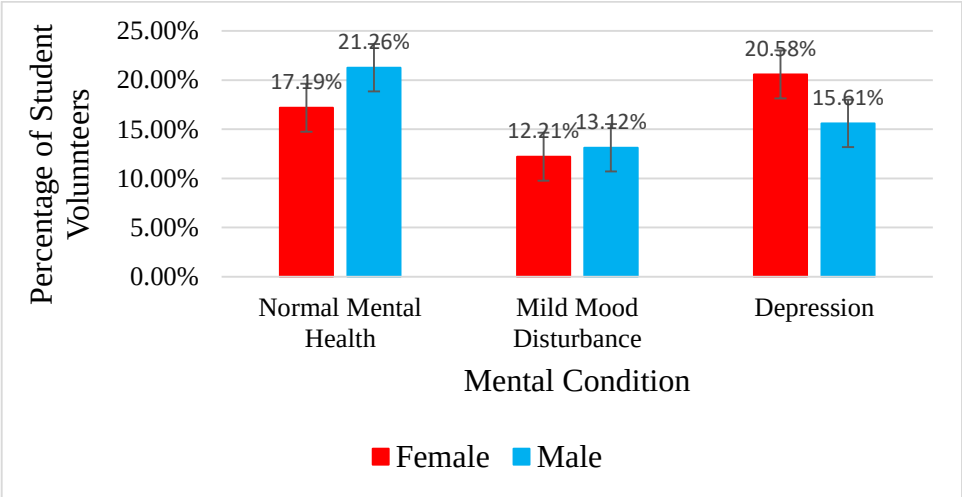

Figure 3.2: Comparison of Mental Condition of Male and Female

Figure 3.2 gives us the pictorial representation in understanding the distribution of mental health in male and female students of IISER Mohali. For the proposed hypothesis, the entire data set have been divided into three categories namely-Normal Mental Health (score 0-10, BECK-II), Mild Mood Disturbance (score 11-16, BECK-II), Depression (score17-63, BECK-II). According to the study 17.19% female and 21.26% male have normal mental health, 12.21% female and 13.12% male have mild mood disturbance. There isn't a big difference between male and female in the mild mood disturbance category. The difference is that of 0.91%. 20.58% female and 15.61% male are under depression. In this category the difference is that of 4.97%. Thus it is clearly significant. Also it proves that my hypothesis that females and male are equally depressed as false. The same have been confirmed by analysis of variance (ANOVA) results. This is result is also in consistent with almost any population of world and IISER Mohali students isn't an exception.

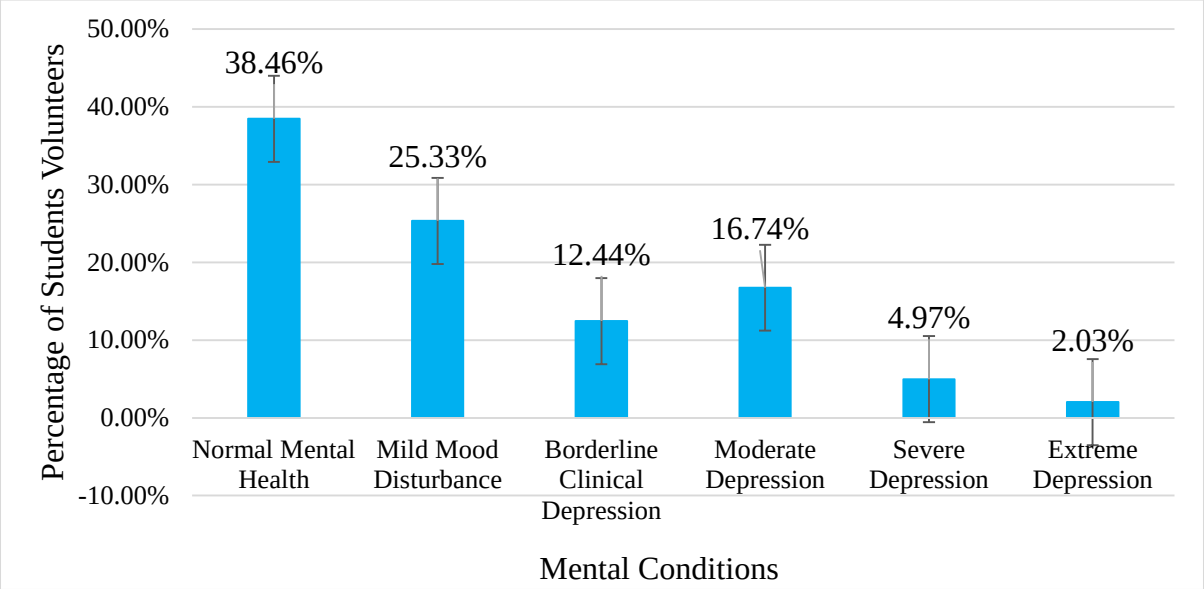

Figure 3.3: Overall Detailed Mental Health Distribution of Students.

Furthermore, Figure 3.3 is showing a detailed distribution of the types of mental health issues seen among IISER Mohali students. According to the study 38.46% students have normal mental health (score 0-10, BECK-II) 25.33%students have mild mood disturbance (score 11-16, BECK-II), 12.44% students have borderline clinical depression (score 17-20, BECK-II), 16.74% students have moderate depression (score 21-30, BECK-II), 4.97% students have severe depression (score 31-40, BECK-II) and 2.03% students have extreme depression (score >40, BECK-II). The depression category ranking is of the following order. The order is Moderate Depression > Borderline Clinical Depression > Severe Depression > Extreme Depression.

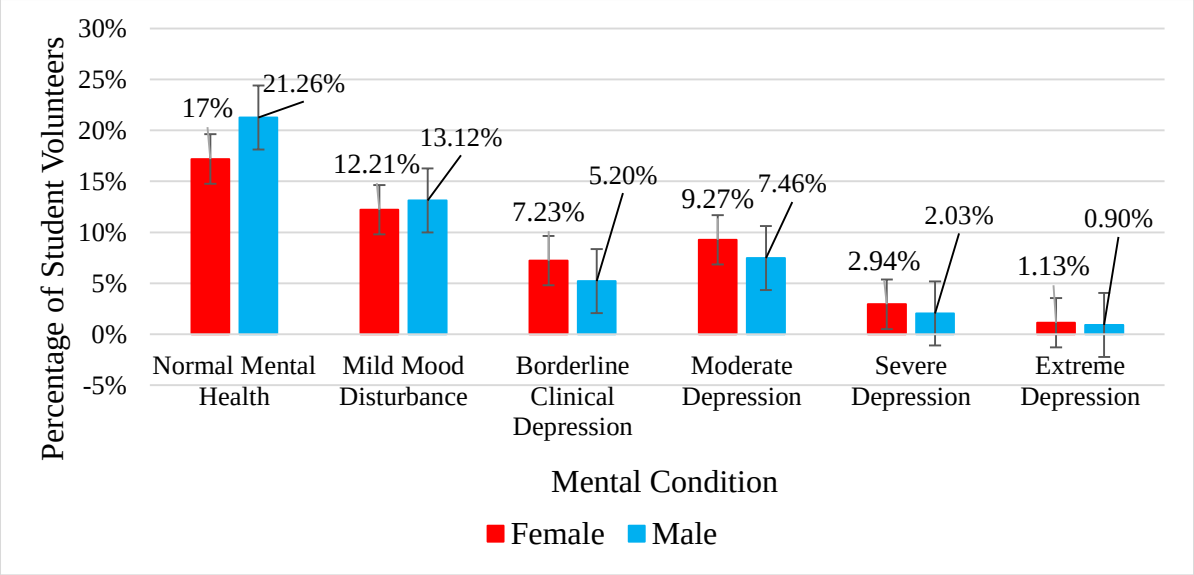

Figure 3.4: Detailed categorisation of the types of mental conditions prevailing among the male and female students

The detailed categorisation of the types of mental conditions prevailing among the male and female students have been presented in Figure 3.4 and this is elaborated in the form such that how various types depression under the broad category depression is present among IISER Mohali students. According to study under the category of depression 7.23% female and 5.20% male have borderline clinical depression (score 17-20, BECK-II). 9.27% female and 7.46% male have moderate depression (score 21-30, BECK-II). 2.94% female and 2.03% male have severe depression (score 31-40, BECK-II). 1.13% female and 0.90% male have extreme depression (score >40, BECK-II). The most prevailing depression among students is the moderate depression 16.74 % followed by borderline clinical depression 12.44%, followed by severe depression 4.97% and the least extreme depression 2.03%. Among female and males the ranking of various types depression according to the percentage is the same. The ranking order is as the following Moderate Depression > Borderline Clinical Depression > Severe Depression > Extreme Depression.

B. Hypothesis: Financial instability is a leading cause for depression.

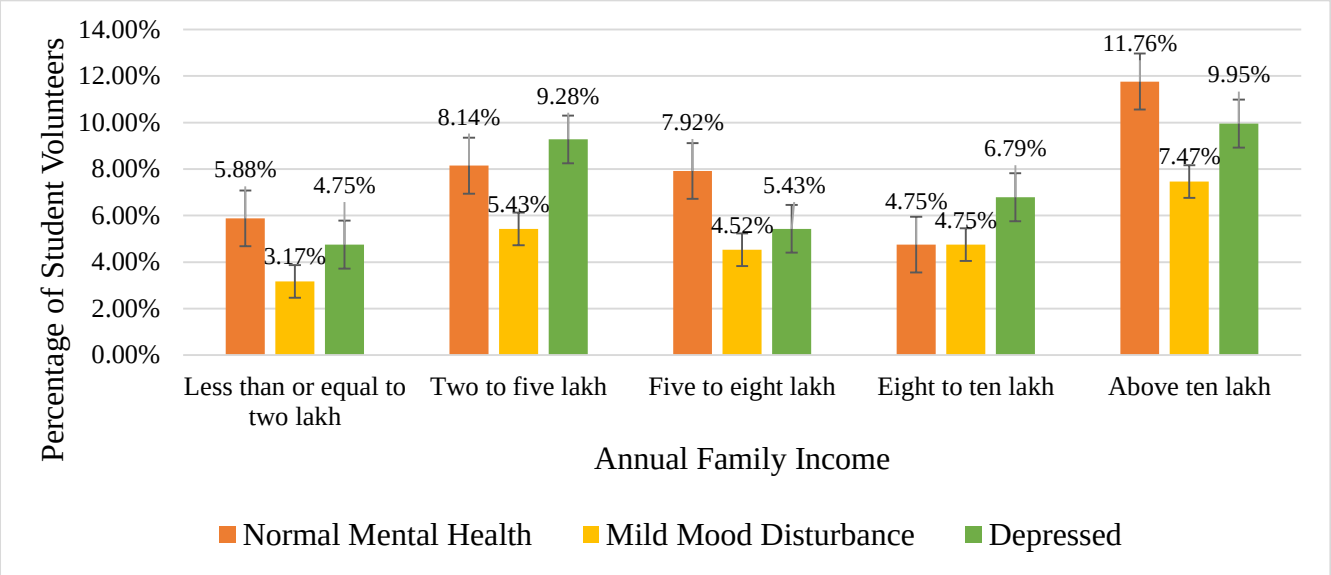

Figure 3.5: Annual Family Income vs Depression

According to the study it has been found out that financial instability isn't a leading cause for depression. From the Figure 3.5, the percentage of student coming from family having annual family income of less than or equal to two lakh is 13.8%. Out of these 5.88% students have normal mental health, 3.17% students have mild mood disturbance and 4.75% students have depression. The percentage of student coming from family having annual family income of two to five lakh is 23.39%. Out of these 8.14% students have normal mental health, 5.43% students have mild mood disturbance and 9.82% students have depression. The percentage of student coming from family having annual family income of five to eight lakh is 17.87%. Out of these 7.92% students have normal mental health, 4.52% students have mild mood disturbance and 5.43% students have depression. The percentage of student coming from family having annual family income of eight to ten lakh is 16.29%. Out of these 4.75% students have normal mental health, 4.75% students have mild mood disturbance and 6.79% students have depression. The percentage of student coming from family having annual family income of above ten lakh is 29.18%. Out of these 11.76% students have normal mental health, 7.47% students have mild mood disturbance and 9.95% students have depression. Depression has been affected to students from all economic strata. In any strata there isn't much difference between students who are depressed and who aren't. The same is confirmed by analysis of variance (ANOVA) result.

C. Hypothesis: Students from South and North- East region of India are the most depressed.

For this study India has been divided into various regions. The States have been grouped into six zones having an Advisory Council "to develop the habit of cooperative working" among these States. Zonal Councils were set up vide Part-III of the States Reorganisation Act, 1956. The North Eastern States' special problems are addressed by another statutory body - The North Eastern Council, created by the North Eastern Council Act, 1971.

Figure 3.6: Different Regions of India, Image Source: Filpro

North Indian States are: Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, and Rajasthan

South Indian States are: Andhra Pradesh, Karnataka, Kerala, Puducherry, Tamil Nadu, and Telangana and union territories Andaman and Nicobar Islands, Lakshadweep.

East Indian States are: Bihar, Jharkhand, Odisha, and West Bengal

Central Indian States are: of Chhattisgarh, Madhya Pradesh, Uttarakhand and Uttar Pradesh

West Indian States are: Dadra and Nagar Haveli, Daman and Diu, Goa, Gujarat, and Maharashtra

North-East Indian States: Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim

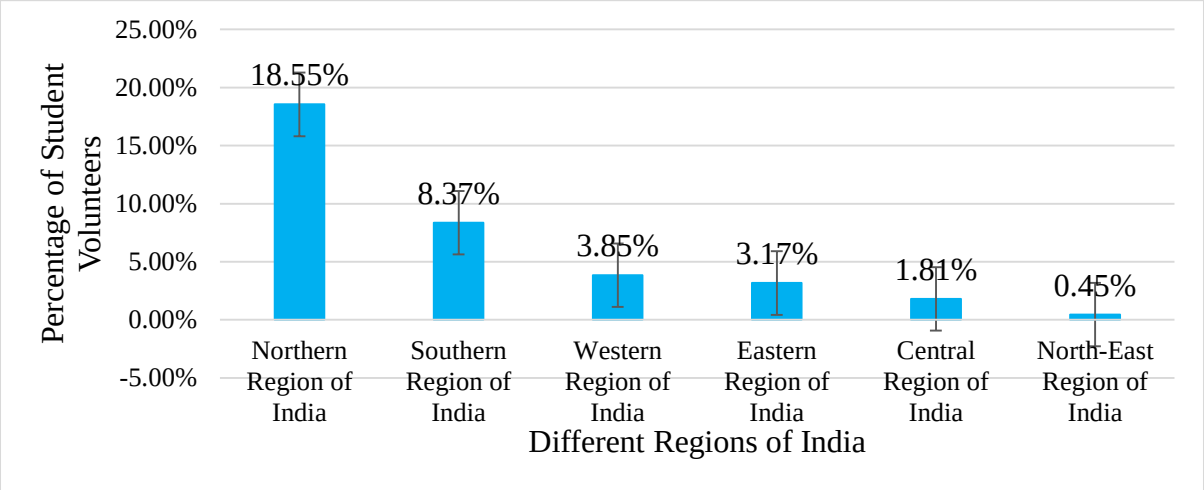

Figure 3.7: Plot of Different Regions of India vs Depression

According to the study students from North India is more depressed compared to students from any other parts of India. 18.55% students from Northern Region of India is under any form of depression. 8.37% students from Southern Region of India is affected by depression. Then 3.85% students from Western Region of India is affected by depression. 3.17% students from Eastern Region of India is affected by depression. 1.81% students from Central Region of India is affected by depression and 0.45% students from North-East Region of India is affected by depression (Figure 3.7).

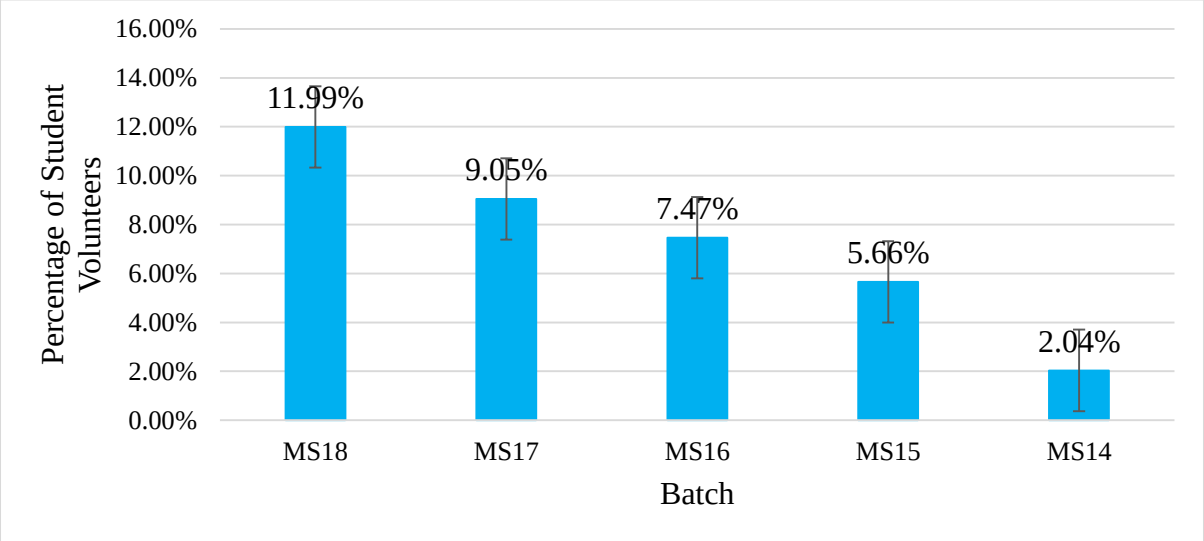

Figure 3.8: Plot of Batch vs Depression

According to the study first and second year students of BS-MS are the most depressed. 11.99% first year students, 9.05% second year students, 7.47% third year students, 5.66% fourth year students and 2.04% fifth year students are depressed. It is also showing that the percentage of students having depression growing down as they reach final year of BS-MS course (Figure 3.8).

Analysis of Mild Mood Disturbance among Batch

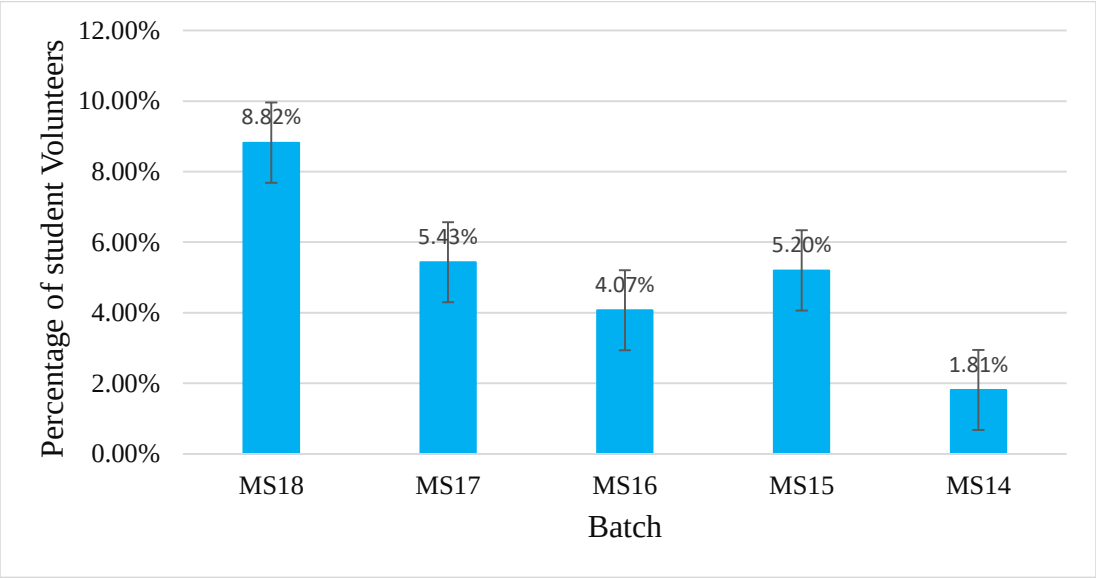

Figure 3.9: Batch vs Mild Mood Disturbance

According to the study first year students have highest mild mood disturbance. 8.82% students of first year students, 5.43% second year students, 4.07% third year, 5.20% students of fourth year students and 1.81% fifth year students have mild mood disturbance (Figure 3.9).

Analysis of Mental Health MS18 Batch

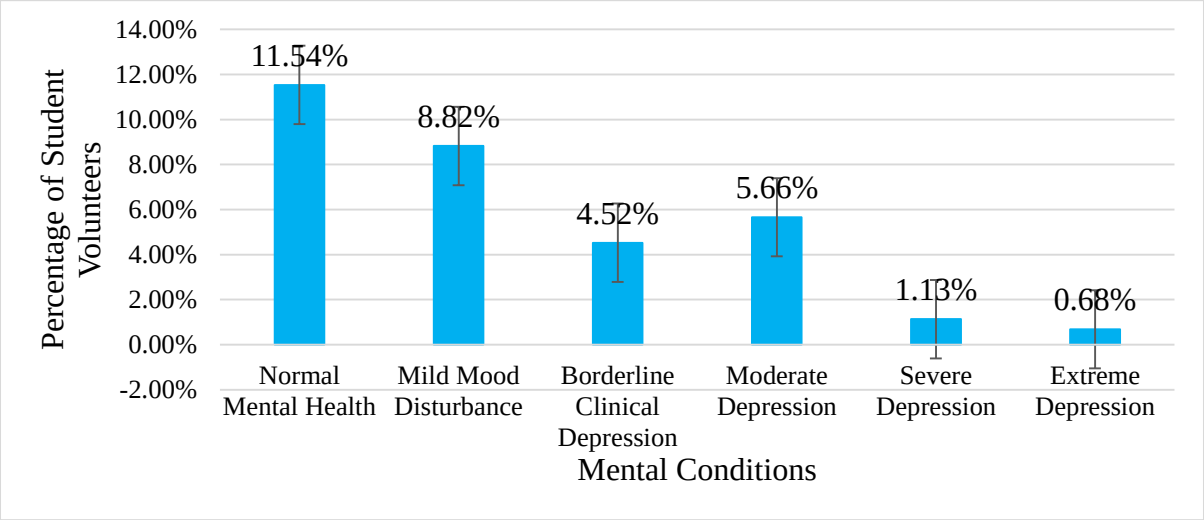

Figure 3.10: MS18 Batch vs Distribution of Mental Health

According to the study 11.45% MS18 students have normal mental health, 8.82% MS18 students have mild mood disturbance, 4.52% MS18 students have borderline clinical depression, 5.66% MS18 students have moderated depression, 1.13% MS18 students have severe depression, and 0.68% MS18 students have extreme depression (Figure 3.10).

Analysis of Mental Health MS17 Batch

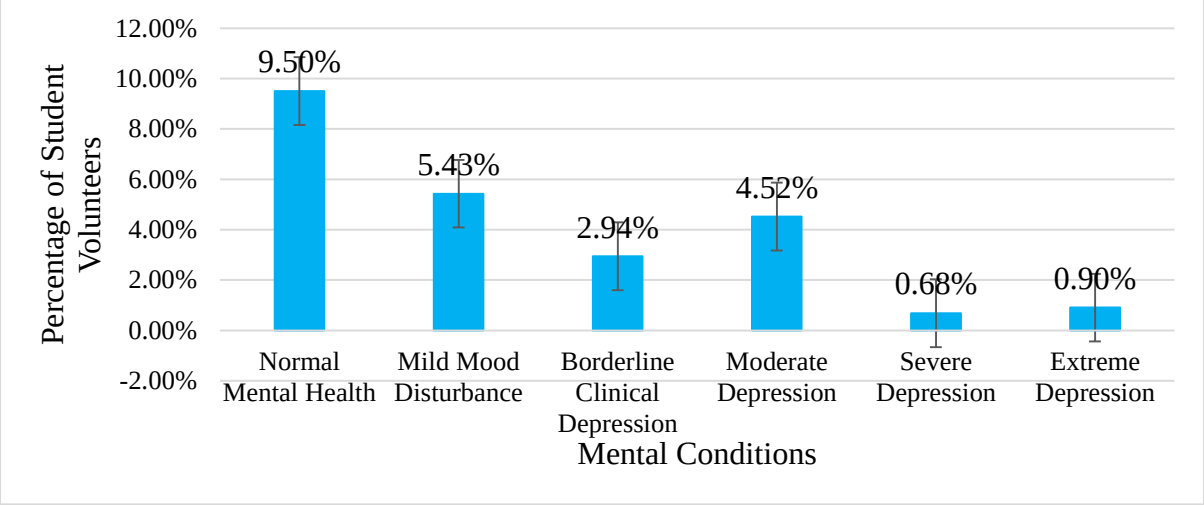

Figure 3.11: MS17 Batch vs Distribution of Mental Health

According to the study 9.50% MS17 students have normal mental health, 5.43% MS17 students have mild mood disturbance, 2.92% MS17 students have borderline clinical depression, 4.52% MS17 students have moderated depression, 0.68% MS17 students have severe depression, and 0.90% MS17 students have extreme depression (Figure 3.11).

Analysis of Mental Health MS16 Batch

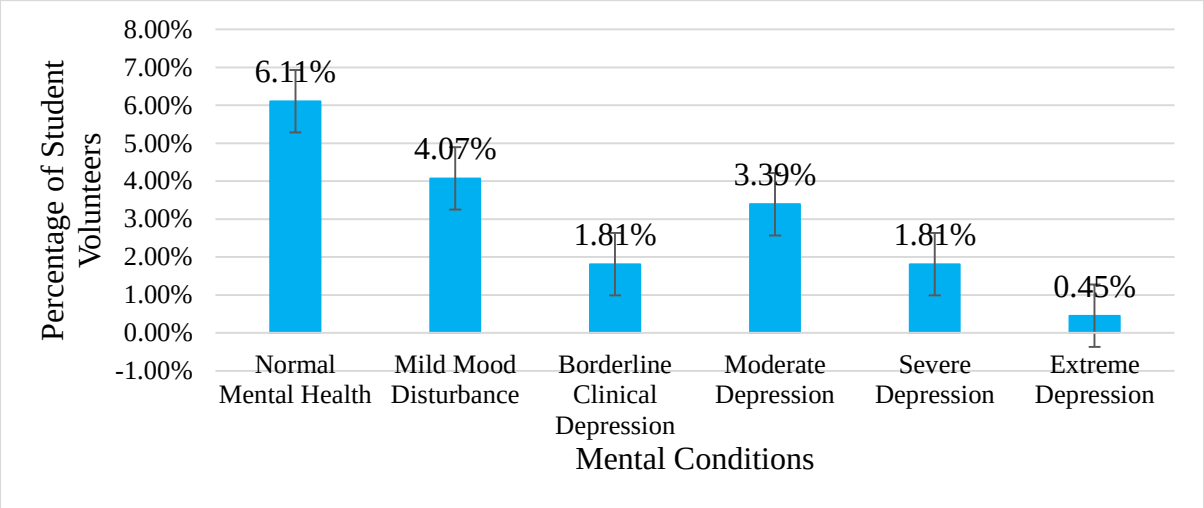

Figure 3.12: MS16 Batch vs Distribution of Mental Health

According to the study 6.11% MS16 students have normal mental health, 4.07% MS16 students have mild mood disturbance, 1.81% MS16 students have borderline clinical depression, 3.39% MS16 students have moderated depression, 1.81% MS16 students have severe depression, and 0.45% MS16 students have extreme depression (Figure 3.12).

Analysis of Mental Health MS15 Batch

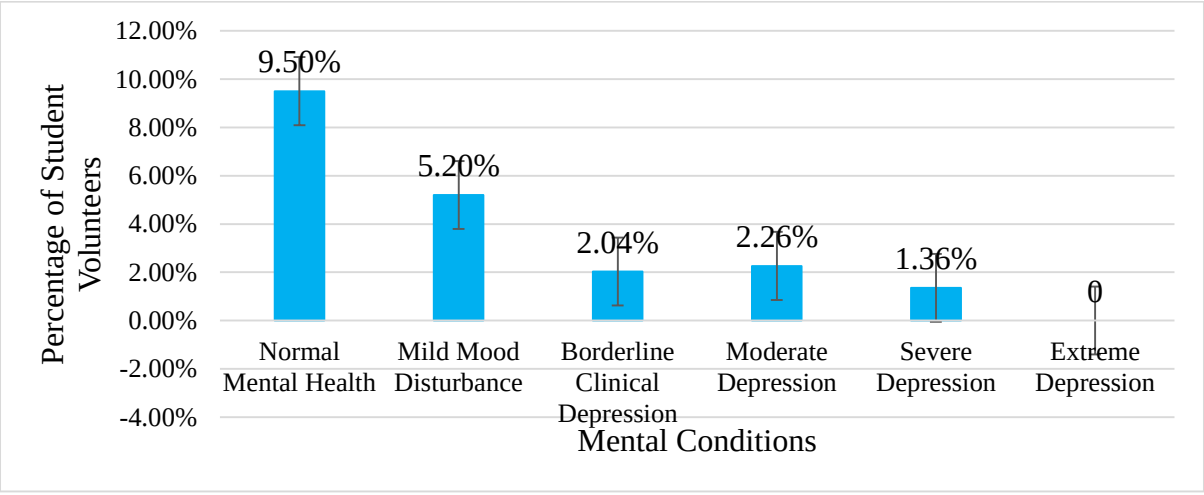

Figure 3.13: MS15 Batch vs Distribution of Mental Health

According to the study 9.50% MS15 students have normal mental health, 5.20% MS15 students have mild mood disturbance, 2.04% MS15 students have borderline clinical depression, 2.26% MS15 students have moderated depression, 1.36% MS15 students have severe depression, and 0.00% MS15 students have extreme depression (Figure 3.13).

Analysis of Mental Health MS14 Batch

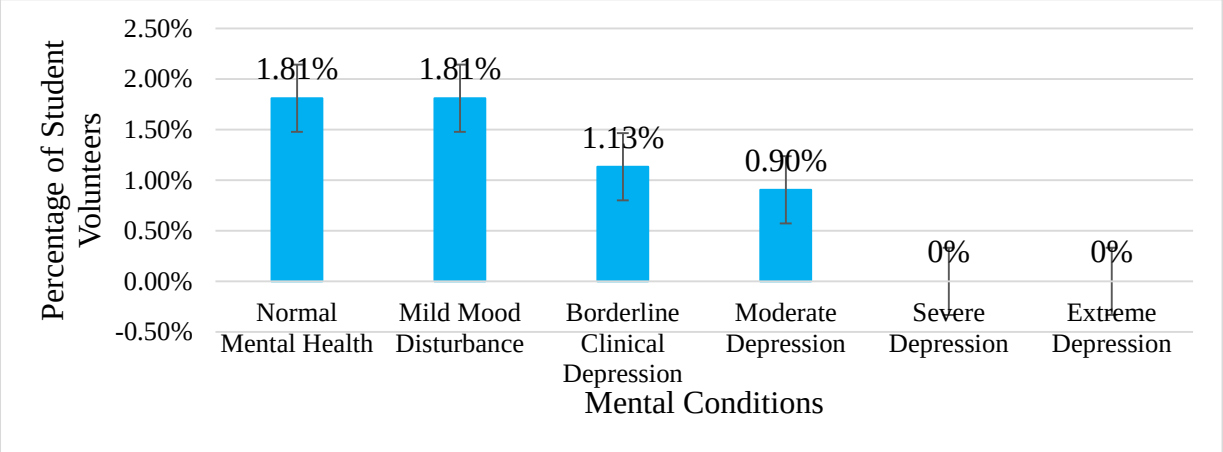

Figure 3.14: MS14 Batch vs Distribution of Mental Health

According to the study 1.81% MS14 students have normal mental health, 1.81% MS14 students have mild mood disturbance, 1.13% MS14 students have borderline clinical depression, 0.90% MS14 students have moderated depression, 0.00% MS14 students have severe depression, and 0.00% MS14 students have extreme depression (Figure 3.14).

Analysis of Variance Table						
Response: (A) Total score obtained by the volunteer						
	Df	SumSq	MeanSq	F value	Pr(>F)	
Gender	1	699.4	699.4	12.5217	0.000439	***
(B) Academic pressure	1	5730.8	5730.8	102.6078	< 2.20E-16	***
(C) Alcohol abuse	1	860.5	860.5	15.4061	9.85E-05	***
(D) Almost or daily quarrel between parents	1	1271.1	1271.1	22.7585	2.40E-06	***
(E) Always worried about your future	1	3123.8	3123.8	55.9302	3.26E-13	***
(F) Boring lectures (most of)	1	246	246	4.4046	0.036328	*
(G) Breakup	1	412.5	412.5	7.3852	0.006798	**
(H) Cheated by your best friend or friends	1	219.2	219.2	3.9247	0.048113	*
(I) Cultural shock	1	302.4	302.4	5.4151	0.02035	*
(J) Failing to have friend or friends	1	1035.2	1035.2	18.5353	2.00E-05	***
(K) High expectation from yourself	1	665.1	665.1	11.9084	0.000605	***
(L) High expectations of family and society	1	182.5	182.5	3.2673	0.071257	.
(M) Homesickness	1	213.1	213.1	3.8163	0.051298	.
(N) Hopelessness	1	1784.5	1784.5	31.9508	2.62E-08	***
(O)Lack of dependable friend or friends	1	978.3	978.3	17.5159	3.35E-05	***
(P) Lack of involvement of extra circular activities	1	413.9	413.9	7.4108	0.006703	**
(Q) Loneliness	1	195.8	195.8	3.5055	0.061731	.
(R) Mental blocks	1	177.1	177.1	3.1713	0.075534	.
(S) Misbehaviour by guides (internship or thesis)	1	208.3	208.3	3.7293	0.054013	.
(T) Obsession or dislike with your appearance	1	444.3	444.3	7.9544	0.004982	**
(U) Pornography	1	329.3	329.3	5.8955	0.015521	*
(V) Pressure from your thesis guide	1	319.5	319.5	5.7197	0.017134	*
(W) Ragging	1	181.6	181.6	3.2522	0.071912	.
(X)Social media addiction	1	433.3	433.3	7.7583	0.005544	**
(Y) Speedy curriculum	1	186	186	3.3306	0.068581	.
(Z) Stress related to choosing a major	1	518.3	518.3	9.2799	0.002436	**
(AA) Strong dislike to mess food	1	224.5	224.5	4.0196	0.045497	*
(AB) Suicide attempts	1	193.1	193.1	3.4571	0.063551	.
(AC) Suicide ideation	1	564.3	564.3	10.1032	0.001569	**
(AD) Very poor academic performance	1	440	440	7.8785	0.005192	**
Significant codes: 0 '*' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1**						

Table 3.1: Results of Analysis of Variance (ANOVA)

Correlation_Plot

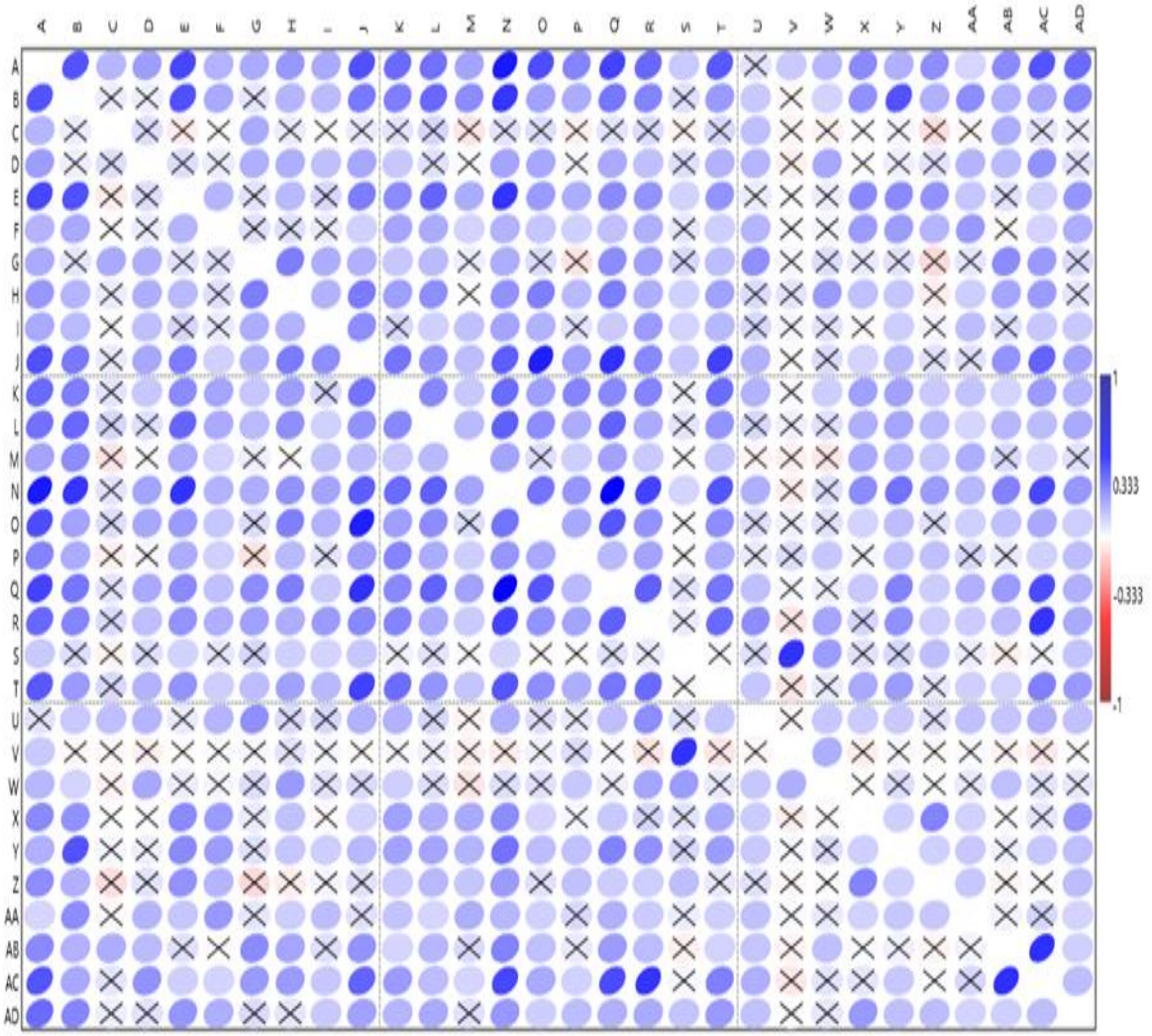

Figure 3.15: Correlation Plot of Total score obtained by volunteers with various constrains $p > 0.05$ crossed

(A)Total score obtained by the volunteer, (B) Academic pressure, (C) Alcohol abuse, (D) Almost or daily quarrel between parents, (E) Always worried about your future, (F) Boring lectures (most of), (G) Breakup, (H) Cheated by your best friend or friends, (I) Cultural shock, (J) Failing to have friend or friends, (K) High expectation from yourself, (L) High expectations of family and society, (M) Homesickness, (N) Hopelessness, (O)Lack of dependable friend or friends, (P) Lack of involvement of extra circular activities, (Q) Loneliness, (R) Mental blocks, (S) Misbehaviour by guides (internship or thesis), (T) Obsession or dislike with your appearance, (U) Pornography, (V) Pressure from your thesis guide, (W) Ragging, (X)Social media addiction, (Y) Speedy curriculum, (Z) Stress related to choosing a major, (AA) Strong

dislike to mess food, (AB) Suicide attempts, (AC) Suicide ideation, (AD) Poor academic performance

In this correlation plot the values of correlation goes from -1 to 1. The colour gradient increases from dark red to dark blue representing the importance of the correlation. Out of nearly 70 problems that students face only those who are majorly contributing to depression is represented. According to the scientific community $p > 0.05$ is considered to highly correlated. The same is followed. This plot is only showing the relationship of each factors to the total score obtained by volunteers, a general idea.

D. Hypothesis: Lack of involvement in extracurricular activities like sports, athletics, cultural and others are cause of depression.

73.75 % students has opted for the option lack of extracurricular activities of any form like sports, athletics, cultural etc. in their daily routine. 36.18% students are under any form of depression. Most of these students have opted forth option lack of extracurricular activities. To understand if they are correlated, after collecting data analysis of variance (ANOVA) is done to calculate the significance level under which the hypotheses could be studied (Hodges *et. al*, 1990; Himmelhoch *et. al*, 1991). The correlation plot (Figure 3.15) has been done to describe the degree of relationship between two variables (Hammer *et. al*, 2001). From AVOVA response is for Total score obtained by the volunteer vs lack of involvement in extracurricular activities the score is 0.006703 (Table 3.1) which is highly significant. From these two analysis it is evident that lack of involvement in extracurricular activities like sports, athletics, cultural and others are cause of depression.

3.2. Reference:

By Filpro - Own work, CC BY-SA 4.0,
https://commons.wikimedia.org/w/index.php?curid=51550153

Hammer, Øyvind, David AT Harper, and Paul D. Ryan. "PAST: paleontological statistics software package for education and data analysis." Palaeontologia electronica 4, no. 1 (2001): 9.

Himmelhoch, Jonathan M., and Michael E. Thase. "Tranylcypromine versus imipramine in anergic bipolar depression." The American journal of psychiatry 148, no. 7 (1991): 910.

Hodges, Kay. "Depression and anxiety in children: A comparison of self-report questionnaires to clinical interview." Psychological Assessment: A Journal of Consulting and Clinical Psychology 2, no. 4 (1990): 376.

Hodges, Kay. "Depression and anxiety in children: A comparison of self-report questionnaires to clinical interview." Psychological Assessment: A Journal of Consulting and Clinical Psychology 2, no. 4 (1990): 376.

http://www.socialjustice.nic.in/Home/Error?aspxerrorpath=/pdf/tab11.pdf

https://web.archive.org/web/20120415001111/http://necouncil.nic.in/

https://www.mapsofindia.com/zonal/

Chapter 4: Discussion

4.1. Discussion

Past studies have confirmed that female are more depressed than male. Reason for that is that female are more sensitivity to interpersonal relationship, whereas male are sensitivity towards external career and goal oriented factors (Alber *et. al*, 2015). Female have hormonal changes during puberty, due to menstrual cycle, changes in estrogen hormone levels, which also have a relation to play with changes in mental health condition among them (Alber *et. al*, 2015). Social factors such as females have to face suppression and restriction at many points in their lifetime (puberty, safety, cultural norms, etc.) which also contributes to the increase in their mental stress in many ways.

9 in every 22 female and 8 in every 24 males are either under borderline or moderate or severe or extreme depression. From the study it is found that 38.46% students have normal mental health (score 1-10, BECH-II). 25.33% students have mild mood disturbance (score 17-20, BECK-II) and 36.18% students are under depression, which is almost equal to the percentage of normal mental health students in the campus. The difference between normal mental health students to depressed students is 2.28%. According to the study 16.74% students have moderate depression (score 21-30, BECK-II), 4.97% students have severe depression (score 31-40, BECK-II) and 2.03% students have extreme depression (score >40, BECK-II). The depression category ranking is of the following order. The order is Moderate Depression > Borderline Clinical Depression > Severe Depression > Extreme Depression. The reason for this is mainly due to academic pressure, almost or daily quarrel between parents, always worried about future, failing to have friend or friends, break up, cheated by your best friend or friends, cultural shock, high expectation from yourself, hopelessness, lack of dependable friend or friends, lack of involvement in extracurricular activities like sports, athletics , cultural and others, obsession or dislike with your appearance, social media addiction, stress related to choosing a major and poor academic performance, alcohol abuse, pornography, pressure from parents, friends and thesis guides. Even in this study all the above mentioned factors are also contributing to the increase in depression among IISER Mohali students.

A recent study conducted on parental caring, support and academic pressure on depression in Chinese adolescents is also showing the roll of these in mental health of students (Quach *et. al*, 2015). The study is in support my findings and IISER Mohali it is clearly evident. Almost or daily quarrel between parents and their correlation to their child being diagnosed with

depression is a new insight. Similar study has been conducted were they have studied around 51 families having children's of age from 9 -12 years old (Cummings *et. al*, 1994). In this study they found that it impacts book male and female child also the impacts are in different ways (Cummings *et. al*, 1994). For male they were able to adjust to the situation, for females they were self-blame with internalizing problems was seen (Cummings *et. al*, 1994). This again is in correlation with the finding that females are more depressed as they are affected by interpersonal relationships. So the seeds of depression are sowed early in the life of student in these kind of situation. Suicide ideation and suicide attempts is high at a time when a person is undergoing depression of any form (Carpenter *et. al*, 2000). These are mostly aged between 13 -29 age (WHO, 2017) which is the same age as the depression is observed. According to World Health Organisation in the year 2015, it is estimated that 788 000 people died due to suicide; many more than this number attempted (but did not die by) suicide. Suicide accounted for close to 1.5% of all deaths worldwide, bringing it into the top 20 leading causes of death in 2015. Globally suicide occurs throughout the lifespan and was the second leading cause of death among 15-29 year olds. Always worried about future is another factor that is contributing to depression. This has been proved again and again by scientist as the repetitive thoughts or the ruminating negative thoughts are going into subconscious mind, which has a negative impact (Hughes et. al, 2008). This also means that repetitive or ruminating of positive thoughts will manifest into positive attitude towards life. Means this cycle works based on the feedback that is given into mind by a person. Failing to have friends or cheated by best friend or friends is the result of modern life style of a student. As they are only spending time with family since most of the students are occupied with school and coaching. So they need not to make new friendship since they are only spending time with family. With time they have either forgot how to make friends or don't know how to make friends at all. Most of the students at IISER Mohali are having a superficial friendship. Due to this they are facing problems. While conducting interview also in my survey most of them say that they are lonely even after they are surrounded by students all the time. At this point the impact of social media and movies on students life is enormous. Both of these avenues is contributing to their life style and expectation from college rather than having their own life. Easy access to social media has made a wall between students even staying in a single room. As again they are connected towards family and family What'sapp or Facebook groups. Also the pressure of doing everything right is a contributing factor. They are afraid to make mistake. In this process their own personal development is compromised. They forgot that mistakes are the stepping stones of success. In fact most of the students can't accept or handle negative feedbacks or results.

The stress of choosing a major is been cited as a problem and it is also found that this stress is feeding the positively the thoughts of depression among students. Alcohol abuse, pornography has been a method that students resort to escape from depression. This has resulted in making them addicted to these. Apart from these they are also using drugs and weeds. The fact that it is a temporary fooling of self is least understood among students. And it is not the solution to the problems. Cultural shock is a big concern among students as they are coming from different regions of India having different religious, socio-economical background. Many of the students are out of their home for the first time. High expectation from yourself arise from thought that they are the topper of their school or district or state. When they subjected to all India level competition and relative grading is putting lots of pressure to perform well. When students get low marks they are having low confidence. Obsession or dislike with your appearance is leading cause to depression. This is mainly due to the impact of social media and movies. They expectations and comparisons of idols from these two spheres of life have made their life difficult (Phillips *et. al*, 1999). Rather than spending time in social media they should focus on improving spiritual, quality of life (not in materialistic way). Regular exercise will help them to achieve their goal. These insights are from the in depth interviews done in one to one manner from those who has volunteered themselves. 151 students volunteered out 46 interview was conducted. The subjects were hand picked randomly.

According to the study, first and second year students of BS-MS are the most depressed. 11.99% first year students, 9.05% second year students, 7.47% third year students, 5.66% fourth year students and 2.04% fifth year students are depressed. It is also showing that the percentage of students having depression growing down as they reach final year of BS-MS course. This can be explained by Darwin's Evolutionary Psychology, a proposes that the human brain comprises many functional mechanisms, called psychological adaptations or evolved cognitive mechanisms designed by the process of natural selection that helps him to adapt (B. R. Hergenhahn and Tracy Henley, 2013).

Financial instability isn't a cause for depression of any stage like borderline or moderate or severe or extreme depression.

Till MS15 students batch, all the students admitted at IISER was getting scholarship either through INSIRE or KVPY. From MS16 batch screening was done and only a minimal number of students were getting scholarships to support their studies. At the same time the fees of new batch students has been increased nearly to 300 % compared to MS14 batch.

Here one has to deal with a very important factor namely: *Who is poor in India according to the Government of India?*

The expert committee set up by the Planning Commission last year under C Rangarajan, former chairperson of of Prime Minister's Economic Advisory Council, has redefined the poverty line. According to the report of the committee, the new poverty line should be Rs 32 in rural areas and Rs 47 in urban areas. The earlier poverty line figure was Rs 27 for rural India and Rs 33 for Urban India.

The Rangarajan report has added 93.7 million more to the list of the poor assessed last year as per the Suresh Tendulkar committee formula. Now the total number of poor has reached 363 million from 269 million in 2011-12.This raise in the poverty line income bar means 93.7 million more people are now below poverty line (BPL).

The Planning commission had set up the five-member expert group under Rangarajan to review the methodology for measurement of poverty. The committee was set up in the backdrop of national outrage over the Planning Commission's suggested poverty line of Rs 22 a day for rural areas – Down To Earth

Thus, in order to have a better understanding on economic factor towards its contribution to the mental health state, we need to do more research which could help in giving concrete results.

Lack of involvement in extracurricular activities like sports, athletics, cultural and others are cause of depression. Extracurricular activities helps in releasing feel-good endorphins, natural cannabis-like brain chemicals (endogenous cannabinoids) and other natural brain chemicals that can enhance your sense of well-being(Graft *et. al*, 2004). It also helps in taking your mind off worries so you can get away from the cycle of negative thoughts that feed depression (Graft *et. al*, 2004). Also it gives confidence and more positive social interactions (Graft *et. al*, 2004). According to the present study, it was also seen that the students who have depression also have a lack of interest in extra-curricular activities. Therefore, it could be related and we could derive that decreased physical activities could also be one of the core reasons which increases depression and other mental conditions among individuals.

According to the study students from North India is more depressed compared to students from any other parts of India. 18.55% students from Northern Region of India is under any form of depression. 8.37% students from Southern Region of India is affected by depression. Then

3.85% students from Western Region of India is affected by depression. 3.17% students from Eastern Region of India is affected by depression. 1.81% students from Central Region of India is affected by depression and 0.45% students from North-East Region of India is affected by depression. This study isn't biased free as student population from Southern and Northern region of India is very high compared to North-East Region of India. Students from North Region of India are more depressed compared to students from other regions of India. This is due to the lifestyle pressure, failing to have friends and lack of dependable friends.

The first and second year students are the most depressed student in the BS-MS batch. The reason for this could that they are new to IISER Mohali and also they haven't set their priorities according to the demands of the course. These students are distracted easily. They are subjected to study all basic subjects such as Biology, Physics, Chemistry and Mathematics and other subjects like electronics, Earth Sciences, Humanities, Programming and many more. Usually their timetable is such that morning from 09:00-12:00 the first years have lectures and afternoon 02:00-05:00 they have lab course. For the second years 09:00-12:00 they have lab courses and 02:00-05:00 they have lectures. Compared to senior batches they have less choices of electives as well as they are subjected to study which they don't want to. Seniors have the freedom of choosing their electives and know their priorities.

Thus, in order to bring about proper development of students who are the future generation of nation, one has to be in proper health both in mind and body. This, demands in more cognitive understanding about oneself and about the environment around. In the present study, it is very evident that student are facing depression and other health issues which could be related to the development of their emotional wellbeing, but, it is even more clear that the mental immaturity of the individuals are also increasing the burden they already have. During my study, when the students were asked about their methods to be happy, they most suggested things like having parties ones or twice in a month where faculties, staffs and students come together and interact over food or a cup of coffee, some even suggested park for students, increase board games, make sure that the peer group is properly working, outdoor gym, swimming pool and many more. Such materialistic suggestions were in a higher count. Being student, their mind were more involved in worldly pleasures. The scenario is not that disturbing yet it is concerning because students at IISER Mohali are very much privileged that many student in our country. Here students are provided with luxuries like been bag in library, less of books and more of resting place in the campus. This is not the case for many institutes and universities across India. A very small proportion of student have solution to their mental problems in the form of

being more physically active or wanted to gain more knowledge i.e. wanted more books in library. From my personal criticism, I would like to state that the student must realize what they need and learn to differentiate between what they want from what is necessary. This mental maturity could also help in decreases case of depression. In order to cope up with the psychological problem, we also need to evolve in our psychological thought processes. Furthermore, this can only be achieved if every individual realizes their problems and seek help at the right stage and in the right time. For this, the institute should provide more psychologist and in between some seminars and survey that could help in understanding mental health. The survey and awareness should be extended to faculties and other administrative staff. This will ensure the overall growth of both students and faculty by making IISER Mohali a good psychological ecosystem.

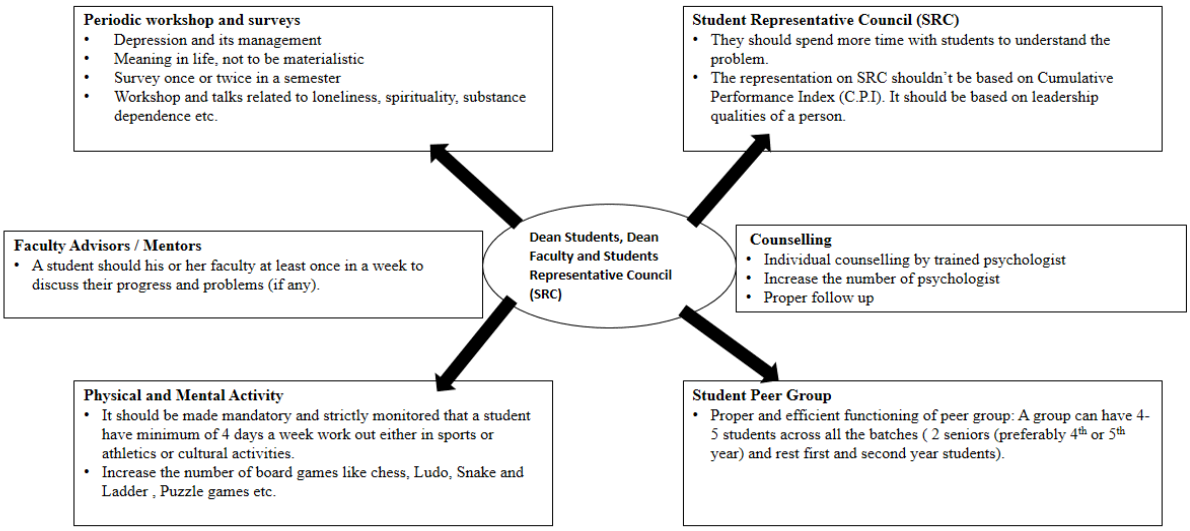

Figure 4.1: A Model for Addressing Students Issues and Concerns Scientifically in Indian Institute of Science Education and Research Mohali

This model can be adopted for implementing in IISER Mohali. The efficient functioning of this model can do wonders to the student and faculty community.

4.2. Reference:

Albert, Paul R. "Why is depression more prevalent in women?." Journal of psychiatry & neuroscience: JPN 40, no. 4 (2015): 219.

B. R. Hergenhahn, Tracy Henley, An Introduction to the History of Psychology, 7th Ed., Cengage Learning (2013).

Carpenter, Kenneth M., Deborah S. Hasin, David B. Allison, and Myles S. Faith. "Relationships between obesity and DSM-IV major depressive disorder, suicide ideation, and suicide attempts: results from a general population study." American journal of public health 90, no. 2 (2000): 251.

Craft, Lynette L., and Frank M. Perna. "The benefits of exercise for the clinically depressed." Primary care companion to the Journal of clinical psychiatry 6, no. 3 (2004): 104.

Cummings, E. Mark, Patrick T. Davies, and Kelly S. Simpson. "Marital conflict, gender, and children's appraisals and coping efficacy as mediators of child adjustment." Journal of Family Psychology 8, no. 2 (1994): 141.

http://www.iisermohali.ac.in/admissions/academics/bs-ms-dual-degree-program

https://www.downtoearth.org.in/news/new-poverty-line-rs-32-for-rural-india-rs-47-for-urban-india-45134

https://www.mayoclinic.org/diseases-conditions/depression/in-depth/depression-and-exercise/art-20046495

https://www.ncbi.nlm.nih.gov/mesh/68008603

https://www.nimh.nih.gov/health/topics/depression/index.shtml

Hughes, Megan E., and Alex Cogswell. "Repetitive thought in psychopathology: The relation of rumination and worry to depression and anxiety symptoms." Journal of Cognitive Psychotherapy 22, no. 3 (2008): 271.

National Council of Educational Research and Training (NCERT), Introduction to Psychology, Psychology class 11th, Shagun Offset Press (2018).

Phillips, Katharine A. "Body dysmorphic disorder and depression: theoretical considerations and treatment strategies." Psychiatric Quarterly 70, no. 4 (1999): 313-331.

Quach, Andrew S., Norman B. Epstein, Pamela J. Riley, Mariana K. Falconier, and Xiaoyi Fang. "Effects of parental warmth and academic pressure on anxiety and depression symptoms in Chinese adolescents." Journal of Child and Family Studies 24, no. 1 (2015): 106-116.

Chapter 5: Conclusion

5.1. Conclusion

The study is to find out the emotional and mental health states among BS- MS students of Indian Institute of Science Education and Research Mohali (IISERM). Globally, according to World Health Organisation the total number of people with depression was estimated to be 322 million, which is equivalent to 4.4% of world population (WHO, 2017). According to their study nearly half of the depression are reported from South East Asian Region and Western Pacific Region which is including India. A recent study conducted by United Nations Population Fund have revealed that India's population has grown at an alarming rate in the past ten years (i.e. 2010 to 2019), with an average increase of 1.2% per year (UNFPA, 2019). According to GBD increase in population not only hampers the grown of individuals and has a relationship with the increase in depression. According to GBD, between 2005 to 2015, the total number of people with depression has increased to 18.4%. IISER Mohali student community is unique population as students from all over the India study together. Also the faculty and students are staying in the same campus. To know the mental state of the student BECK II inventory was used (Beck *et. al*, 1996). The 633 students has volunteered out which 608 students provided complete information. The study found that 38.46% students have normal mental health (score 1-10, BECH-II). 25.33% students have mild mood disturbance (score 17-20, BECK-II) and 36.18% students are under depression, which is almost equal to the percentage of normal mental health students in the campus. The study also categorized according to the severity of depression: 16.74% students have moderate depression (score 21-30, BECK-II), 4.97% students have severe depression (score 31-40, BECK-II) and 2.03% students have extreme depression (score >40, BECK-II). The depression category ranking is of the following order. The order is Moderate Depression > Borderline Clinical Depression > Severe Depression > Extreme Depression. 9 in every 22 female and 8 in every 24 males are either under borderline/ moderate/ severe/extreme depression. Financial instability is not a major cause for depression. From the survey it was found that 14.25% students from Northern Region of India has normal mental health, 13.34% students from Southern Region of India has normal mental health, 3.61% students from Eastern Region of India have normal mental health, 2.03% students from Central Region of India has normal mental health, 4.29% students from Western Region of India has normal mental health, and 0.90% students from North-East Region of India are having normal mental health. According to the study students from North India are more depressed compared to students from any other parts of India. 18.55% students

from Northern Region of India is under any form of depression. 8.37% students from Southern Region of India are affected by depression. Then 3.85% students from Western Region of India are affected by depression. 3.17% students from Eastern Region of India are affected by depression. 1.81% students from Central Region of India are affected by depression and 0.45% students from North-East Region of India is affected by depression. The results aren't biased free as student population from Southern and Northern region of India is in high numbers compared to North-East Region of India. The contributing factors for depression according to survey are academic pressure, almost or daily quarrel between parents, always worried about future, failing to have friend or friends, break up, cheated by your best friend or friends, cultural shock, high expectation from yourself, hopelessness, lack of dependable friend or friends, lack of involvement in extracurricular activities like sports, athletics , cultural and others, obsession or dislike with your appearance, social media addiction, stress related to choosing a major and poor academic performance, alcohol abuse, pornography, pressure from parents, friends and thesis guides. This study could be made more concrete if more detailed analysis is done to understand if regional and economic instability could have any relation to depression. Additionally, it could also help us in understanding the problems faced by students which could hamper their growth. This is the first study to be conducted among students from India, and is discussing if depression could be a factor of major concern among students who are considered to be from a highly selective pool. This, study has opened the scope to understand the mental health among Indian students and with more research, it could provide us with results that could help in the development of remedies which could build healthy individuals.

5.2. Future Directions

- Collect data from PhD students of IISER Mohali and analyse them.

- To extent the study to other institution of national importance like All India Institute of Medical Sciences (AIIMS), Indian Institutes of Technology (IIT).

5.3. Reference:

Aaron T. Beck, Robert A. Steer, Roberta Ball & William F. Ranieri (1996) Comparison of Beck Depression Inventories-IA and-II in Psychiatric Outpatients, Journal of Personality Assessment, 67:3, 588-597, DOI: 10.1207/s15327752jpa6703_13

Albert, Paul R. "Why is depression more prevalent in women?." Journal of psychiatry & neuroscience: JPN 40, no. 4 (2015): 219.

B. R. Hergenhahn, Tracy Henley, An Introduction to the History of Psychology, 7th Ed., Cengage Learning (2013).

Craft, Lynette L., and Frank M. Perna. "The benefits of exercise for the clinically depressed." Primary care companion to the Journal of clinical psychiatry 6, no. 3 (2004): 104.

Depression and Other Common Mental Disorders: Global Health Estimates. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, and others. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet, 388: 10053.

https://indianexpress.com/article/india/indias-population-growth-rate-outpaced-china-in-last-9-years-un-report/

https://www.mayoclinic.org/diseases-conditions/depression/in-depth/depression-and-exercise/art-20046495

United Nations Population Fund’s (UNFP) State of World Population 2019 report

Appendix

A.1. Complete ANOVA table

Analysis of Variance Complete Table						
Response: Total score obtained by the volunteer						
	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
Gender	1	699.4	699.4	12.5217	0.000439	***
State of birth	26	2767.6	106.4	1.9059	0.004853	**
Age	1	197.7	197.7	3.5403	0.060458	.
Are you getting scholarship?	1	58.7	58.7	1.0503 0	0.305925	
Academic pressure	1	5730.8	5730.8	102.6078	< 2.2e-16	***
Alcohol abuse	1	860.5	860.5	15.4061	9.85E-05	***
Alcohol use	1	72.4	72.4	1.2967	0.25534	
Almost or daily quarrel between parents	1	1271.1	1271.1	22.7585	2.40E-06	***
Always worried about your future	1	3123.8	3123.8	55.9302	3.26E-13	***
Boring lectures (most of)	1	246	246	4.4046	0.036328	*
Breakup	1	412.5	412.5	7.3852	0.006798	**
Cheated by your best friend or friends	1	219.2	219.2	3.9247	0.048113	*
Cultural shock	1	302.4	302.4	5.4151	0.02035	*
Debt	1	106	106	1.8973	0.168976	
Divorcing or Divorced parents	1	13	13	0.2331	0.629418	
Drug abuse	1	31.6	31.6	0.5652	0.452536	
Drug use	1	141.6	141.6	2.5351	0.111951	
Exam pressure	1	2.1	2.1	0.0368	0.847871	
Failing to have friend or friends	1	1035.2	1035.2	18.5353	2.00E-05	***
Failing to manage money	1	5.7	5.7	0.1027	0.748693	
Financial instability	1	1.4	1.4	0.0248	0.874822	
Game addiction	1	47.9	47.9	0.8577	0.354821	
Gossips and rumours	1	2	2	0.0351	0.851524	
High expectation from yourself	1	665.1	665.1	11.9084	0.000605	***
High expectations of family and society	1	182.5	182.5	3.2673	0.071257	.
Homesickness	1	213.1	213.1	3.8163	0.051298	.
Hopelessness	1	1784.5	1784.5	31.9508	2.62E-08	***
Insomnia (Diseases)	1	52.8	52.8	0.9457	0.33128	

Lack of dependable friend or friends	1	978.3	978.3	17.5159	3.35E-05	***
Lack of involvement of extra circular activities	1	413.9	413.9	7.4108	0.006703	**
Lack of personal space in your room	1	35.6	35.6	0.6382	0.424739	
Lack of Physical exercise	1	121.6	121.6	2.1776	0.140644	
Lack of places like park in the campus	1	34.9	34.9	0.6248	0.429622	
Lack of support and guidance to participate in athletics activities	1	147	147	2.6317	0.105362	
Lack of support and guidance to participate in cultural activities	1	25.3	25.3	0.4536	0.50091	
Lack of support and guidance to participate in sports activities	1	58.2	58.2	1.0422	0.307783	
Lack of time management	1	50.7	50.7	0.9069	0.341381	
Language problem	1	52.2	52.2	0.9338	0.334339	
Leaking of personal informations	1	69.3	69.3	1.2406	0.265882	
Loneliness	1	195.8	195.8	3.5055	0.061731	.
Mental blocks	1	177.1	177.1	3.1713	0.075534	.
Misbehaviour by guides (internship or thesis).	1	208.3	208.3	3.7293	0.054013	.
No emotional support from parents	1	129.4	129.4	2.3169	0.128587	
Obsession or dislike with your appearance	1	444.3	444.3	7.9544	0.004982	**
Peer pressure	1	109.3	109.3	1.957	0.162433	
Personal chronic health issues	1	39.8	39.8	0.7127	0.398952	
Physical.harassment	1	57.4	57.4	1.0283	0.311039	
Pornography	1	329.3	329.3	5.8955	0.015521	*
Pressure from parents	1	82.7	82.7	1.4805	0.224247	
Pressure from your thesis guide	1	319.5	319.5	5.7197	0.017134	*
Problem in managing your studies well	1	97.7	97.7	1.7485	0.186647	
Problems with college roommate	1	136.4	136.4	2.4413	0.118791	
Ragging	1	181.6	181.6	3.2522	0.071912	.
Rape	1	0.3	0.3	0.0059	0.938978	
Series of nightmares	1	119.7	119.7	2.1424	0.143892	
Sexual harassment	1	25.2	25.2	0.4508	0.502276	
Smoking	1	76.2	76.2	1.3649	0.243239	
Social media addiction	1	433.3	433.3	7.7583	0.005544	**

Speedy curriculum	1	186	186	3.3306	0.068581	.
Stress related to choosing a major	1	518.3	518.3	9.2799	0.002436	**
Strong dislike to mess food	1	224.5	224.5	4.0196	0.045497	*
Student education loan problems	1	69.6	69.6	1.2465	0.264748	
Substandard food	1	0.3	0.3	0.0055	0.940995	
Suicide attempts	1	193.1	193.1	3.4571	0.063551	.
Suicide ideation	1	564.3	564.3	10.1032	0.001569	**
Unable to deal with winter weather	1	20.2	20.2	0.3613	0.548052	
Very poor academic performance	1	440	440	7.8785	0.005192	**
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1						

A.2.The questionnaire that was used for data collection

Dear friend, as part of my project PRJ502. I am studying the emotional health and its related aspects of IISER Mohali student community. This is good opportunity for all to understand the IISER Mohali student community in a better way and help each other. Please fill the questionnaire.

1) Gender: Male/ Female

2) Age:

3) State of birth:

4) Mother tongue:

5) Annual family income:

a) Less than or equal to two lakh
b) Two to five lakh
c) Five to eight lakh
d) Eight to ten lakh
e) Above ten lakh

6) No of siblings (if you have any):

7) Are you getting scholarship?

a) Yes b) No

8) If so among the following which scholarship you are getting?

a) KVPY fellow b) INSIPRE fellow c) Private (like NGO's or organisations)

d) International

9) Have you ever faced the any following situation? If you have faced multiple situation which is most likely please circle them all.

- Cheated by your best friend /friends
- Ragging
- Sexual harassment
- Rape
- Physical harassment
- Pressure from parents
- Peer pressure
- Pressure from your thesis guide
- Alcohol use
- Alcohol abuse
- Divorcing/Divorced parents
- Financial instability
- Personal chronic health issues
- Breakup
- No emotional support from parents
- Cultural shock
- Exam pressure
- Insomnia (Diseases)
- Loneliness
- Hopelessness
- Strong dislike to mess food
- Suicide ideation
- Suicide attempts
- Death of dear person
- Problem in managing your studies well
- Lack of time management
- High expectations of family and society
- Student education loan problems
- Problem with college roommate
- Academic pressure
- Social media addiction
- Unhygienic conditions in hostel
- Lack of support and guidance to participate in cultural activities
- Lack of support and guidance to participate in athletics activities
- Lack of support and guidance to participate in sports activities
- Lack of dependable friend/friends
- Misbehaviour by guides (internship or thesis)
- Misbehaviour by lab members (internship or thesis)
- Gossips and rumours
- Leaking of personal informations
- Mental blocks
- Speedy curriculum
- High expectation from yourself
- Lack of involvement of extra circular activities
- Almost or daily quarrel between parents
- Lack of places like park in the campus
- Unable to deal with winter weather
- Series of nightmares
- Substandard food
- Drug use
- Drug abuse
- Smoking
- Lack of care and affection by parents
- Lack of personal space in your room
- Lack of Physical exercise
- Obsession or dislike with your appearance
- Language problem
- Always worried about your future
- Pornography
- Failing to have friend or friends
- Debt
- Stress related to choosing a major
- Homesickness
- Failing to manage money
- Very poor academic performance
- Boring lectures (most of)
- Any other: .....

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully. And then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness

0. I do not feel sad.
1. I feel sad much of the time.
2. I am sad all the time.
3. I am so sad or unhappy that I can't stand it.

2. Pessimism

0. I am not discouraged about my future.
1. I feel more discouraged about my future than I used to.
2. I do not expect things to work out for me.
3. I feel my future is hopeless and will only get worse.

3. Past Failure

0. I do not feel like a failure.
1. I have failed more than I should have.
2. As I look back, I see a lot of failures.
3. I feel I am a total failure as a person.

4. Loss of Pleasure

0. I get as much pleasure as I ever did from the things I enjoy.
1. I don't enjoy things as much as I used to.
2. I get very little pleasure from the things I used to enjoy.
3. I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

0. I don't feel particularly guilty.

1. I feel guilty over many things I have done or should have done.

2. I feel quite guilty most of the time.

3. I feel guilty all of the time.

6. Punishment Feelings

0. I don't feel I am being punished.

1. I feel I may be punished.

2. I expect to be punished.

3. I feel I am being punished.

7. Self-Dislike

0. I feel the same about myself as ever.

1. I have lost confidence in myself.

2. I am disappointed in myself.

3. I dislike myself.

8. Self-Criticalness

0. I don't criticize or blame myself more than usual.

1. I am more critical of myself than I used to be.

2. I criticize myself for all of my faults.

3. I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

0. I don't have any thoughts of killing myself.

1. I have thoughts of killing myself, but I would not carry them out.

2. I would like to kill myself.

3. I would kill myself if I had the chance.

10. Crying

0. I don't cry any more than I used to.

1. I cry more than I used to.

2. I cry over every little thing.

3. I feel like crying, but I can't.

11. Agitation

0. I am no more restless or wound up than usual.

1. I feel more restless or wound up than usual.

2. I am so restless or agitated, it's hard to stay still.

3. I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0. I have not lost interest in other people or activities.

1. I am less interested in other people or things than before.

2. I have lost most of my interest in other people or things.

3. It's hard to get interested in anything.

13. Indecisiveness

0. I make decisions about as well as ever.

1. I find it more difficult to make decisions than usual.

2. I have much greater difficulty in making decisions than I used to.

3. I have trouble making any decisions.

14. Worthlessness

0. I do not feel I am worthless.

1. I don't consider myself as worthwhile and useful as I used to.

2. I feel more worthless as compared to others.

3. I feel utterly worthless.

15. Loss of Energy

0. I have as much energy as ever.

1. I have less energy than I used to have.

2. I don't have enough energy to do very much.

3. I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0. I have not experienced any change in my sleeping.

1a I sleep somewhat more than usual.

1b I sleep somewhat less than usual.

2a I sleep a lot more than usual.

2b I sleep a lot less than usual.

3a I sleep most of the day.

3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0. I am not more irritable than usual.

1. I am more irritable than usual.

2. I am much more irritable than usual.

3. I am irritable all the time.

18. Changes in Appetite

0. I have not experienced any change in my appetite.

1a My appetite is somewhat less than usual.

1b My appetite is somewhat greater than usual.

2a My appetite is much less than before.

2b My appetite is much greater than usual.

3a I have no appetite at all.

3b I crave food all the time.

19. Concentration Difficulty

0. I can concentrate as well as ever.

1. I can't concentrate as well as usual.

2. It's hard to keep my mind on anything for very long.

3. I find I can't concentrate on anything.

20. Tiredness or Fatigue

0. I am no more tired or fatigued than usual.

1. I get more tired or fatigued more easily than usual.

2. I am too tired or fatigued to do a lot of the things I used to do.

3. I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0. I have not noticed any recent change in my interest in sex.

1. I am less interested in sex than I used to be.

2. I am much less interested in sex now.

3. I have lost interest in sex completely.

Thank you ☺

Note: If you are willing to be contacted for in depth interview in the coming few days please share your name and contact number. This survey is only for academic purpose and name of the volunteers who participate will be kept confidential.

Name:

Contact number:

What'sapp number: