

ECONOMIC COST OF MENTAL ILLNESSES

How do mental illnesses affect economic performance, and what are the economic costs?

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Abstract

This paper is a literature review on the effects mental illnesses have on individuals' economic performance in the short and long-term. I will be doing a systematic review of the direct and indirect costs and how exactly they are formed analysing how mental illnesses affect one's risk awareness, decision making and loss of potential and using behavioural economics as a tool to understand why precisely these effects are seen. These will then be used to take a more specific look at how and why they affect particular parts of life such as education, work and employment, family and social life, poverty and lost healthy years. By doing so, we can better understand the aggregated costs estimated by studies already conducted. This paper aims to better inform the reader on the sheer size of the negative impact caused by mental illnesses, in doing so, raising awareness and understanding of the matter. The cost of mental illnesses varies between countries, but a consistent cost of 3%-5% of countries GDP can be seen. Most of the costs are due to lost healthy years and an increase in absenteeism and presenteeism. Tremendous treatment gaps ranging from only 10%-50% of mentally ill people getting help, varying between countries. This paper also touches on the matter of incentives to invest in mental health and how some studies have shown a cost-benefit ratio of 2-3 on investments into mental health.

Keywords Economics, Mental Illness, Risk awareness, Decision making, Loss of potential

1 Introduction

In 2019 mental illnesses were the single biggest reason for work absence in Finland. Nearly half a million Finns take depression medication yearly (Mäkinen et al., n.d.). In the EU, almost 165 million suffer from a form of mental disorder annually and in general half of the population will go through a mental illness once in their lifetime (Trautmann et al., 2016). Not only is this a massive problem, but it is also a growing problem. Last year (2019) in Finland, the number of new work absences caused by mental illnesses compared to the previous year (2018) grew by 10000 new cases (Blomgren, 2019). It is clear that we face a rising problem at hand, which, as for now, does not show any signs of slowing down.

Mental illnesses cause significant losses on capital, labour and human potential, all which are fundamental components in economic well-being, thus for economic growth. This thesis will focus on how mental illnesses affect individuals' economics performance, the costs, and how the costs are formed. Using behavioural economics, I will analyse how mental illnesses affect individuals' risk awareness, decision-making, and potential loss. These findings will then be translated into numerical cost estimations by analysing researches already conducted on the matter. The costs will be divided into direct and indirect costs, giving more significant emphasis on the indirect part, since most of the costs caused by mental illnesses tend to be indirect.

Presenting a problem in a more concrete numerical way is an excellent way to raise awareness among policymakers, health planners and people in general. By doing this, I wish to create incentives on the benefits of investing in mental healthcare.

As humanity progresses into the future, we face new challenges as a by-product of our ever-changing lifestyles and environment. These changes in our society and daily lives partly contributes to the rise of mental illnesses (Reini, 2016). As new challenges arise, we must also arise. By acknowledging and facing it head-on, after all, mental well-being enables one to live a fulfilling life and be a productive part of our society (Han & goleman, daniel; boyatzis, Richard; Mckee, 2019).

1.1 Mental illnesses

1.1.1 The definition of mental illness

Mental health and psychological well-being are a crucial element in individuals progress and decision making in life. This affects one's capacity to live a fulfilling life and to feel like a part of society. How one can pursue dreams, interest and feel pleasure in doing so. Taking responsibility on personal decision regarding finances, employment and education (Chisholm et al., 2006).

Mental illnesses create a disturbance in one's ability to feel pleasure in general. This disturbance in persons mood and way of thinking can alter the ability to function drastically in the field mentioned above of life (Chisholm et al., 2006). Mental illnesses can be listed as follows (Saraceno, 2005).

- Anxiety disorders
- Depression
- Eating disorders
- Personality disorders
- Post-traumatic stress disorder
- Psychotic disorders
- Schizophrenia
- Drug use disorder

These disorders share many similar traits when it comes to how they affect a person. Due to the unpredictable and often recurring nature of these illnesses, it is not easy to evaluate the total negative impact (Chisholm et al., 2006). This makes it difficult to pinpoint the start and the end of the illness, and because of this it is more challenging to entirely fathom the economic costs caused by it.

1.1.2 Brief history

Mental illnesses are not a new phenomenon by any means; there are references to them throughout history. As humans evolve so does our understanding of diseases, the same goes for mental illnesses. The history of understanding mental illnesses is bleak and a dark one, due to the conditions' nature. As mental disorders typically mean that one differs from the “normal” and the definition of normal is ever-changing, they are incredibly prone to be defined in given time periods current trends and a general understanding on the human mind, which means that what is nowadays diagnosed as an illness, e.g. schizophrenia used to be explained by one simply being mad (Farreras, 2020).

As time went on, there was a need for a uniform way of tackling mental illnesses, a diagnosis which would be used globally. Now that mental illnesses had taken a firm ground as an “illness” that could cause havoc in one’s life society needed a way to diagnose it properly, after all, one couldn’t diagnose it with a simple laboratory test (Blomgren, 2019; Farreras, 2020). To establish a standardised diagnostic system with agreed-upon definitions of psychological disorders and create a shared understanding among mental-health providers and aid in clinical research, DSM-5 was created in 2013 (Farreras, 2020). Another similar diagnostic system also used globally is the ICD-10 (International Classification of Diseases) by the WHO in 1992 (Ritchie & Roser, 2018).

1.2 Current situation regarding mental illnesses

In 2017 10,7% of the world’s population suffered from a mental disorder (Ritchie & Roser, 2018) and in the most recent study 13%, or translated into numbers 970 million people have a mental disorder (Walsh, 2020). The trend on mental illnesses is quite clear, and it has been growing since we first started gathering data on the matter.

In the EU, approximately 165 million are affected by a mental illness each year (Trautmann et al., 2016). Generally speaking, more than 50% of the population in the middle- and high-income countries will suffer from at least one mental disorder throughout their lifetime (Trautmann et al., 2016). In Finland, approximately 15-20% of the underaged population, 20-25% of adults under 65 and 16-30% adults over 65 suffer from some form of mental illness

(Reini, 2016). Last year Finland had an additional 10000 more work absences due to mental illnesses topping at 84000 cases of sick leaves in one year. This makes mental illnesses the most common reason for work absence and 43% larger than in 2017. Most common disorders being anxiety and depression, this can also be seen from the fact that half a million Finns take depression medication yearly (Blomgren, 2019).

Most alarming signal has to be the fact that mental illnesses are more and more common among the youth. A quarter of Finnish youth is diagnosed with a mental illness of some sort: the most common reasons being loneliness and social exclusion (Kaltiala, 2020).

2 Economic cost of mental illnesses

2.1.1 Briefing on the idea

The idea is to do a systematic analysis of how mental illnesses affect economic productivity and how these create direct and indirect costs. While direct expenses, such as physician visits, necessary transportation for getting treatment and medication costs are more easily quantifiable, the indirect costs are harder to measure. Indirect costs consist of loss of potential income due to being mentally ill, such as being absent from work, loss of healthy years, suboptimal economic decision-making, and not fully achieving one's potential. Using behavioural economic theory, I will analyse how being mentally ill can affect one's risk awareness, decision-making, and potential loss. The subtopics which will be analysed through behavioural economics are as follows:

- Education
- Work and employment
- Family and social life
- Poverty
- Lost healthy years

I will do a systematic review on these subtopics one by one on how mental illnesses disturb these aspects of life, affecting risk-taking, decision-making, and potential loss in the long run.

These can be estimated through indirect costs and by doing so, give us an estimation of how high the economic cost of mental illnesses can be.

Already conducted studies will be used to estimate the numerical costs, combining these studies into one, and then focusing on what actually causes these costs. This will give us a better understanding of how exactly mental illnesses affect one's economic productivity in life and how this translates into costs for an individual and our society.

The effects of being mentally ill is a complicated matter when it comes to the actual impact it causes for an individual. A state of mind can cause one to lose control of one's finances, causing one to plunge into poverty in worst-case scenarios. Falling into poverty can cause one to become mentally ill due to added levels of anxiety and stress levels. This double-sided blade aspect of mental illnesses makes it a result of certain situations of drawbacks in life. Simultaneously, it can also be the cause that creates these situations, which makes mental illnesses one of the most burdensome noncommunicable diseases (Baranov et al., 2020).

In the next part where I will be analysing different direct and indirect cost, it is good to keep in mind that many of these studies, such as the "economic burden of depression in South Korea" calculate the cost by estimating the lost productivity/income that an individual on average loses due to lost healthy years caused by mental illnesses. Calculation methods differ between different studies, but on this literature review, I focus on the ones where calculations were conducted on a similar matter. In order to fully understand the total cost of mental illnesses, we must include an estimation of indirect costs. Unemployment benefits were also not considered, since they are just money transfers between individuals (Chang et al., 2012).

2.2.1 How do mental illnesses affect economic performance and what are the costs?

2.2.2 Education

To start analysing how mental illnesses affect education and through that cause costs for the society, we must first make two economic assumptions. Firstly educated individuals perform better economically than uneducated individuals (Nafukho et al., 2004; Wolf, 2004). This

consist of better risk management and better decision making when it comes to finances and life in general. Secondly, education is an investment in two ways, capital investment on governments part and human capital investment on the individual's part. Assuming that the government pays for education, such as in Finland (Reini, 2016).

Mental illnesses can disturb education on two levels, going for higher education in the first place or graduating from higher education. Even though one would want to do so, not going for higher education is due to higher risk aversion and difficulties in decision-making caused by a mental illness, most commonly depression. This is also further made worse by how depressed individuals share a common trait of unworthiness and lack of self-belief (Han & Goleman, Daniel; Boyatzis, Richard; Mckee, 2019). This results in a loss of human potential and human capital development. Instead, taking a risk and achieving dreams and goals in life, individuals suffering from a form of mental illness can get stagnated not going forward in life.

When it comes to performance regarding school and graduating, mental illnesses play a significant role. The risk of dropping out and underperforming is significantly higher when mentally ill. Dropping out is a direct loss of investment. Prolonged education due to mental illnesses, on the other hand, increases the cost of education and creates potential losses due to the individual still studying instead of working. Mental illnesses negatively affect one's quality of sleep, willingness to exercise and food diet (Baranov et al., 2020). These factors downgrade school performance and well-being in general, resulting in higher risks of dropouts and postponed graduation (Berger & Fisher, 2013; Frank, 2012; Reini, 2016).

Now to further understand the indirect costs, we must analyse how educated people behave differently. On average, an educated individual is more economically productive than an uneducated individual. Added tools for life granted by education enable one to achieve goals in life better. Possibilities are much higher in the job markets increasing the chance of finding a fulfilling and pleasant job, resulting in a better quality of life and being a more productive individual (Berger & Fisher, 2013; Nafukho et al., 2004). Education increases positive economic decision making; this includes investing in health, housing and positive risk-taking. Effects can also be seen in society's stability, a more significant portion of educated individuals correlates positively with the stability of society as a whole (Nafukho et al., 2004; Reini, 2016).

When looking at the components of economic growth, labour, and ideas play a significant role. Mental illnesses impact and reduce education levels among people reducing the valuable educated labour force. This loss of potential accounts for the most indirect costs derived from mental illnesses impact on education. This is more prominent in developed forerunner countries since new ideas and technological inventions enable us to drive forward on our economic growth (Doran & Kinchin, 2019).

2.2.3 Work and employment

To better understand the effects of mental illnesses on working capabilities and employment, it is necessary to understand how the nature of work has changed in recent history. When looking at modern western countries specifically, not too long-ago individuals' physical capabilities were the highest contributor to productive work. The further we go forward the less value is put on one's physical abilities when it comes to working. As we progress forward, new attributes have become more critical when it comes to performing well in the work environment, such as problem-solving, creativity, adaptability and in general a more comprehensive range of knowledge and know-how. These are all ushered in by the new information era, which requires a much broader understanding of different components and skills (Reini, 2016). These all require more mental performance and brainwork, often resulting in mental exhaustion. Physical work can be mostly done without a significant reduction in productivity, even when one is not mentally ill. On the other hand, modern work requires constant levels of creativity, thinking outside the box and learning new skills to be relevant. This new nature of contemporary work can explain how mental illnesses affect economic performance in the labour force. Mental illnesses, especially depression, increases absenteeism and presenteeism (Chang et al., 2012). So not only do mental illnesses reduce an individual's productivity, but it also increases the number of work absences.

Mental illnesses increase absenteeism, meaning that being absent from work is increased when mentally ill. This can happen directly by being so mentally ill that one cannot attend work or other health complications indirectly caused by mental illnesses. A mentally ill individual will have difficulty coping with the everchanging and more requiring modern-day work, thus feeling exhaustion much easier. This psychological and physical exhaustion often leads to work absences. Being unable to feel any accomplishments due to being mentally ill

disconnects one from the work environment, lowering the bar for applying for sickness-related work absence (Chisholm et al., 2006). Studies have investigated the relationship between mental illnesses and absenteeism. These studies were conducted on either people suffering from a form of mental illness or have been diagnosed with one in earlier life. Both studies concluded that mental illnesses do increase absenteeism. A study based in South Korea conducted that the average absent days from work for a mentally ill individual was approximately 2-2,5 days higher per month than a non-mentally ill individual (Chang et al., 2012). Another similar study based in Australia conducted an increase of 1.7% absenteeism (Doran & Kinchin, 2019). These numbers are even worse in Finland, where mental illness-related work absences are much higher in proportion to other diseases, making it the leading cause of work absences in 2019 after surpassing physical injuries related absences. Mental illnesses are the single biggest reason for the loss of workdays in Finland, resulting in 5,2 million lost workdays from the total sum of 15 million workdays lost during 2018 (Blomgren, 2019).

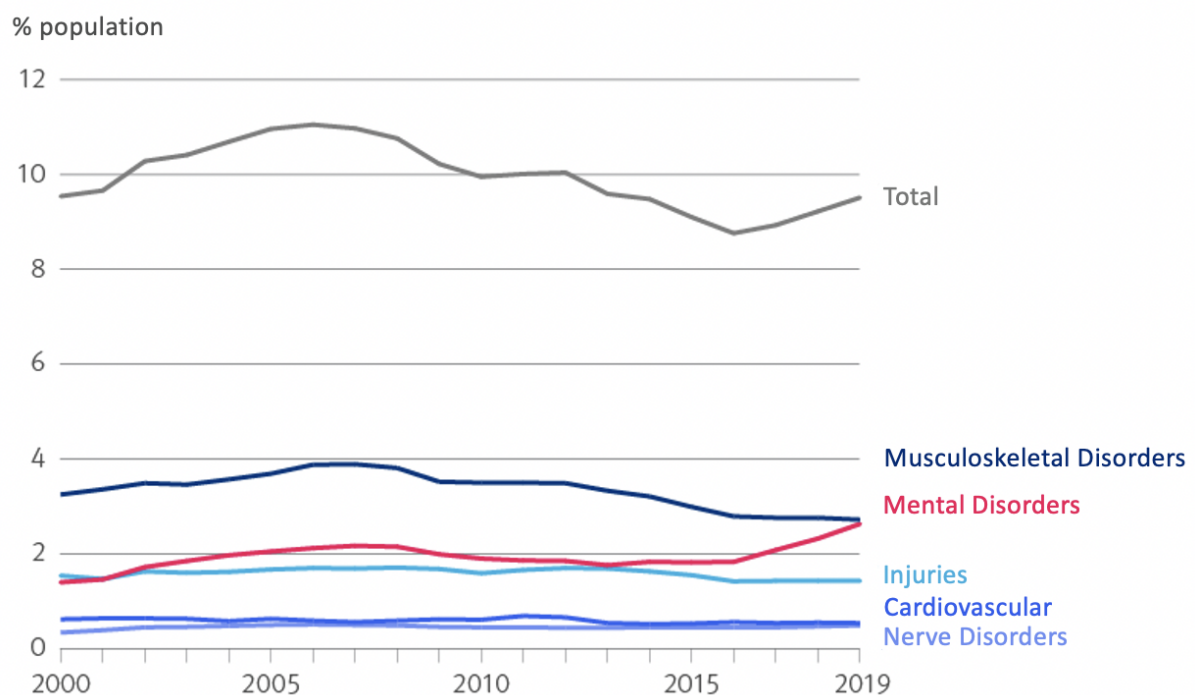


Figure 1: Work absences due to a disability in Finland. Source: Tilastokeskus

Presenteeism, economic productivity in the work environment can be studied in many ways. This can be measured in the healthcare sector by the number of patients taken care and

customer happiness. In some scenarios, the fulfilled goals and projects. Whatever the field of work, a clear signal of increased presentism can be seen when suffering from a mental illness. A loss of 5-10% in economic productivity at work has been seen, varying on the field of work (Chang et al., 2012; Doran & Kinchin, 2019; McTernan et al., 2013). Mentally ill individuals tend to be less energetic due to decision making regarding one's health. This often results in worse physical well-being resulting in a less enthusiastic labour force. Loss of motivation also plays a significant role when explaining the increased presenteeism. A depressed individual does not get any positive emotions from accomplishments; this makes goals set by the employer more exhausting and less rewarding (Baranov et al., 2020; Chang et al., 2012; Doran & Kinchin, 2019).

Mental illnesses can cause a lasting mark on the individual. One example of this is how it affects one career in the long run. To understand how mental illnesses disturb people's careers, we must take a look at the drivers behind successful careers: risk-taking, good decision making, confidence and honest hard work. When suffering from a mental illness, the risk-taking is significantly magnified in the individual's mind, often resulting in staying in the comfort zone and never taking chances. This overly cautious behaviour can cause a "mental prison" preventing one from attaining anything new into one's life. In practice, this can mean refusing a promotion, due to the new added responsibilities or perhaps refusing a better paying and demanding offer from a different company. This increase in risk aversion, loss of confidence, and motivation causes sub-par decision-making, which can cause an enormous impact on one's career. Studies have investigated how individuals suffering from mental illnesses generate income during their lifetimes, compared to similar people without a mental illness. The combination of losing opportunities due to risk aversion can cause a significant difference in income. A study based in Australia concluded that individuals who had or still were suffering a severe mental illness case had approximately 73% lower income than their full-time employed counterparts (Doran & Kinchin, 2019; Han & Goleman, Daniel; Boyatzis, Richard; Mckee, 2019).

Implications on disturbance on employment and unemployment can also be seen. People suffering from mental illnesses often carry pessimistic opinions about their future, this combined with the loss of confidence results in an unmotivated state of mind. In this state, one will have a hard time giving effort to the task that will challenge them, one such task is finding a job and becoming employed. These effects explain the four times higher

unemployment rate amongst severely mentally ill people (Chisholm et al., 2016; Han & Goleman, Daniel; Boyatzis, Richard; McKee, 2019). This same pattern of disbelief in self, increases the risk of becoming unemployed as well. A study based in the USA followed recently unemployed, mentally ill individuals on their re-employment progress. The monitoring period was six months. Half of the study group received help to their mental illness-related problems, and the other half did not. After the six months, 72.2% of the ones who got help found new jobs and from the ones who did not, only 52.2%. Hence mental illnesses make joining the labour force much more difficult (Chisholm et al., 2016; Reini, 2016).

2.2.4 Family and social life

Often when investigating the effects mental illnesses can have on an individual, the impact on the patient's family is not getting any attention. In truth, a severely depressed individual can drastically affect the family's well-being as a whole. These people often require financial assistance and caretaking from their family and relatives, lowering the whole family's cumulative wealth. Depressed father or mother might not be able to raise his/her children, forcing the other to be forced into full time caretaking of both the children and the mentally ill spouse. Combining these effects can often lead the family into poverty, from where things can then spiral out of control. The financial decision, such as deciding to have children or investing in buying a house often get left behind when the partner has a mental illness (Doran & Kinchin, 2019; Knapp & Wong, n.d.).

2.2.5 Poverty

The relationship between poverty and mental illnesses is two-sided; poverty can cause one to get mentally ill and mental illnesses can cause poverty. The effects of poverty and mental illnesses are very similar in many ways. When it comes to risk awareness and decision making, both share many similar negative attributes. Hence the topic of poverty and mental illnesses is very relevant. This can also be seen how the poorest population quintiles in rich countries exhibit mental health disorder prevalence that is 1,5 to 2 times that of the wealthiest quintiles (Haushofer & Fehr, 2014).

Mental illnesses can lead to poverty in a very similar way as poverty can lead to mental illnesses. The direct costs of physician visits and medication create a significant dent on one's finances. These costs vary between countries whether or not the individual pays all these costs or has the government's privilege of free healthcare. These costs can force one to cut costs from other life fields, often resulting in being forced to quit hobbies or other activities that bring joy to one's life. It is quite common that when a person has a mental illness, new additional costs to life force one to use up life savings to enable treatment and a reasonable standard of living. One key factor in this matter is how mentally ill people are more prone to increased time discounting. This is due to how mentally ill people have a more pessimistic view of one's future, hence capitals current value is much higher and investing in the future is not very attractive. One is also more prone to be absent from work, do fewer hours of work and in worst scenarios, decide to quit a job due to ill health. These effects on economic decision making lead into a row of suboptimal decision-making, leading one into a poverty trap (Baranov et al., 2020; Haushofer & Fehr, 2014; Knapp & Wong, n.d.).

Poverty brings on a new set of challenges and decision making to a person these range from long-term to short-term effects. The short-term effects consist of day-by-day decision-making situations. Ranging from choosing non-healthy food to passing on exercising, these decisions are often made under the sheer financial pressure one faces. This can quickly become a self-feeding cycle that worsens one physical and mental health even further. Moreover, the long-term effects cause the most significant economic loss for an individual. This long-term economic performance loss is due to the feedback loop caused by mental illnesses and poverty, both of them further strengthening the harmful effects of one and the other. This feedback loop consists of increased risk awareness, suboptimal economic decision making and increased pessimistic views on the future (Baranov et al., 2020; Frank, 2012; Haushofer & Fehr, 2014). It is precisely this extremely brutal trap that so many people end up in many cases due to sheer bad luck. The nature of this self-feeding loop can, in worst cases, completely isolate an individual from society. This leads us to the question of equality. These effects can completely rid one from the willingness, and the potential one possesses, these also being the tools to get out of poverty and get help for the suffering caused by mental illnesses. In the end, it is the complete loss of human capital development and potential that creates the most prominent economic cost for our society in the long run (Baranov et al., 2020; Han & Goleman, Daniel; Boyatzis, Richard; McKee, 2019).

The effects of poverty do not only limit to the adult, but also the children. Children born and raised suffer similar consequences of which the adults fall victim to. These children have much fewer options and possibilities when it comes to human capital development. These include hobbies, education and the neighbourhood where one lives. These effects can be seen as a lowered economic opportunity which causes substantial effects on one's prospects of upward socio-economic mobility (Chetty et al., 2018).

2.2.6 Lost healthy years

When analysing the indirect costs of mental illnesses, a straightforward way to grasp how big the lost economic output is, we must take into account the lost days of work, lost years due to early retirement, and lost years due to shortened lives. These indirect costs are generally accepted as the largest due to the most extensive loss of economic output. To understand what causes these, we must analyse what causes people to be absent from work and reasons behind the shortened lives due to being mentally ill. This part will be analysed with effects on individual behaviourism, in which ways do mental illnesses affect decision making so that it negatively affects one's health. We will mostly be focusing on the effects of depression.

First, we will tackle the subject of personal health and the decision making behind this. Mentally ill individuals tend to go for more unhealthy diets. This decision is based on two factors, unhealthy and processed food is often cheaper, and fast food is easy and accessible. Usually, one can find themselves unable to find the energy required to do any cooking; this often results in an easy and fast option, which in most cases is unhealthy fast food. This leaves the individual lacking essential nutrients and replaces them with unhealthy fast carbohydrates such as excess sugar. The unhealthy diet then results in an even worse energy level which then feeds into future decision-making regarding nutrition sources. The worsened nutrition added to the lowered willingness of healthy exercise results in deteriorated physical condition, which then leads to declined levels of sleep. (Baranov et al., 2020; Haushofer & Fehr, 2014).

Secondly, the willingness for substance abuse. Mentally ill individuals are much more prone to drugs abuse; this includes alcohol, cigarettes and other more potent drugs. Use of drugs is often the minuscule pleasure these mentally ill people have, in worst cases, the small pleasure

drugs bring into one's life is the only source of pleasure they have. This then can lead to drug abuse (Han & Goleman, Daniel; Boyatzis, Richard; Mckee, 2019; Reini, 2016).

Thirdly, mentally ill individuals show a reduced willingness to get help. This includes taking the time to visit a physician or psychotherapy. Often the poverty caused by mental illnesses results in one not being financially able to do so, this, of course is not the case in countries with free healthcare systems. This can result in severely mentally ill people not getting help due to the lack of willingness to do so (Doran & Kinchin, 2019; Han & Goleman, Daniel; Boyatzis, Richard; Mckee, 2019; Knapp & Wong, n.d.).

The combination of all these effects leads to a drastically worse physical and mental well-being. One might think why mentally ill people would act this way. When looking at healthier diets, exercise, and capital on medical help as an investment, it all becomes more apparent. Since mentally ill individuals have pessimistic views about one's future, incentives to invest in short-term for long-term healthier life becomes less attractive (Haushofer & Fehr, 2014; Strulik, 2019). These indirect causes to health due to being mentally ill leave a severe dent in one's health and can be seen as a significant loss of healthy years and years lived in general. Whether or not due to just unhealthy habits or newly found health complications such as cardiovascular diseases which are strongly linked to severe mental illnesses, the toll on the longevity of one's life is significant. This translates into shorter lifespan, earlier retirement and to years lived with a disability. Premature mortality is positively linked to mental illnesses. Individuals diagnosed with mental illnesses live approximately 4,8 years shorter lives (Strulik, 2019). This number varies between 10-25 years shorter lives when also taking into account other chronic diseases that these mentally ill individuals gained during their lives, this being a more rough estimate due to not being entirely sure whether or not these individuals would have acquired these other diseases in the case of not being mentally ill (WHO, 2013). In South Korea, a recent study conducted that mental illnesses are the fourth leading cause of death in the country and the leading reason for self-afflicted suicide (Chang et al., 2012). Effects can also be seen in early retirements due to a disability, mental illness-related early retirements increased by 20% in the year 2019 in Finland. This makes it the leading cause of early retirements due to disability in Finland (Halonen Kristiina, 2020). The economic loss due to premature death and lost healthy years is estimated by discounting the lost years' average potential income into current value. These estimates are the single

most significant economic impact caused by mental illnesses (Chang et al., 2012; Doran & Kinchin, 2019).

2.3.1 Aggregated cost

Now that I have gone through the critical parts of life which get affected and went through how these costs are formed, it is time to discuss the aggregate cost caused for our society. In general, these costs boil down to lost potential economic output lost due to being mentally ill. Studies estimating the aggregated costs differ from one another but share the common economic viewpoint of loss of labour, capital and human potential.

The global estimate of the loss of productivity due to mental illness related problems is a whopping 12 billion working days annually (Lewis, 2018). When put in numbers, the aggregated cost total is US\$2,5 trillion, which US\$1,7 trillion consist of estimated indirect cost due to loss of productivity. In the EU, with generally speaking better healthcare systems, this number was approximately €600 billion (OECD, n.d.; Trautmann et al., 2016).

An excellent way to put the sheer amount of loss into perspective is to reflect it on the GDP. The total economic cost in the EU amounts to over 4% of the GDP – across all 28 EU countries. When inspecting Finland, this number is much higher totalling in at 5.3% of the GDP (€11 billion). 51,5% of early retirements in Finland are caused by mental illnesses and costs by these totals in at €670 million (OECD, n.d.).

Cost of mental health problems in Europe	
Estimates of total costs direct and indirect as % of GDP, 2015	
Denmark	5.4%
Finland	5.1%
Germany	4.8%
Spain	4.2%
European Union	4.1%
United Kingdom	4.1%
France	3.7%
Italy	3.3%
Czech Republic	2.5%

Figure 2: OECD/EU (2018), Health as a glance: Europe 2018: State of health in the EU

These numerical estimations are estimated from the loss of economic output. By calculating the discounted value of average individuals' lost economic income in a said country or group of countries, an estimation of the loss of aggregated economic output can be made. These calculations are based on years lost to mental illnesses and lost healthy years which result in a reduced income. Over 10% of lost years of healthy life and over 30% of all years lived with a disability are caused by mental illnesses (Saraceno, 2005).

In summary, mental disorders cause tremendous economic costs directly due to healthcare costs and indirectly via enormous losses in economic productivity and growth (Chisholm et al., 2006; Saraceno, 2005).

2.3.2 Estimations for future

Currently, mental illnesses have followed a semi-linear growth pattern (Chisholm et al., 2016). Estimations made for the future scenarios and cost estimates also share the common assumption, whereas treatments and availability do not change significantly globally. This assumption of expecting societies not to react to the growing numbers of mental illnesses often paints a grimmer picture of the situation; nevertheless, these numbers are to be taken seriously and act as a motivator to react on the matter. With these assumptions, it has been

estimated that from the year 2011 to 2030 the total cumulative loss of economic output caused by mental illnesses is US\$ 16.3 trillion worldwide (Chisholm et al., 2016; Trautmann et al., 2016).

3 Incentives for investments

3.1 Current state of investments

When summarising all interventions and the population in need, it is estimated that between 7% and 28% of all people suffering from mental illnesses receive treatment. Differences come from the country's income level and healthcare budgeting when it comes to mental illnesses. Most low-income and middle-income countries spend less than US\$2 per year per person compared to high-income countries that spend US\$50 per person. This results in significant treatment gaps varying between governments and their respective income levels (Chisholm et al., 2016).

In Finland, the budget share of mental illnesses from the total healthcare budget was 5,5% in 2010, and in 2015 it was 4,3%. Unfortunately, the budgeting for mental illness treatments has reduced, even though the adverse effects on our society have been rising. The Finnish government has estimated that half of the people in need of help get treatment (Wahlbeck et al., 2018).

3.2 How efficient is it to invest in mental health services

Some studies estimate the cost-effectiveness and return on investments regarding mental illness treatments by calculating the average return of healthy years gained by treating patients. These accumulated years are then discounted to net present value based on average income potential in a said country. A study based on increased scaling on treatments in the timeframe of 2016 and 2030 on the return of investment came to a conclusion of substantial returns to investment. This study also predicted an increase of 5% income after getting treated (Chisholm et al., 2016).

	Low-income (N=6)	Lower middle-income (N=10)	Upper middle-income (N=10)	High-income (N=10)	All countries (N=36)
Total population (millions)	443	2215	2101	992	5751
Total investment (NPV, \$US Millions)	517	7164	20338	63503	91522
Economic returns (US\$ Millions)	1190	18799	52732	157022	229744
Benefit to cost ratio (Economic returns)	2,3	2,6	2,6	2,5	2,5

Figure 3: Return to investment analysis 2016-2030. Source: Scaling-up treatment of depression and anxiety: a global return of investment analysis

Finnish government did a similar study and concluded the cost-to-benefit ratio of 3,3 - 5,7 in a 15-year timeframe for mental healthcare investments. Investments on mental illness related suicide preventions yield a staggering benefit ratio of 39,11 (Wahlbeck et al., 2018). These studies share a similar conclusion on the viability of investing in mental illness treatments, concluding that investing is beneficiary and yields a high cost to benefit ratio.

5 Conclusion and findings

Mental illnesses are highly prevalent and disabling disorders, resulting in an enormous amount of human misery and lost health and a significant loss of potential economic output. The disturbance level varies on the severity of the mental illness, nevertheless when suffering from a mental illness, all aspects of life take a toll. Mental illnesses cause short and long-term effects. Through disturbing risk awareness, decision-making, and human capital development, mental illnesses leave an enormous shadow of direct and indirect costs for our society.

Disturbances to one's education can be seen through delayed graduation or not having the motivation to follow dreams of higher education. Clear signs of increased presenteeism and absenteeism are also present, which result in a massive loss of economic output. These signs can also be seen on an individual level when looking at long-term effects. Studies show that individuals who have or are suffering from a form of mental illness tend to perform much worse than their counterparts in rewards to income levels. Effects are not only limited to the person suffering but also cause negative effects to one's family and relatives. Most notable of these effects being poverty caused by mental illnesses. This poverty not only makes the situation worse for the individual but also causes lasting effects on children being born and raised amongst poverty. These children suffer from lower levels of options and opportunities, and the consequences can be seen as long-term decreased income potential. Most significant costs come through the lost healthy years and shortened lives of people caused by mental

illnesses. The aggregated economic costs caused directly and indirectly are a considerable chunk of a given country's GDP.

The relationship between mental illnesses and economics is very underutilised, although the research on this subject has seen a significant increase in recent years, there is still much to improve. When analysing economic growth, the most prominent factors are capital, labour and ideas. Capital is depleted by healthcare expenditures and loss of income, resulting in less capital and poorer people. Labour is depleted by disability and mortality, resulting in a massive amount of lost healthy years. Ideas are lost due to disturbances on human capital development resulting in lost potential.

Nevertheless, the subject of economics and mental illnesses should be researched more. By doing so, we might be able to solve the current problem of the lack of resources for treatments, through being able to raise awareness and capital invested in mental healthcare. Cost-effectiveness studies should be implemented into mental healthcare sectors so that we could potentially find the perfect allocation of resources, given that we live in a world of finite resources. At a purely conceptual level, a solid case can be made for investing in mental health, whether on the grounds of enhancing the well-being of the population and through that the people's economic performance and reducing social inequalities and protecting fundamental human rights.

As a society, we must provide better information, awareness and education about mental health and illnesses to make it more common knowledge and reduce the bar to seek help for those who are suffering. We should make sure that those with unfortunate circumstances that cannot afford treatment are given support to help them get better. We should make sure that the social and financial security is good enough so that people won't fall into poverty traps due to becoming ill, focusing on the more disadvantaged groups, and providing better legislative protection and social support for individuals, families and communities adversely affected by mental illnesses. It is not only our duty as a society but ultimately, the duty of the government to make sure these needs are met. This will not only lead to a healthier and happier society but also better economic performance and innovation. After all, bettering the mental well-being of our society will lead us to a better tomorrow.

6 References

- Baranov, V., Haushofer, J., & Jang, C. (2020). Can positive psychology improve psychological well-being and economic decision-making? Experimental evidence from Kenya. *Economic Development and Cultural Change*, 68(4), 1346–1376.
<https://doi.org/10.1086/702860>
- Berger, N., & Fisher, P. (2013). A Well-educated Workforce is Key to State Prosperity. *Economic Policy Institute*, 22(1), 1–14. http://www.epi.org/files/2013/A_well-educated_workforce_is_key_to_state_prosperity.pdf
<http://www.policymattersohio.org/wp-content/uploads/2013/08/EducationProsperity.pdf>
- Blomgren Jenni. (2019, January 29). *Mielenterveyden häiriöistä johtuvien sairauspoissaolojen kasvu jatkuu jyrkkänä – Tutkimusblogi*.
<https://tutkimusblogi.kela.fi/arkisto/5168>
- Chang, S. M., Hong, J. P., & Cho, M. J. (2012). Economic burden of depression in South Korea. *Social Psychiatry and Psychiatric Epidemiology*, 47(5), 683–689.
<https://doi.org/10.1007/s00127-011-0382-8>
- Chetty, R., Friedman, J. N., Hendren, N., Jones, M. R., & Porter, S. R. (2018). The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility. *NBER Working Paper Series*, 25147.
- Chisholm, D., Saxena, S., & Ommeren, M. van. (2006). *Economic aspects of the mental health system: Key messages to health partners and policy-makers*.
http://www.who.int/mental_health/economic_aspects_of_mental_health.pdf
- Chisholm, D., Sweeny, K., Sheehan, P., Rasmussen, B., Smit, F., Cuijpers, P., & Saxena, S. (2016). Scaling-up treatment of depression and anxiety: A global return on investment analysis. *The Lancet Psychiatry*, 3(5), 415–424. [https://doi.org/10.1016/S2215-0366\(16\)30024-4](https://doi.org/10.1016/S2215-0366(16)30024-4)
- Doran, C. M., & Kinchin, I. (2019). A review of the economic impact of mental illness. *Australian Health Review*, 43(1), 43–48. <https://doi.org/10.1071/AH16115>
- Farreras, I. G. (2020). *History of Mental Illness | Noba*.
<https://nobaproject.com/modules/history-of-mental-illness>
- Frank, R. G. (2012). Behavioral economics and health economics. *Behavioral Economics and Its Applications*, 195–234. <https://doi.org/10.2307/j.ctvd58v0s.10>
- Halonen Kristiina. (2020, January 17). *Työkyvyttömyyseläkkeelle jäi yhä useampi - Ilmarinen*.
<https://www.ilmarinen.fi/tietoa-ilmarisesta/ajankohtaista/uutiset-ja->

tiedotteet/2020/tyokyvyyttomyyselakkeelle-jai-yha-useampi--useimmiten-taustalla-mielenterveyssyyt/

- Han, E. S., & Goleman, Daniel; Boyatzis, Richard; McKee, A. (2019). Depression for economists. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
- Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, 344(6186), 862–867. <https://doi.org/10.1126/science.1232491>
- Kaltiala Riittakerttu. (2020). *Nuorten mielenterveyden häiriöiden kasvu on hätähuuto yhteiskunnan muutoksesta | Tampereen yliopistollinen sairaala*. [https://www.tays.fi/fi-FI/Nuorten_mielenterveyden_hairioiden_kasvu\(102911\)](https://www.tays.fi/fi-FI/Nuorten_mielenterveyden_hairioiden_kasvu(102911))
- Knapp, M., & Wong, G. (n.d.). *Economics and mental health: the current scenario*.
- Lewis, J. (2018). In the room with climate anxiety part 1. *Psychiatric Times*, 35(11), COVER-1.
- Mäkinen, N. (YLE), Mäkilä, A., & Pietikäinen, P. (n.d.). *Masennuksesta on tullut uusi kansantauti – mutta mikä on oikeasti muuttunut, suomalaisten mielenterveys vai diagnoosit?* Retrieved November 16, 2020, from <https://yle.fi/aihe/artikkeli/2019/10/27/masennuksesta-on-tullut-uusi-kansantauti-muttamika-on-oikeasti-muuttunut>
- McTernan, W. P., Dollard, M. F., & LaMontagne, A. D. (2013). Depression in the workplace: An economic cost analysis of depression-related productivity loss attributable to job strain and bullying. *Work and Stress*, 27(4), 321–338. <https://doi.org/10.1080/02678373.2013.846948>
- Nafukho, F. M., Hairston, N. R., & Brooks, K. (2004). Human capital theory: Implications for human resource development. *Human Resource Development International*, 7(4), 545–551. <https://doi.org/10.1080/1367886042000299843>
- OECD. (n.d.). *Mental health problems costing Europe heavily - OECD*. 2018. Retrieved November 22, 2020, from <https://www.oecd.org/newsroom/mental-health-problems-costing-europe-heavily.htm>
- Reini, K. (2016). *Mielenterveyden edistämisen taloudelliset vaikutukset : nuorten miesten syrjäytymistä ehkäisevän Aikalisä-tukipalvelun arviointi*.
- Ritchie Hannah, & Roser Max. (2018). *Mental Health - Our World in Data*. <https://ourworldindata.org/mental-health#citation>
- Saraceno, B. (2005). Investing in mental health. *Information Psychiatrique*, 81(4), 289–293.
- Strulik, H. (2019). An economic theory of depression and its impact on health behavior and longevity. *Journal of Economic Behavior and Organization*, 158, 269–287.

<https://doi.org/10.1016/j.jebo.2018.11.022>

- Trautmann, S., Rehm, J., & Wittchen, H. U. (2016). The economic costs of mental disorders: Do our societies react appropriately to the burden of mental disorders? *EMBO Reports*, *17*(9), 1245–1249. <https://doi.org/10.15252/embr.201642951>
- Wahlbeck, K., Hietala, O., Kuosmanen, L., Mcdaid, D., Mikkonen, J., Parkkonen, J., Mikkonen, J., Parkkonen, J., Reini, K., & Salo-, S. (2018). *Toimivat mielenterveys- ja päihdepalvelut*.
- Walsh Marissa. (2020, August 4). *Mental health statistics 2020* | SingleCare. <https://www.singlecare.com/blog/news/mental-health-statistics/>
- WHO. (2013). *Information sheet Premature death among people with severe mental disorders 1*.
- Wolf, A. (2004). Education and economic performance: Simplistic theories and their policy consequences. *Oxford Review of Economic Policy*, *20*(2), 315–333. <https://doi.org/10.1093/oxrep/grh018>