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Original article

Indirect effects of the covid-19 pandemic on physical and mental health

DAMIAN George Cosmin[1], PUȘCAȘU Cosmin-Andrei[2]

Abstract

Aim This article aims to sound the alarm on the importance of the indirect effects of the pandemic, to analyze the main ways in which our health and mental health are indirectly endangered, and to provide some useful tips and hints to minimize the effects of measures that indirectly facilitate the deterioration of health, applied to combat the pandemic.

Methods We rely on the application of the method of observational research, as a way of collecting data. In terms of information processing, we approached a quantitative research strategy and, finally, the comparative research method to obtain the research results.

Results The factors that favor the adoption of a sedentary lifestyle and weight gain are: decreased level of exercise, unhealthy diet (hypercaloric), lack of a clear structure (schedule) of the day, circadian rhythm disorder, quarantine or long-term isolation, increased level of time spent in front of screens. Physical and mental health was affected in pandemic period. So, moderate physical activity, a controlled nutrition and hydration should be the steps to wellbeeing.

Conclusions The COVID-19 pandemic poses a challenge to the physical and mental health of all affected peoples. It does nothing but expose, once again, human fragility, along with the disadvantages of diminishing the level of physical activity. The only salvation, due to technological advances, has been that we are better equipped than any time in history to respond to a pandemic. Physical activities, sports, good nutrition and hydration are the most important ways to a good health.

Keywords: pandemic, side effects, lifestyle, exercise, nutrition.

Introduction

"Mens sana in corpore sano", as the latin poet Juvenal rightly said 2 millennia ago, remains a fundamental desideratum for any person, regardless of the age in which he lives, physical and mental health being the basic pillars of a quality life. One of the main desires of a rational being is to lead a satisfying life. In order to be able to fulfill this desire, it is necessary to ensure an active interest in strengthening and maintaining the integrity of the basic pillars.

The characteristic of life is movement, locomotion. Every moment, inside our body, there is movement. They are called cell remodeling processes, secretion of various substances, etc. in order to passively revitalize the body. On the other hand, there is a need for a sustained active revitalization of the body to revitalize, in particular, the passive apparatus of locomotion (bones and joints) and the active apparatus of locomotion (muscles and ligaments) but also the functional apparatus that gives us status. of rational being: the brain.

The COVID-19 pandemic indirectly endangers our physical and mental health by the fact that in order to limit the direct effects, represented by the infection with the SARS-CoV-2 virus and the appearance of the specific pathology, it is necessary to take responsible measures. uncharacteristic, incompatible with the status of social being that we have, the most important being represented by isolation and social distancing.

Isolation and social distancing lead to a marked decrease in mobility and the level of physical activity practiced, with important consequences.

Thus, in these times it is a challenge to ensure the continuity of the active process of revitalization of the body, maintaining and improving health becoming difficult to achieve.

Objectives

Highlighting the relationship between the causes and effects of pandemic control measures is the main objective of this research.

What are the causes that lead to physical degradation in a pandemic context? To what extent does an unhealthy lifestyle in a pandemic context affect our bodily and physical integrity? How can the negative effects of social distancing be avoided? What are the recommendations of sports and health professionals to combat the indirect effects of the pandemic on the body?We intend to answer these questions in this article.

Assumption Measures taken to combat the pandemic provide an opportunity to perpetuate unhealthy habits

[1]Faculty of Physical Education and Sport, Ovidius University of Constanța, Str. Cpt. Av. Alexandru Șerbănescu, no. 1, Constanța, Romania.
[2]Faculty of Medicine, Ovidius University of Constanța, Str. Cpt. Av. Alexandru Șerbănescu, no. 1, Constanța, Romania.
Email: cosmin.damian@ymail.com

that do not support mind-body harmony: insufficient physical activity (adopting a sedentary lifestyle), limiting participation in social activities (can lead to stress, anxiety or even depression), eating inappropriate for daily energy intake (may lead to metabolic imbalances).

Distancing and social and physical isolation make a significant impact on the quality of life in a pandemic context. In this regard, it is necessary to actively involve and adapt each individual in order to find and apply innovative solutions (using technology) to limit the pandemic damage to health: playing sports in unusual conditions, eating responsibly and participating in social activities. at a distance, with friends, being among the most important approaches.

Research methods

We rely on the application of the method of observational research, as a way of collecting data. In terms of information processing, we approached a quantitative research strategy and, finally, the comparative research method to obtain the research results.

Results and discussions

The World Health Organization (WHO) has classified physical inactivity as the fourth leading risk factor, accounting for 6% of global mortality, after hypertension (13%), smoking (9%) and diabetes (6%) (Ricci et al., 2020).

The main causes that lead to the degradation of the basic pillars of health during the pandemic are: disruption of personal, social and professional life balance, adaptation to an unhealthy, unbalanced lifestyle, stress, neglect to treat other health problems, financial difficulties.

The factors that favor the adoption of a sedentary lifestyle and weight gain are: decreased level of exercise, unhealthy diet (hypercaloric), lack of a clear structure (schedule) of the day, circadian rhythm disorder, quarantine or long-term isolation, increased level of time spent in front of screens (Ashikalli et al., 2020).

Recent evidence has suggested that sedentary behavior is independently associated with traditional cardiovascular risk factors and overall mortality, regardless of the volume of physical activity. Sedentary behavior is defined as any waking behavior characterized by an expenditure of energy ≤ 1.5 metabolic equivalents (MET), while the person is in a sitting, leaning or lying position (Ricci et al., 2020).

Typical sedentary behavior includes time spent in front of screens (watching TV, using a computer or mobile phone), driving, and reading.

Thus, physical inactivity and sedentary behavior should be considered as separate entities with their unique determinants and health consequences, but with synergistic harmful effects on cardiovascular health.

Although the differences observed in terms of physical activity (a few minutes a day) may seem trivial, this effect becomes significant when taking into account public health recommendations on physical activity (WHO, 2010https://apps.who.int/iris/bitstream/handle/10665/44399/9789241599979_eng.pdf?sequence=1.). For example, an increase of about 10 minutes per day of walking and moderate physical activity is about 50% of the 150 minutes of moderate physical activity per week, while a decrease of about 6 minutes per day of physical activity vigorous represents 60% of the 75 minutes of vigorous physical activity per week (Cheval et al., 2020).

Due to the fact that there are restrictive mobility measures, it has become difficult to practice certain sports (especially those practiced inside buildings), so it has become a challenge to find ways to practice them outdoors, respecting health safety measures, or even in own housing, during periods when restrictive measures are imposed in terms of mobility outside the home (only out of strict necessity), and it is necessary for their own homes to become real training rooms.

In these situations of decreased mobility (isolation or quarantine), the body has a lower energy consumption than usual, and the adaptation of dietary measures does not occur simultaneously with the decrease in the level of sport practiced. Thus, a high-calorie consumption of food takes place, leading to weight gain and at the same time the risk of developing cardiovascular or metabolic diseases.

The factors that contribute to stress and thus the deterioration of mental health are: poor physical condition, worsening comorbidities, long term isolation, lack of social relationships, fear of infection, lack of correct information, frustration and boredom.

As we can see, mental health is closely related to physical health, influencing each other. This highlights the importance of protecting both the physical and mental dimensions of man.

The causal chain is as follows: 1. distancing and social isolation -> 2. lifestyle that favors the appearance of unhealthy habits -> 3. the appearance of imbalances in the body and aggravation of existing pathologies -> 4. degradation of physical and mental health.

Although people often underestimate the influence of the mind on the body, numerous studies have shown that a high level of stress over an extended period of time can drastically alter physiological functions, affecting any organ system.

During the COVID-19 pandemic, a team of Australian researchers found that a representative percentage of the population had manifestations of depression and anxiety at a level 2 times higher than normal (Dawel et al., 2020).

The main effects of stress on the body in the context of the pandemic are: anxiety and fear about losing one's health or job, sleep disorders, changing eating habits, concentration problems, worsening chronic health problems, increased consumption of alcohol, tobacco and other substances.

A study of 4,149 respondents in the United States at the beginning of the pandemic in April 2020 found that in a pandemic context: 61% of them felt a higher level of stress than normal, 60% were more nervous or anxious, 39% ate more, 47% felt locked in their homes, 54% were scared of the virus and 69% had to resort to technology to distract themselves from the pandemic (Chapman University, 2020) .

All these manifestations have long-term consequences for mental health, as in the case of other natural disasters. We appreciate that these consequences can be observed even many years after the end of the pandemic, just as the post-traumatic stress caused by Hurricane Katrina could be observed even 12 years after the unfortunate event (Raker et al., 2020).

Some groups may be more vulnerable than others to the psycho-social effects of pandemics. In particular, people who contract the virus, people at high risk for it (the elderly, people with compromised immune systems) and people with medical problems are at increased risk for deteriorating mental health. Healthcare staff are also particularly vulnerable to emotional distress in the current pandemic, given the risk of exposure to the virus, concerns about infection and caring for loved ones, lack of personal protective equipment, extended working hours (Pfefferbaum & North, 2020).

In terms of physical health, it has been significantly affected as whole populations have been forced to live in solitary confinement at home for weeks or even months, which in itself is a physiological challenge with significant health risks. This restrictive period forces people, even the youngest and fittest, to suddenly become inactive and adopt sedentary behaviors.

Significantly reduced physical activity at levels well below the recommendation of WHO specialists of 7,500-10,000 steps per day will exacerbate health problems arising from physical inactivity.

Among the effects of sedentary lifestyle on the body we mention the following:

- significant muscle atrophy of the quadriceps muscle occurs after only 2 days of immobilization of the legs (a level of 1.7% of atrophied fibers);

- associated with an even greater loss of muscle strength (a level of 8-9%);

- triggering neurodegenerative processes that induce muscle denervation and damage to neuromuscular junctions.

A low level of physical activity (between 10.500 and 1300 steps / day for 14 days - exactly the duration of quarantine or isolation at home) induces muscular insulin resistance (after 14 days, insulin sensitivity decreases by 17- 44%), increase central fat (predisposing factor for type 2 diabetes) and reduced muscle mass.

After 14 days of reduced physical activity, there is a 7% decrease in maximal aerobic capacity (VO2 max) in young adults, while in 60-year-olds the decrease is approximately 15%.

At the level of gene expression, it was found that after 9 days of bed rest there is a change in the expression of about 4.500 genes, mainly associated with mitochondrial function (energy production) and insulin resistance (Narici et al., 2020).

Also, sedentary behavior predisposes to the appearance of various orthopedic pathologies (spinal deviations) due to the defective posture we adopt when we sit at the office (for work, education or entertainment), an activity intensely practiced especially during periods with restrictions of mobility.

Physical inactivity also has an important effect on the deterioration of the health of people with rheumatic diseases. In the past, bed rest has been widely used as a treatment for rheumatic diseases, such as rheumatoid arthritis and myositis, to prevent exacerbation of the disease and / or destruction of the joints. However, convincing evidence shows that a marked decrease in the level of physical activity practiced actually leads to joint destruction, muscle weakness and atrophy, resulting in reduced physical function (Pinto et al., 2017).

Such evidence has led to the abandonment of the recommendation of "bed rest" for rheumatic patients and new approaches to clinical practice have emerged that show that physical activity is an important part of therapy to improve patients' symptoms (Pinto et al., 2020).

Properly practiced physical activity has many beneficial effects: it improves the functional capacity of the body (especially the cardiorespiratory function), has a prophylactic effect on cardiovascular and metabolic problems, and overall, improves the quality of life.

Physical activity has beneficial effects on common problems during quarantine, such as frustration and boredom (Foye et al., 2020). In addition, the positive physiological side effects of exercise are: a lower risk of developing high blood pressure, stroke, osteoporosis, diabetes, metabolic syndrome and obesity, as well as a lower risk of developing more cancers. (Liguori et al., 2020). The therapeutic effects of exercise have been described for 26 different chronic diseases (Pedersen & Saltin, 2015), thus revealing that sport is a real medicine.

Clemmensen, Bang Petersen, & Thorkild, Sørensen, (2020) affirmed that home confinement during the COVID-19 pandemic provides an altered food cue exposure, which could challenge the

individual's cognitive restraint and enhance impulsive eating behaviour. In addition, emotional eating, often used to relieve negative feelings, might increase under these circumstances. The elimination of social eating practices could encourage a reduction in mindful eating, which might negatively influence dietary choices and promote overeating. Finally, the closing of fitness centres and curtailment of organized sports, in combination with the need for physical distancing, could make maintaining an active lifestyle difficult.

Popov, Aytaman, Alemán, (2022) said that we forgot the pandemic obesity. Now it is the second leading risk factor after age for mortality and intensive care unit admission in COVID-19.

To successfully combat the side effects of a pandemic, here are some suggestions on how to get used to pandemics: maintaining a healthy sleep routine, maintaining a healthy diet (avoiding junk food, and staying healthy). excessive physical activity), regular physical activity, limiting time spent in front of screens (TV, tablet, laptop, phone), limiting exposure to the media possible exposure to misinformation and false news), remote socializing (making virtual connections through video calling applications), relaxing by practicing your favorite activities (meditation, yoga, dancing, gardening, cooking, watching a movie, read, etc.) (CDC, 2019, https://www.cdc.gov/coronavirus/2019ncov/daily-life-coping/managing-stress-anxiety.html.;WHO, 2020, outbreak.https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf?sfvrsn=6d3578af_8.).

During the period of isolation at home, the following dietary practices are recommended: reduction of consumption of foods with high glycemic index, low calorie consumption (from 15 to 25%) compared to normal, low frequency of meals, regular meals and a long fasting period between dinner and breakfast (more than 10 hours), consuming more calories at breakfast (about 40%), less at lunch (30%) and dinner (30%).

In terms of exercise, WHO experts, cited by Narici et al.(2020), recommend the following: at least 150 to 300 minutes of moderate aerobic activity per week for all adults, including people living with chronic conditions or disabilities, depending on the doctor's instructions. It is necessary to perform at least 5000 steps a day, any form of energy expenditure being helpful to avoid the harmful effects of sedentary lifestyle.

An extremely effective type of training, especially suitable for a young and fit population, is high-intensity, interval training (HIIT). They have the advantage that they can be practiced at home and do not require special equipment, they offer rapid improvements in terms of muscle strength, cardiorespiratory capacity and glucose metabolism.

Conclusions

In addition to the direct, immediate effects of the COVID-19 pandemic on mortality, it also has a widespread and indirect impact on physical and mental well-being, exposing survivors to stress and potential trauma.

The annual number of deaths due to physical inactivity has been estimated at over 5 million globally (Lee et al., 2012). It is undeniable that social isolation measures are needed to counter the spread of COVID-19 and to prevent the collapse of health systems. However, we should also consider that increased physical inactivity has the potential to increase mortality, especially if social isolation persists for longer periods (Roschel, Artioli & Gualano, 2020).

We believe that it is essential that international and national decision-makers strengthen the importance of complying with public health recommendations on physical activity, even during quarantine.

Under these conditions, being physically active is essential for health and well-being. Exercise is beneficial for the prevention of heart disease, type 2 diabetes, but also for reducing the symptoms of anxiety and depression, improving memory and reducing cognitive decline.

Regardless of the societal difficulties we are going through, we must not forget to attach importance to strengthening the basic pillars of life: physical and mental health, because health is a state of complete harmony of body, mind and spirit.

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