Expert Views

Fit Body, Sound Mind, Lower Claims:

The Impact of Physical Activity on Mental Health and Its Application to Life and Health Insurance

SCOR
The Art & Science of Risk

August 2024

Contents

Executive Summary

Mental health is an integral part of our overall health. Since the introduction of psychiatry into the field of modern medicine 200 years ago, we have seen countless evidence supporting the fact that there is no true and sustainable physical health without mental health. Yet, the degree of burden mental disorders imposed on society and business including insurers is often underestimated. According to the Organization for Economic Co-operation and Development (OECD), mental illnesses are the leading cause of disability in Western nations. They represent 30% to 40% of long-term sick leaves in Europe, at the cost of 4% of GDP, coming from poor health as well as loss of productivity.[1] The rising mental health claims on health and disability insurance are serious concerns for insurers.

Despite the visible and measurable negative impact of mental disorders on society, progress on this front is still limited. According to the 2020 WHO's Mental Health Atlas, which includes data from 171 countries, the percentage of government health budgets spent on mental health has scarcely changed during the past few years, still hovering around 2%.

Both public and private sectors are attempting to tackle this issue. In this article, we discuss one of the most effective and least invasive ways to improve mental health - increasing physical activity. By encouraging policyholders to engage in regular physical activity, insurers can not only contribute to the overall well-being of their policyholders but also potentially reduce the number and severity of mental health-related claims.

But this win-win solution does not come without obstacles as developing and maintaining a good physical activity habit can be extremely difficult for some people. Behavioral science can help. In this article, we discuss the state of the current global mental health crisis and why and how incorporating behavioral science-based approaches can help people achieve successful and continuous physical activities to benefit their mental health.

Mental Health: A Global Crisis

Growing mental health issues and its impact on insurance

In today's society, mental health is considered as one of the most serious emerging health issues around the world. But do we know exactly what the "mentally healthy" condition means? It represents much more than simply not having mental disorders or disabilities. According to the WHO, mental health is "a state of well-being that enables people to realize their potential, cope with the normal difficulties of life, work successfully and productively, and be able to make a contribution to the community."

From life and health insurers' perspective, mental health issues are one of the fastest growing threats, constituting a sizable portion of filed claims. For instance, in the US, 7.3% of short-term disability claims are caused by mental illnesses and 9.3% of long-term claims.[2] The Geneva Association[3] has warned about the increasing trend of claims due to mental health that affects many countries. In Germany, more than one-fifth of all disability claims are related to mental illnesses. The UK presents a similar scenario, with mental health problems accounting for 27% of income protection claims in 2020. Japan also witnessed an increase in workers' compensation claims due to mental health, with a rise of 12.5% in 2021 compared to previous years. Canada saw a substantial increase in claims related to poor mental health, with a 75% surge in 2021 compared to 2019.

Mental illness conditions and risk factors

Mental illness conditions are characterized by alterations in thinking, mood, or behavior associated with a state of marked distress and dysfunction. According to the NHS,[4] these conditions include but are not limited to:

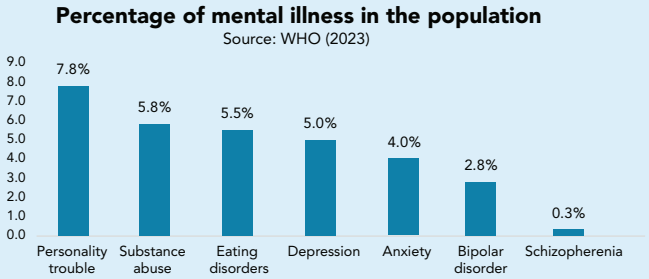
- **Anxiety disorders** - characterized by disproportionately high levels of fear, anxiety, and avoidance in response to certain objects or situations. Examples include generalized anxiety disorder, panic disorder, and social anxiety disorder.
- **Mood disorders** - involving sad, empty, or irritable moods along with physical and thought changes that affect your ability to function. Examples include depressive disorders, bipolar disorders, and seasonal affective disorder.
- **Substance-related disorders** - implying changes in brain chemistry that create a dependence on the substance being used.
- **Eating disorders** - characterized by abnormal or disturbed eating habits.
- **Personality disorders** – rigid and unhealthy ways of thinking, behaving, and perceiving oneself and others.
- **Schizophrenia** - a mental disorder in which people interpret reality abnormally.

Mental illness encompasses many conditions driven by various risk factors, affecting people of all ages, education levels, incomes, and cultures. Specific risk factors include family history of mental illness, age, gender, substance use, chronic illnesses, family, work environment, or stress related to certain life events.

Global trends and impact on health systems

Today, one in every eight people, or 970 million people around the world, are living with mental disorders, with anxiety and depressive disorders being the most common.[5] According to WHO, more than 30% of global population have symptoms of mental illness, including personality trouble, substance abuse, and eating disorders (Figure 1). In France, mental illness and psychological disorders affect almost one-fifth of the population, and more than one-quarter take anxiolytics, antidepressants, sleeping pills, and other psychotropic drugs.[6] In the US, nearly 20% (50 million) people are affected by mental illness[7] while in the UK, the number is one in six.[8]

Figure 1: Percentage of mental illness in the population[9]



The growing number of mental illness cases is also financially impacting governmental social security programs. In France, psychiatric illnesses associated with all chronic treatments with psychotropic drugs (including anxiolytics and hypnotics) account for 14% of total expenditure for the Assurance Maladie (French national medical insurance).[10] In total, at more than €23 billion a year, expenditure reimbursed for mental suffering and psychiatric illnesses is the largest item of expenditure for the French health insurance system, ahead of cancer and cardiovascular disease. They represent an overall cost of more than €100 billion, including loss of income. Mental illnesses are also the leading cause of disability claims. They are responsible for 35% to 45% of absenteeism from work. In the US, around $280 billion was spent on mental health services in 2020, according to the White House report.[11] In the UK, NHS England expects the mental health services expense to be as high as GBP 16.8 billion for 2023/2024.

Difficulties in treatment and prevention

Preventing and treating mental health disorders is a complex task. There are several treatment options, most often combining psychotherapy, social intervention, and pharmacology (including a range of treatments such as anxiolytics, antidepressants, hypnotics, psychostimulants, antipsychotics, and even seismotherapy/ electroconvulsive therapy). Hygienic and dietary measures (sleep, balanced diet, social support, physical activity) are also recommended to improve the effectiveness of treatment.

Mental health disorders are complex and can vary greatly from person to person, which makes it difficult to develop a "one-size-fits-all" treatment. Hence, some treatments, such as selective serotonin reuptake inhibitors for depression, have proved their effectiveness for some but not for every patient. One study for example found that only 31% of people with major depression felt well after 14 weeks of treatment.

Moreover, many people do not have access to the mental health services they need due to a lack of services in their area, the cost of treatment, or stigma associated with seeking help.

Prevention is also complex and difficult. The causes of mental health disorders are often a mix of biological, psychological, and environmental factors, which makes it hard to pinpoint specific causes and prevent them. Despite advances in neuroscience, our understanding of the brain and mental health is still limited, which hampers the development of effective prevention strategies. Stigma and discrimination can also deter people from seeking help and accessing preventative measures.

These challenges highlight the need for continued research and investment in mental health prevention and treatment strategies. Insurers should have a proactive step towards addressing the mental health burden, and one promising path is helping policyholders increase physical activity.

Physical Activity and Mental Health

Exercise and other physical activities are universally proven to make people feel good and happy. Scientifically speaking, physical movement increases endorphins, dopamine, adrenaline, and other brain chemicals to make us feel positive. Much research has been dedicated to this field since the early 2000s, and results indicate a strong beneficial effect of physical activity on mental health.

Moreover, evidence shows that physical activity can be useful for the prevention of mental disorders as well as for the treatment of existing disorders (tertiary prevention). Although physical exercise is not yet recognized as a fully-fledged treatment for mental illness, on par with medication or sessions with a psychologist or psychiatrist, its effect is being increasingly recognized and integrated into the prevention and treatment of mental health disorders as more positive cases emerge.

Definition of "physical activity"

"Physical activity" does not have to be a strenuous exercise as many people think. The WHO defines physical activity as "any bodily movement produced by skeletal muscles that requires the expenditure of energy." It refers to all movements carried out for leisure, in the workplace, or to move from one place to another, involving an expenditure of energy greater than that expended at rest. Walking, cycling, and climbing stairs are all common ways of engaging in physical activity for most people regardless of their level (Figure 2 on the next page).

Figure 2: Types of Physical Activity (Source: WHO)

Daily physical activities:
- Active travel: walking, cycling, climbing stairs.
- Domestic activities: housework, DIY, gardening.
- Professional activities (physical work, for example) or school.

Physical exercise:
- Planned, repetitive physical activity, such as running or walking. It can often be performed without the need for heavy infrastructure or specific equipment and is not governed by the rules of the game.

Sporting activity or sport:
- A physical activity in which the participant adheres to rules. Sport is most often practiced in infrastructures (clubs, gyms, swimming pools, etc.) and at quite different levels: leisure or competitive sports, school sports, individual or team sports, etc.

Physical activity as prevention

Physical activity can be a powerful tool for preventing mental illness, as it stimulates the production of endorphins, chemical compounds produced in the brain that engender a sense of well-being and alleviate stress and pain. Exercise reduces anxiety and relieves tension, fatigue, and anger, preventing the withdrawal and feelings of hopelessness associated with depression. Regular physical activity also helps to achieve and maintain a healthy weight, which leads to higher self-esteem.

SCOR Digital Solution's latest Global Consumer Survey shows that 45% of 12,563 respondents from 22 key insurance markets worldwide said that physical activity is the most popular resolution for dealing with stress.[12] Data from users of UK Vitality Health, a wearable health tracking program, also show that members who engage in high physical activity levels realized a 17% reduction in future psychiatric claims, compared to 9% in only talking therapy, leading to a GBP 510,000 savings in total annual member claims.[13]

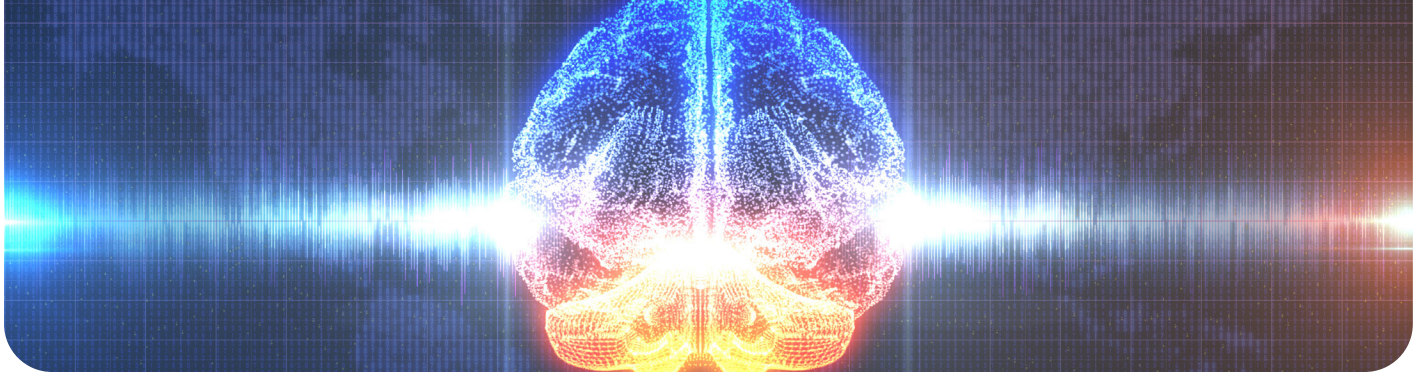
Physical activity also enhances cognitive and work performance, limits work stoppages, and promotes job stabilization. Companies who recognize these benefits are starting to offer physical activity programs to their employees, and they are already seeing positive results. Similarly, insurers who offer preventive activity programs are seeing an increase in the attractiveness of their products and in customer loyalty.

Physical activity as treatment

In addition to prevention, physical activity is also highly effective in treating patients with mental illnesses, as it increases brain neurotransmitters which help reduce symptoms associated with depression and anxiety disorders. It promotes a state of relaxation, with a calming effect on anxiety by lowering blood cortisol levels.[14] Individuals with serious mental illness are also at high risk of chronic diseases associated with sedentary behavior, such as diabetes and cardiovascular disease[15]. Physical activity reduces those risks.

Recent meta-analyses found that physical activity is 1.5 times more effective than psychotherapy or the usual medication for depressive symptoms. In schizophrenia and non-affective psychotic disorders, for example, exercise interventions which used at least 90 min of moderate to vigorous activity per week did significantly reduce total symptoms. Exercise was also found to significantly improve global cognition in schizophrenia.[16,17,18]

The European Psychiatric Association also advocates adding a structured physical activity program to standard medication and psychotherapy, which stresses the importance of treating patients suffering from mild to moderate depression as well as for those with severe mental disorders.[19]



Applying Behavioral Science Approaches to Promote Physical Activity

Although the benefit of physical activity to mental health is evident as described, integrating it into our daily routine is not an easy task. There have been countless attempts made to encourage people to exercise, but many people still find it difficult to get themselves moving. One approach that is gaining popularity and has proven to be effective in solving this problem is rooted in behavioral science.

By examining the complexity of human behavior and identifying which factors lead people to make their physical activity decisions, behavioral science aims to find the best ways to motivate people to lead active and healthy lives. Studies so far found that using the incentive theory, a psychological theory of motivation, can encourage individuals to engage in activities. Two of the most effective types of incentives are financial incentives and behavioral incentives.

Financial incentives

Research conducted by economists and physicians has found that financial incentives such as giving monetary rewards are highly effective in increasing individuals' physical activity.

One of the examples is Charness and Gneezy's field experiment research which helps us understand how people form a long-lasting healthy physical activity habit.[20] In the study, participants who were divided into two groups were incentivized to attend a gym with two different options. The first group were given a low incentive ($25 per visit) if they performed low-training tasks (e.g., workout just once a week). The other group was given high-incentive (additional $100) but had to fulfil a higher-training requirement (e.g., at least eight more gym sessions after the initial habit-building period has passed.)

The results after the first weeks of the experiment show that the high-incentive group engaged in more workouts, but there was no attendance difference between those two groups. The results indicate that the financial incentive is effective during the habit-building period, but once a new task is performed regularly for a certain amount of time, it is no longer necessary.

Another similar experiment focusing on the improvement of health indicators yielded the same difference among the high-incentive group and other groups. Studies also found that the effectiveness of monetary incentives depends on the award amount, indicating significant cost may be incurred to maintain motivation.[21]

Another effective method is contingency contracts, in which participants receive rewards only when their goals are met.[22, 23] One of the successful examples of this method used in the insurance industry is the Vitality Active Rewards™ program. Leveraging on loss-aversion bias,[24] participants of this program are given a free wearable device and told that they will be required to pay for it if they do not engage in physical activity for a month. This tactic was proven to be successful as participants find the pain of losing the free wearable device is more powerful than that of regularly engaging in physical activity.

Recently, Arad et al. found that financial incentives through intermittent and nonpredictable payments increase people's physical activity.[25] They used the so-called "partial-reinforcement extinction effect" (PREE), which is extensively used in psychology.[26] The PREE refers to the phenomenon whereby the conditioned response extinguishes more slowly if subjects have been reinforced inconsistently ("partially") than if they have been reinforced on every trial ("continuously"). In other words, if the incentive to physical activity is financially valued consistently, when the financial valuation stops, physical activity will be abandoned more quickly than if the valuation is partial. In fact, individuals with partial reinforcement integrate the activity into their daily routine and maintain it for longer,

even after the financial incentive has ended. The experiment conducted by Arad et al. effectively shows that only intermittent schemes can sustain behavioral change in the long run.

Although effective when well designed, the financial incentive method has some drawbacks. After the incentive program has ended, individuals may revert to their previous behavior.[27] In addition, incentive schemes can have unintended consequences, such as health-endangering behaviors to increase weight loss to receive more rewards.[28]

During the past 70 years, behavioral psychologists and cognitive psychologists have been expressing opposing views. Behavioral psychologists claim that financial incentives generate motivation to carry out the same task in the long run, while the cognitive school dismiss the need for financial incentives as many people have an intrinsic, non-incentivized motivation.

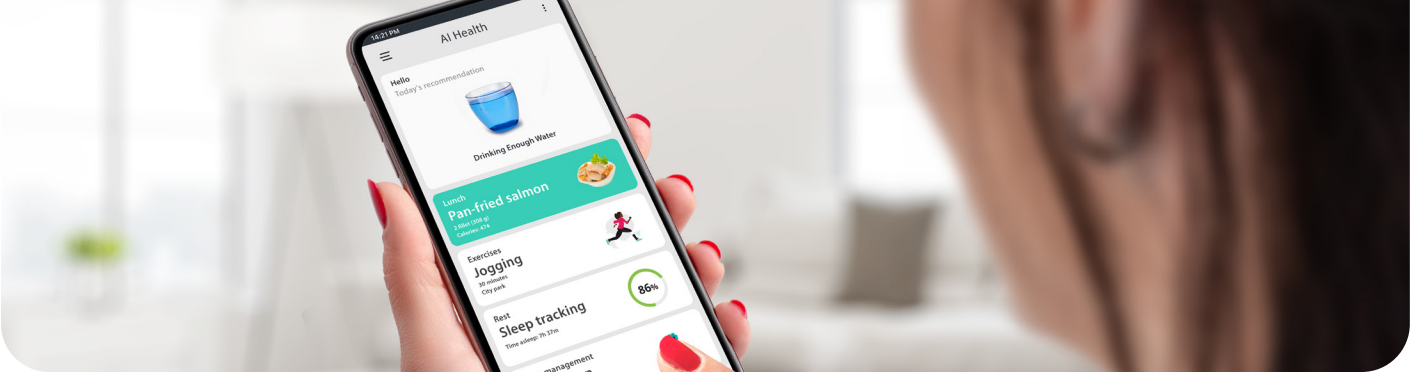
Behavioral incentives

Another effective way to encourage physical activity is through behavioral incentives, which reward good behaviors with non-financial incentives such as recognition, points, and good grades. One behavioral incentive method proven to improve healthy behaviors is to leverage the nudge theory. Introduced by Richard Thaler and Cass Sunstein, it is a concept that suggests people's behaviors can be influenced (nudged) not coerced by small changes in how choices are presented.[29] The following five nudges are especially effective in motivating individuals to exercise:

1. **Framing** is a way to increase, for instance, the number of steps, presenting the challenge with a reference point that individuals try to exceed on a regular basis. It also permits the presentation of the results of a challenge in a specific way; for example, leveraging an individual's loss aversion bias.[30]
2. **Reminders** counteract present-biased preferences[31], driving participants to focus on long-term goals.
3. **Gamification** leverages an individual's joy of earning points during a challenge.[32]
4. **Social modeling** permits individuals to find peers that already achieved expected goals.[33]
5. **Social influence** leverages an individual's willingness to be part of a community.[33]

Adopting those elements puts individuals in the best conditions to start exercising. Below are our suggestions for designing and implementing a successful program utilizing the nudge theory:

- First, clearly define what "physical activity" means to the participants. Many people misunderstand physical activity as only referring to high-intensity sport such as running and playing sports. But knowing that physical activity can be much less strenuous everyday movement such as walking decreases fear and increases participation.
- Encourage participants to make their physical activity a ritual. Integrating a new practice or behavior into their daily routine takes a little time. Charles Duhigg, author of the best seller *Power of Habits*[35], explains that changing one's habits requires modifying one's behavior over several days to ritualize them. Giving participants a quick and positive incentive for their implementation of a new behavior, such as choosing the stairs instead of the elevator or taking a five minute walk during a break, will be effective.
- Make it easy for participants to see the immediate benefits of physical activity.
- Offer physical activity in a fun, game-based group setting utilizing mobile applications designed to enable people to achieve physical activity goals in a gamified way, with goals shared by a community of like-minded people. It is important to assign the participates into groups of similar ability to enhance a positive and collaborative atmosphere.



Insurance Solutions

Life and health insurance companies around the world are increasingly providing wellness incentive programs to their policyholders, sometimes even embedding them into their insurance contracts. Those programs utilize insurer data and knowledge on the relationship between consumer mortality/morbidity and physical activities to promote healthy behaviors with incentives and other behavioral science-based tactics. A 2018 study by the Rand Corporation, for example, found that the Discovery insurance group's Vitality Active Rewards with the Apple Watch implemented in South Africa, UK and US achieved an average increase of tracked activity days per month of approximately 34%, leading to an additional 4.8 days of activity per month.[36]

SCOR's Good Life health and wellness app is one of the successful examples of such programs, used by more than 300,000 active users worldwide, especially in Asian countries. The solution is based on the Biological Age Model (BAM), an algorithm which utilizes wearable data to compute users' biological ages based on an evidence-based model for both mortality and morbidity risks. Good Life combines extensive experience data, analytics capabilities, and an engaging user interface integrating multiple elements such as physical activity, mental health, nutrition, social health, and sleep. Many users of Good Life app report positive outcomes including increased daily steps and longer sleep hours, leading to their better overall mental health as well.

Conclusion

Mental health disorders present a significant challenge to individuals, societies, and the insurance sector. The complexity of these disorders, coupled with the stigma surrounding mental health, makes prevention and treatment difficult.

Despite the increasing recognition of mental health's importance, investment in mental health services remains insufficient globally. However, this challenge also presents an opportunity for innovation and change.

Insurers can play a pivotal role in promoting mental health to their policyholders. One promising path is incentivizing physical activity. By doing so, they can contribute to the overall well-being of their policyholders and potentially reduce the number and severity of mental health-related claims. As we move forward, it's crucial that we continue to advocate for increased investment in mental health services, reduced stigma, and explore new strategies to improve mental health outcomes, such as behavioral science.

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This article was written by:

Denis Charles
Junior Behavior & Data Analyst

Alexandra Stulz
PhD, Psychologist

Please feel free to visit us at scor.com

SCOR SE
5 avenue Kléber - 75795 PARIS Cedex 16
France

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August 2024