REVIEW ARTICLE

Sedentary Habits and Their Detrimental Impact on Global Health: A Viewpoint

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ABSTRACT

With limited areas where people can work out, an increase in sedentary work with the growing popularity of desk jobs and television and video devices, inactive lifestyles are becoming more and more common around the world. The objective of the current review is to explore the role of sedentary habits in the causation of different diseases and their impact on global health standards. Consequently, the associated health problems are becoming more serious. Inactivity has a significant influence on the human body in numerous ways. It disrupts lipolysis, transporter proteins, muscle glucose, the metabolic process, and lipoprotein lipase functionality. Prolonged sedentary behavior directly impacts the gravity, body weight balance, and can lead to fluid retention, obesity, and an increase in oxidative stress. An inactive lifestyle has a range of adverse impacts on our bodies, including a surge in all-cause mortality, coronary heart disease mortality, and the probability of contracting diseases like diabetes mellitus, hypertension, and dyslipidemia, in addition to physical ailments like arthralgia and osteoporosis, mental health issues like depression, and mental retardation. Consequently, to advance public health, we need to reduce sedentary practices and increase physical activity.

Keywords: Exercise, metabolic disease, cancer, mortality, physical activity, sedentary behavior

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INTRODUCTION

The term "sedentary" stems from the Latin "sedentarius," which means "sitting." An inactive lifestyle has become an international health concern, with approximately one-third of the population now living a sedentary lifestyle.[1] Automobile travel and increasing digital use for school, jobs, and pleasure are leading to more sitting. Doing nothing during free time and being inactive for work and at home are all factors in the lower levels of physical activity. Today's youths are taking advantage of social media to stay in touch with their pals.[2] In the same way, relying more on vehicles for transportation lowers our physical activity levels. Anything from leisure activities to going to and from places to activities at work constitutes physical exercise.[3] Both rigorous and moderate workouts are advantageous for our well-being.[4] Exploring on foot, riding a bike, rolling in a wheelchair, playing sports, enjoying active recreation, and simply having fun are all means of physical activity that anyone can partake in, no matter their level of ability.[5] Even though a lack of exercise can be just as hazardous to one's health, resulting in a greater risk of many diseases, the majority of medical advice and instruction for physical activity centers around increasing physical activity, with less attention being given to reducing inactivity.[6,7] Astonishingly, recent data reveals that 25% of adults and an astounding 81% of teens do not take part in enough exercise. Moreover, as economies improve, the amount of inactivity rises to a shocking 70%. This can partially be attributed to alterations to transportation, the rise of technology for business and pleasure, cultural values, and an increase in sedentary activities.[5] COVID-19 has also created an impact on the sedentary behavior of the individual as they were several activities, including sports, exercise, and physical activity, were restricted.[8] The objective of the current review is to explore the role of sedentary habits in the causation of different diseases and their impact on global health standards.

SEDENTARY LIFESTYLE

A sedentary lifestyle is when individuals are active for less than 60 minutes a day. Anything that burns 1.5 metabolic equivalent tasks or less is classified as sedentary behavior.[9] This includes activities such as watching TV, playing video games, sitting at work, on the computer, and even sitting when you're traveling.[10] In 2018, the World Health Organization released its Global Action Plan on Physical Activity 2018-2030, with all 194 Member States committing to a 15% decrease in physical inactivity by 2030.[11] The WHO also requested an update to the 2010 World Recommendations on Physical Activity for Health were published. In 2019, the World Health Organization (WHO) published its Guidelines for Physical Activity, Sedentary Behavior and Sleep for Children aged 5 and under.[11] In 2020, the World Health Organization (WHO) disseminated comprehensive global guidelines about physical activity and inactivity across diverse demographics, encompassing children, adolescents, adults, and seniors, as well as specific groups like pregnant and postpartum women, and individuals contending with chronic illnesses or disabilities.[7,12] The COVID-19 pandemic necessitated stringent measures, including person-to-person transmission mitigation, isolation protocols, and rigorous quarantine procedures, to effectively curb its spread.[13,14] Consequently, various activities, notably those involving sports, exercise, and general physical activity, underwent restrictions, leading to a discernible decline in the frequency and volume of physical activities across different intensity levels (vigorous, moderate, walking, and overall).[5] Prolonged periods of home confinement further introduced sedentary behaviors, manifested through increased instances of prolonged sitting, heightened screen usage, and the adoption of unfavorable dietary practices.[15,16] The combination of fewer good habits and more bad ones may raise the probability of chronic health issues, reflecting an even greater risk for COVID-19 infection.[14,17]

HEALTHY BEHAVIOR OR PHYSICAL ACTIVITY

Today, physical exercise is a crucial and fundamental part of our lives if we want to attain the best possible health and wellness.[5] Physical exercise is muscle movement that uses up energy.[18] Regular exercise lowers the chance of developing non-communicable illnesses such as depression, diabetes, breast and colon cancer, hypertension, and ischemic heart disease.[19] Additionally, it helps the aged demographic's equilibrium and coordination as well as their psychological well-being, musculoskeletal issues (osteoarthritis, osteoporosis), and overweight and obesity.[20] However, a large portion of the population is growing less active. The advantages of regular exercise are numerous in terms of health, society, and economy.[6] The 2030 Sustainable Development Goals and the aim of a 15% subsequent decrease in the impact of physical inactivity among adults and young people globally by that year are both directly impacted by actions to encourage physical activity.[21]

UNHEALTHY BEHAVIOR OR PHYSICAL INACTIVITY

Many factors are assumed to affect people's failure to get enough physical activity.[6,22] A few environmental factors that could be causing this include a lack of parks or sidewalks, air contamination, and the absence of sports or leisure facilities.[23] It seems that living a couch-potato lifestyle is connected to spending time watching TV, videos, and being preoccupied with cell phones.[24] Taking into account the existing social and economic circumstances, it is highly likely

that indolent behavior will increase.[25] The overall health of people everywhere is profoundly affected by inactive ways of life. Nearly everywhere, physical inactivity is widespread, and associated non-communicable diseases are on the rise.[7,26] It is widely accepted that lack of exercise or motionlessness is detrimental to health.[27] Physical inactivity is the fourth most important risk factor, accounting for 6% of deaths around the world.[28] Although inactivity can be a significant health risk and can lead to many illnesses, the majority of medical advice concerning physical activity focuses on increasing activity levels, rather than decreasing inactivity.[27] All healthcare workers, especially doctors, should emphasize the importance of a sedentary lifestyle in their policies and inform patients of its potential health effects.[29,30]

HEALTH RISK

Sedentary behavior is highly linked to cancer, diabetes, cardiovascular disease, and early death. It's been found that the more time spent sitting in front of the TV and not being active increases the chances of premature mortality.[31]

Diabetes Mellitus*:* Sedentary behavior leads to excessive eating, high-fat, and high-sugar diets, lack of exercise, obesity, and excessive visceral fat which affect the persons health by causing diabetes mellitus.[27,32] Furthermore, there exists compelling empirical evidence indicating a genetic predisposition among individuals of Indian descent toward diabetes, coupled with elevated levels of insulin resistance.[33] Regardless of anthropometric, nutritional, socioeconomic, and migratory characteristics, Indian communities exhibited a greater prevalence of Type 2 diabetes.[34] It is logical to assume that type 2 diabetes in kids and teenagers in India is a phenomenon ready to make a big splash there as well. The increased frequency of Type 2 diabetes in children is a reflection of the consequences of globalization and industrialization on all communities, as the young are less physically active and spend the majority of their time sitting down.[35] Extensive sitting has been demonstrated to modify the structure and activity of muscle glucose transporter proteins.[36]

Hypertension: Sedentary behavior causes obesity which leads to hypertension in youth as they are very concern about their looks.[31,37] It is exciting to note that according to conservative estimates, the number of people with high blood pressure is expected to reach 1.56 billion globally by 2025.[38] Different tactics can be utilized to alter blood pressure caused by an inactive lifestyle, such as adjusting cardiac output and total peripheral vascular resistance with enthusiasm.[39] In India, an astonishing 63% of all fatalities are related to non-transmissible diseases, and the majority of these are caused by cardiovascular disease, affecting 45% of people in the 40-69 age group.[40] High blood pressure is a leading contributor to this and sadly, it's poorly managed due to a lack of knowledge about hypertension, inadequate primary care, and poor follow-up.[41]

Dyslipidemia: The metabolic impairment arising from a sedentary lifestyle is delineated by elevated blood triglyceride concentrations, diminished levels of high-density lipoprotein (HDL) cholesterol, and reduced insulin sensitivity.[42] In India, dyslipidemia affects around 25-30% of urban and 15-20% of rural people. Although it affects both sexes, men are more likely to experience it. Ages 30 to 40 have the propensity to have high prevalence, but over 60, it becomes noticeably high.[43]

Obesity: A person who is obese has abnormal or excessive fat mass which has a detrimental impact on their health.[44] An individual's obesity can be due to an inconsistency between the calories they consume and the calories they burn off.[45] Weight gain results from increasing calorie intake without correspondingly increasing physical activity.[46] Boosting physical activity can be a great way to battle obesity since those who are overweight tend to be less active.[47] A whopping 135 million Indians are dealing with the issue of obesity. Factors like age, sex, location, financial status, and inactive lifestyle can all influence its prevalence in India.[48]

Cancer Risk: Other variables, such as being overweight or obese, may reduce the association between prolonged periods of sitting and the chance of developing cancer.[49] Sedentary behavior is associated with an increased chance of getting overweight.[50] Lack of physical activity can lead to metabolic disturbances such as high blood sugar, high insulin levels, resistance to insulin, disruptions in insulin-like growth factor levels, and changes in the amounts of sex hormones present in the bloodstream.[51] These fluctuating hormone levels are linked to hormone-caused cancers including breast and uterine cancer.[52,53]

Musculoskeletal Diseases: A majority of the global need for rehabilitation is due to musculoskeletal disorders.54 These ailments account for nearly two-thirds of individuals requiring therapy and are major reasons why young people require treatment plans.[55] Chronic knee discomfort was associated with spending a lot of time sitting still. The results of an investigation of the relationship between chronic knee pain and total daily inactivity suggested that people with prolonged inactivity had a greater frequency of chronic knee pain.[56] It was found that there was a powerful connection between those who spent more than 10 hours daily engaging in leisure activities and recurring knee pain.[57]

Depression: India has one of the highest rates of mental illness in the world, with no proper medical facilities to aid people who need it.[58] Research has discovered that there is a strong correlation between the likelihood of depression and activities that don't require much mental activity, such as watching TV, sitting, listening to music, and chatting while seated.[31,59] Excitingly, this may provide some insight into the causes of depression. Contrarily, intellectually

stimulating sedentary activities like reading newspapers or books, driving, going to meetings, or doing crafts like knitting or sewing did not significantly increase the risk of depression.[60]

HEALTHY DIET

Eating a nutritious diet is absolutely essential for good health, as well as allowing for proper development and avoiding deficiencies.[61] Furthermore, it can help reduce the risk of chronic diseases such as diabetes, heart problems, some forms of cancer, and other issues associated with being overweight.[62] One of the top global dangers to health is a lack of exercise and a poor diet.[27,61] Fruits and vegetables, which are low in calories and high in nutrients, are the foundation of a healthy sedentary diet. Because fiber keeps you feeling full, the majority of fruits and vegetables are abundant in it.[63,64] Fighting hunger is crucial to maintaining a low-calorie diet since, if you aren't already sedentary, stress eating at the first indication of hunger can happen.[65]

MOBILE DEVICES' IMPACT ON CONTEMPORARY SOCIETY

Over the past ten years, modern technologies like computers, cell phones, and tablets have been created and have spread more widely. These devices may both benefit youngsters and pose health dangers.[66,67] Older persons are more likely to develop chronic illnesses, have functional decline, and die young if they spend a lot of time sitting down, get a little exercise, and are not in good physical shape.[27,68] While using a phone, improper posture might increase your chance of developing developmental issues, musculoskeletal issues, obesity, inactivity, and poor sleep.[31,69,70] To help young people adopt a healthy lifestyle, it's imperative to monitor the amount, frequency, and type of material they access on technology.[61,71,72] Additionally, it's paramount to ensure that kids have ample chances to stay active, eat nutritiously, maintain regular sleep patterns, and be part of a supportive social atmosphere.[73] Research has demonstrated a connection between the use of digital technology among preschool and school-age kids and a variety of difficulties, including sleeping issues, aggression, physical idleness, and difficulty concentrating.[74] An analysis unveiled that out of children in the age range of 4 to 11 years, 37% had a shortage of physical activity, 65% had excessive exposure to screens (TVs, PCs, tablets, etc.), and 26% had a mix of both.[27,75] Parents must strive to ensure their kids benefit from the principles of healthy eating, adequate sleep, physical activity, and meaningful socialization to help them thrive and grow.[76] In order to do so, plans should be tailored to each child's age, health, temperament, and level of maturity. Nowadays, children are reared in a highly personalized tech-centered environment.[77] On the other hand, numerous health applications for mobile devices might encourage an active lifestyle.[78,79] An alternative to being inactive might be provided by mHealth apps; these are applications that run on mobile devices such as smartphones and tablets.[80,81] Compared to other forms of eHealth (static computers, the internet, landlines, text messages, and mobile phone calls), mHealth apps have distinct advantages because they can support continuous monitoring, which forms the basis for individualized feedback and goal setting.[82,83] Currently, a variety of health settings encourage the use of health-related applications. This covers a range of medical disorders, such as the treatment of diabetes, chronic obstructive pulmonary disease, depression, and dementia.[84]

PREVENTION

In the house or surrounding area, people may commit to doing housekeeping, yard labor, and gardening, can stretch, do yoga, ride a stationary bike inside, lift small weights, and perform other simple workouts, they can exercise at home while viewing exercise videos, walking might be more enjoyable if done with friends, family, or a pet, and they can use a phone while exercising, get up and move around, treadmills, elliptical trainers, and belly boards are examples of home fitness equipment, some less expensive equipment like stretch bands, exercise balls, mats, yoga mats, or hand weights. Furthermore, mobile phones can serve as valuable tools for home-based fitness regimens. Individuals may also avail themselves of online workout classes or fitness applications, which provide a diverse range of exercises and routines. Identifying enjoyable activities that can be adhered to consistently is essential for establishing a sustainable home exercise routine. By possessing the appropriate equipment and sustaining motivation, the attainment of an active and fit lifestyle can be readily accomplished in the convenience of one's domestic environment.[5,9,85]

At the office, make an effort to stand up and walk around every hour, using the stairs rather than the elevator. Incorporating this modest adjustment into daily routine will facilitate the maintenance of an active lifestyle and contribute to the expenditure of additional calories over the course of the day. Furthermore, opting for stairs as opposed to sedentary alternatives can enhance cardiovascular well-being and fortify the musculature of the lower extremities.[5] Therefore, cultivating a practice of integrating brief intervals of physical activity into workday is advocated for fostering a state of improved health and heightened vitality, as it has been depicted in Figure 1. There are benefits of doing some physical activity the harmful weight gain is reduced, helps with anxiety and despair, enhances mood, a rise in the caliber of sleep, enhances skeletal and bone health lowers the risk for a variety of chronic disorders. Conditions such as heart disease, diabetes, and specific forms of cancer can be mitigated through consistent physical activity. Furthermore, routine engagement in physi-

cal exercise has the potential to enhance cognitive function and memory, elevate energy levels, and contribute to overall longevity. Beyond the physiological benefits, regular physical activity affords opportunities for social interaction, serving as an enjoyable means to alleviate stress and unwind from the pressures of daily life. The adoption of a physically active lifestyle offers individuals a tangible pathway to substantially enhance their holistic well-being, fostering a healthier and more gratifying existence.[5,86-88]

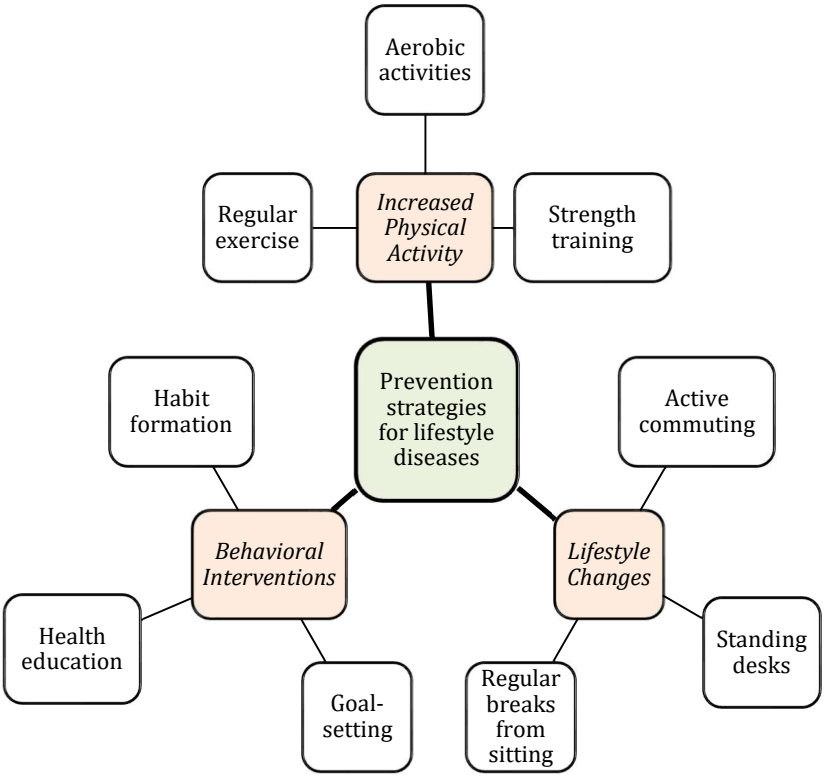

Figure 1: Prevention strategies for lifestyle diseases

Conclusion

Sedentary behavior has several detrimental consequences on health, such as increased all-cause mortality, cardiovascular disease mortality, cancer risk, and risks for metabolic illnesses including Diabetes Mellitus, dyslipidemia, and musculoskeletal conditions like knee pain and osteoporosis. Watching television had the worst effects when it came to health outcomes, which varied based on the type of sedentary activity. This may be due to the passive sedentary nature of watching television and the prevalence of snacking while television viewing. As a result, among the numerous sedentary habits, people should avoid watching television as much as they can, and they should limit their eating while doing so. It is recommended that sedentary individuals who are not engaged in moderate physical activity reduce their sedentary behavior and switch to light-intensity physical activity to reduce the impact of the same on diseases and health-related conditions.

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