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Review Article

Breaking Barriers, Building Habits: A Comprehensive Study on Public Health Strategies to Promote and Support Regular Physical Activity on A Global Scale

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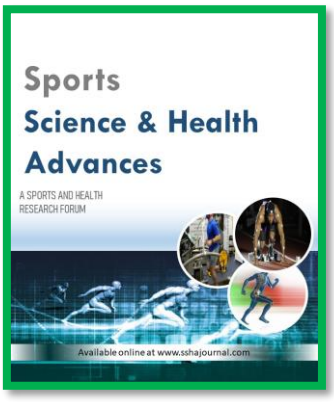

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Abstract

Regular physical activity is a vital shield against the onset and management of Non-Communicable Diseases (NCDs), with individuals adhering to recommended activity levels experiencing a substantial reduction in premature mortality risk. This report outlines the significance of physical activity in preventing NCDs, promoting mental well-being, and maintaining a healthy weight. It presents WHO recommendations for physical activity across different age groups and highlights global trends in insufficient physical activity, revealing disparities between sexes, regions, and income levels. The report further delves into worldwide trends in insufficient physical activity. It highlights the alarming disparities in physical activity levels, particularly among men and women, various global regions, and income groups. The findings underscore the urgent need for targeted interventions to promote physical activity, particularly in regions and populations where rates are disturbingly low. Finally, the report identifies the critical risks associated with physical inactivity, with insufficiently active individuals facing a 20% to 30% increased risk of mortality compared to those who maintain sufficient physical activity levels. This highlights the urgent need for comprehensive public health strategies to promote and support regular physical activity on a global scale to reduce the burden of NCDs, improve overall well-being, and mitigate the economic costs associated with physical inactivity.

Keywords: Non-Communicable Diseases, world health organization, Physical Activity, Cardiovascular Disease

Introduction

Engaging in regular physical activity stands as a pivotal shield against the onset and control of Non-Communicable Diseases (NCDs). In fact, individuals who adhere to the recommended levels of physical activity witness a substantial 20-30% reduction in the risk of premature mortality (2). Astonishingly, a noteworthy proportion of NCD cases could be averted through increased physical activity – approximately 7-8% of incidents related to cardiovascular disease, depression, and dementia, along with nearly 5% of type-2 diabetes cases, could be staved off. The significance of these preventable NCDs extends beyond individual impact, cascading to affect families, healthcare systems, and

society on a broader canvas (Organization, 2002; World Health Organization, 2022).

Moreover, the positive impact of physical activity extends to mental well-being, encompassing the prevention of cognitive decline and alleviation of symptoms related to depression and anxiety. Remarkably, it even enhances children's educational achievements (D. Kumar, Dhull, et al., 2023; Nara et al., 2022). Beyond the confines of mental health, physical activity emerges as a key player in maintaining a healthy weight and promoting overall well-being (Deepak et al., 2022; NARA et al., n.d., 2022; Parveen, n.d.).

The avenues for engaging in physical activity are as diverse as they are accessible (Deepak & Yadav, 2016; Kasnia & Dhull, 2022; D. Kumar, Nara, et al., 2023). One can partake in activities ranging from brisk walks to cycling (a term which, in the context of this report, encompasses various personal mobility modes such as scooters and wheelchairs), as well as engaging in sports and active recreational pursuits (D. Kumar & Dhull, 2023). The versatility of options underscores the inclusive nature of physical activity, enabling individuals to tailor their engagement to personal preferences and needs (Dhull, 2023; Heijne et al., 2022; D. Kumar, Kumar, et al., 2023; S. Kumar, Ahlawat, et al., 2023).

Method

WHO Recommendations for Physical Activity (In the context of a 24-hour day)

Infants (Less than 1 year): Be physically active several times a day in a variety of ways, particularly through interactive floor-based play; more is better. For those not yet mobile, this includes at least 30 minutes in prone position (tummy time) spread throughout the day while awake; not be restrained for more than 1 hour at a time (e.g., prams/strollers, high chairs, or strapped on a caregiver's back); Screen time is not recommended. When sedentary, engaging in reading and storytelling with a caregiver is encouraged; and have 14-17h (0-3 months of age) or 12-16h (4-11 months of age) of good quality sleep, including naps.

Children (1-2 years): Spend at least 180 minutes in a variety of types of physical activities at any intensity, including moderate- to vigorous-intensity physical activity, spread throughout the day; more is better; not be restrained for more than 1 hour at a time (e.g., prams/strollers, high chairs, or strapped on a caregiver's back) or sit for extended periods of time. For 1-year-olds, sedentary screen time (such as watching TV or videos, or playing computer games) is not recommended. For those aged 2 years, sedentary screen time should be no more than 1 hour; less is better. When sedentary, engaging in reading and storytelling with a caregiver is encouraged; and have 11-14h of good quality sleep, including naps, with regular sleep and wake-up times.

Children (3-4 years): Spend at least 180 minutes in a variety of types of physical activities at any intensity, of which at least 60 minutes is moderate- to vigorous-intensity physical activity, spread throughout the day; more is better; not be restrained for more than 1 hour at a time (e.g., prams/strollers) or sit for extended periods of time. Sedentary screen time should be no more than 1 hour; less is better. When sedentary, engaging in reading and storytelling with a caregiver is); encourage; and have 10-13h of good quality sleep, which may include a nap, with regular sleep and wake-up times.

Children and Adolescents (5 – 17 years): Should do at least an average of 60 minutes per day of moderate-to-vigorous intensity, mostly aerobic, physical activity, across the week. should incorporate vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, at least 3 days a week. should limit the amount of time spent being sedentary, particularly the amount of recreational screen time.

Adults (18–64 years): Should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits. may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits. should limit the amount of time spent

being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits, and to help reduce the detrimental effects of high levels of sedentary behavior on health, all adults and older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

Adults aged 65 years and above: Same as for adults; and as part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.

Pregnant and postpartum women: All pregnant and postpartum women without contraindication should: do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week incorporate a variety of aerobic and muscle-strengthening activities should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.

People living with chronic conditions (hypertension, type 2 diabetes, HIV and cancer survivors): Should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits. as part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls. may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits. should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits, and to help reduce the detrimental effects of high levels of sedentary behaviour on health, all adults and older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

Children and adolescents living with disability: Should do at least an average of 60 minutes per day of moderate-to-vigorous intensity, mostly aerobic, physical activity, across the week. should incorporate vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, at least 3 days a week. should limit the amount of time spent being sedentary, particularly the amount of recreational screen time.

Adults living with disability: should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits. As part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls. may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits. should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits, and to help reduce the detrimental effects of high levels of sedentary behaviour on health, all adults and older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity. It is possible to avoid sedentary behaviour and be physically active while sitting or lying. E.g. Upper body led activities, inclusive and/or wheelchair-specific sport and activities.

Worldwide Trends in Insufficient Physical Activity

A comprehensive study published in The Lancet incorporated data gleaned from 358 surveys conducted across 168 countries, involving a staggering 1.9 million participants. The global prevalence of insufficient physical activity, when age-standardized, stood at 27.5% in the year 2016, with a margin of uncertainty at 95% between 25.0% and 32.2%. Notably, there was a distinct divergence between the sexes, amounting to a more than 8 percentage point difference. Specifically, insufficient physical activity was reported in 23.4% of men (with a confidence interval between 21.1% and 30.7%) and 31.7% of women (with a confidence interval between 28.6% and 39.0%). When assessing trends over time, the study unveiled that between 2001 and 2016, the levels of insufficient physical activity remained relatively stable. In 2001, the recorded percentage was 28.5%, and this figure did not exhibit significant change.

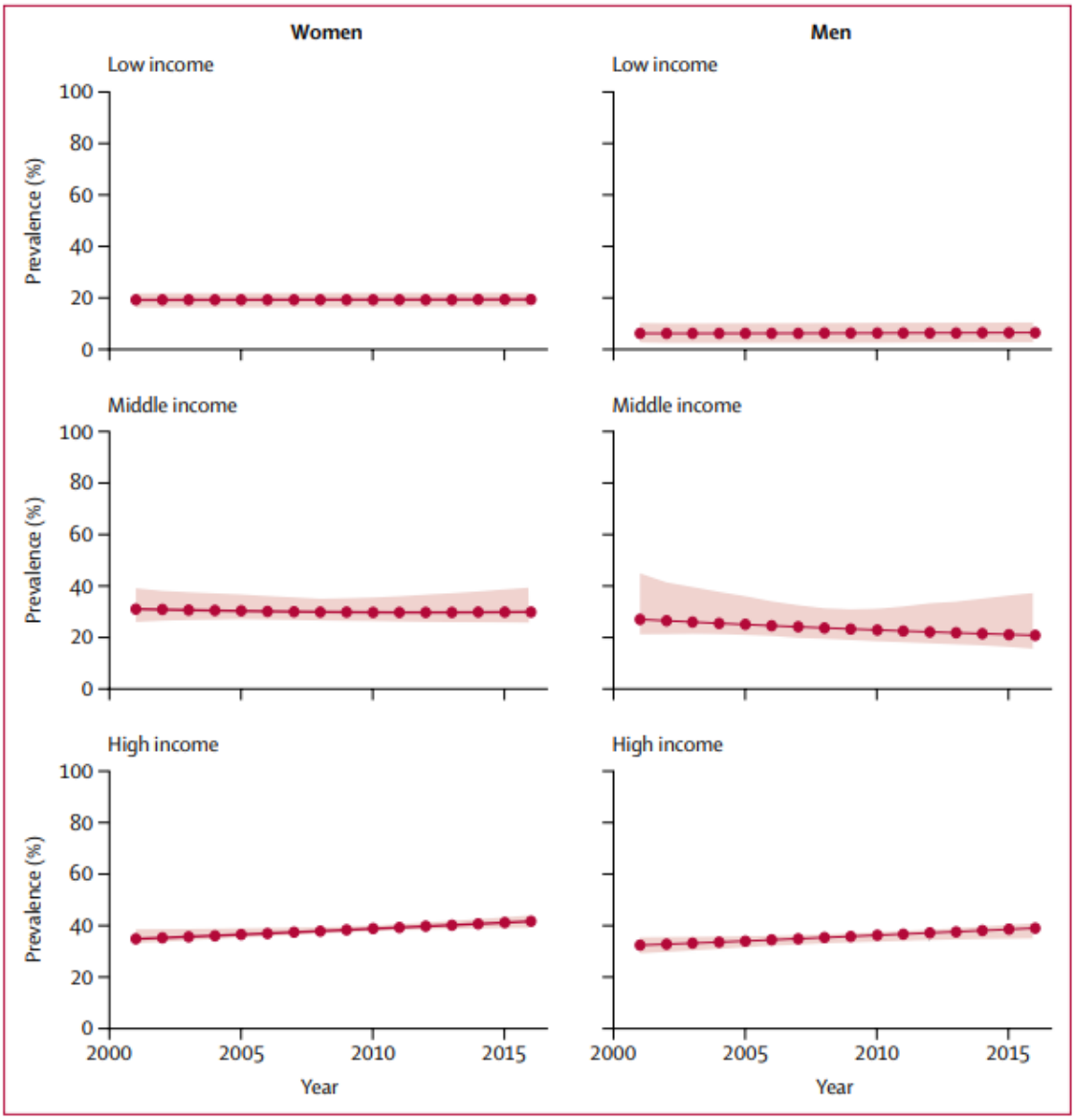

Figure 1 Trends in insufficient physical activity for three income groups from 2001 to 2016. The shaded areas show 95% uncertainty intervals. [Reprint with permission (Guthold et al., 2018)]

Geographical analysis revealed fascinating disparities. The highest prevalence of insufficient physical activity in 2016 was observed in women from Latin America and the Caribbean (43.7%, confidence interval 42.9%–46.5%), south Asia (43.0%, confidence interval 29.6%–74.9%), and high-income Western countries (42.3%, confidence interval 39.1%–45.4%). Conversely, the lowest levels were reported in men from Oceania (12.3%, confidence interval 11.2%–17.7%), east and southeast Asia (17.6%, confidence interval 15.7%–23.9%), and sub-Saharan Africa (17.9%, confidence interval 15.1%–20.5%).

Delving into economic classifications (see Figure 1), the study revealed that the prevalence of insufficient activity was more than double in high-income countries (36.8%, confidence interval 35.0%–38.0%) when compared to low-income countries (16.2%, confidence interval 14.2%–17.9%) in the year 2016. Moreover, it was noted that insufficient physical activity has experienced an upward trajectory in high-income countries over time, rising from 31.6% (confidence interval 27.1%–37.2%) in 2001. These findings underscore the global disparities in physical activity levels and highlight the urgent need for targeted interventions to encourage and promote regular physical activity, particularly in regions and populations where rates are alarmingly low (Guthold et al., 2018).

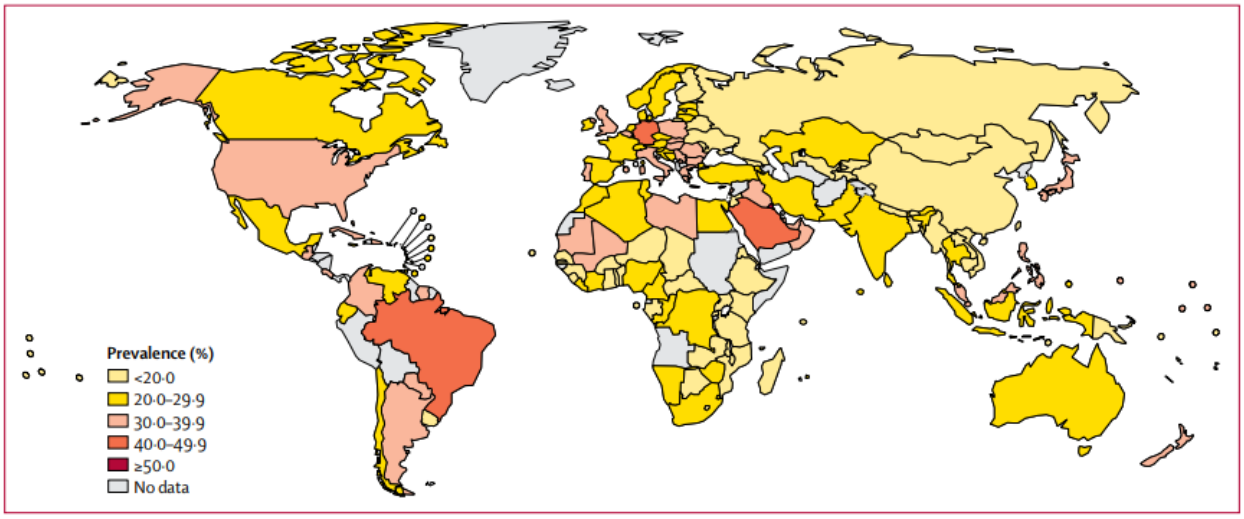

Figure 2 Country prevalence of insufficient physical activity in men in 2016 [Reprint with permission (Guthold et al., 2018)]

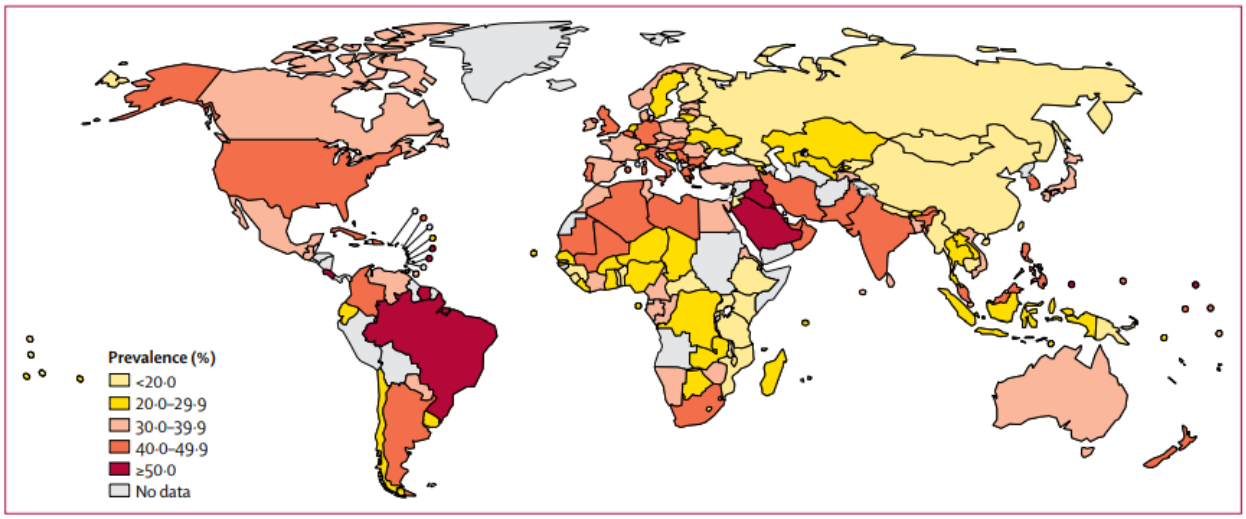

Figure 3 Country prevalence of insufficient physical activity in women in 2016 [Reprint with permission (Guthold et al., 2018)

Cost of Physical Inactivity

Physical inactivity is associated with a range of chronic diseases and premature deaths (World Health Organization, 2020) that carry not just a human but also an economic cost. Estimating the economic burden of physical inactivity is important to inform policy and decide resource prioritization. Previous global estimates of the economic burden of physical inactivity, undertaken in 2016, showed a global cost in 2013 of INT$ 67.5 billion per year due to healthcare expenditure and productivity losses (Ding et al., 2016).

The economic burden of physical inactivity is large. Globally, almost 500 million (499 208 million) new cases of preventable NCDs will occur between 2020–2030, incurring treatment costs of just over US$ 300 billion (INT$ 524 billion) or around US$ 27 billion (INT$ 48 billion) annually if there is no change in the current prevalence of physical inactivity. The burden of new cases will largely fall on lower- and upper-middle-income countries, which are set to account for nearly three quarters – 74% – of estimated new cases of NCDs, with the Western Pacific Region predicted to be hardest hit.

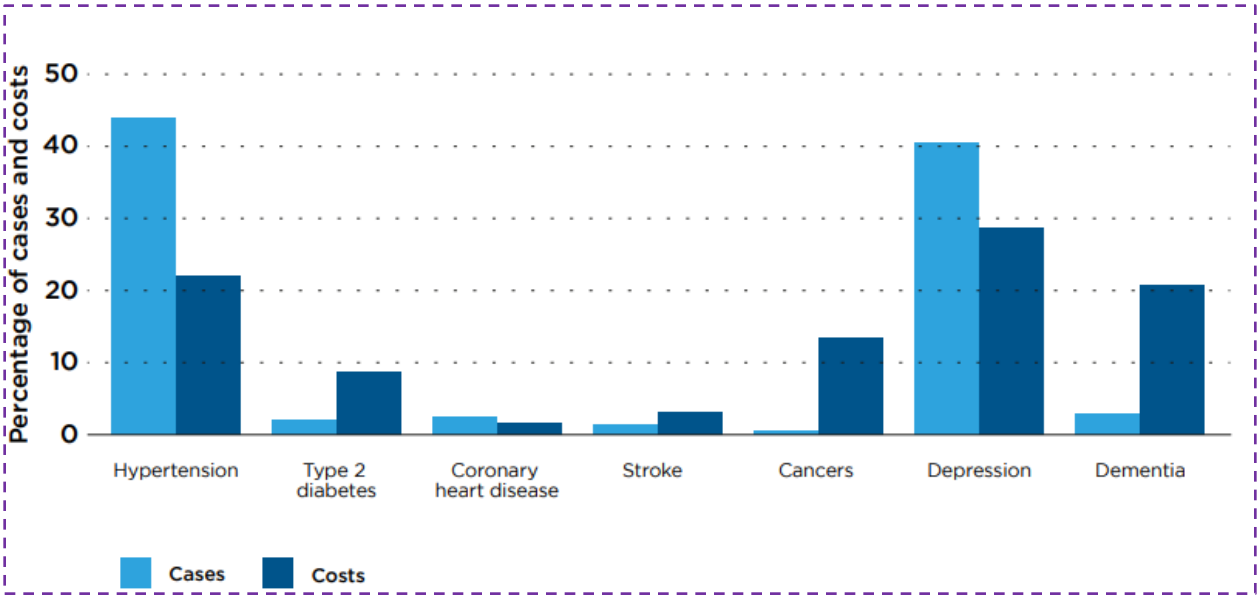

Figure 4 Distribution (%) of the total number of cases and costs by type of NCD attributed to physical inactivity, 2020–2030 [Retrieved from Global Status Report on Physical Activity 2022, WHO]

As might be expected, and similar to findings in 2016 (Ding et al., 2016), the economic burden of physical inactivity is unequally distributed across regions and is disproportionate in relation to the disease burden. The largest economic cost is set to occur among high-income countries, which will account for 70% of expenditure on treatment for illness resulting from physical inactivity. These estimates show that society is paying the price for not acting to reduce levels of physical inactivity. Moreover, these estimates are conservative. The inclusion of other important health outcomes, for example costs of treatment and management of preventable cases of falls and their associated injuries, would provide a comprehensive estimate of the impact of physical inactivity on health systems. In addition, if models were extended to include productivity losses due to morbidity and mortality, they would reveal the even greater economic costs associated with physical inactivity (Hafner et al., 2020).

Result

In summary, the article provides a compelling case for the pivotal role of regular physical activity in safeguarding health and well-being. It underscores how adopting recommended levels of physical activity can significantly reduce the risk of premature death and prevent a substantial portion of NCD cases, thereby benefiting not only individuals but also healthcare systems and

society at large. The versatility of physical activity options, as outlined by WHO recommendations, ensures that people of all ages and abilities can participate and tailor their engagement to their specific needs and preferences However, the article also presents sobering insights into global trends, revealing that a significant proportion of the world's population falls short of meeting recommended physical activity levels. This deficiency is more pronounced among women and in certain regions, posing a pressing public health challenge. Moreover, the economic ramifications of physical inactivity are substantial, with significant costs associated with healthcare expenses and productivity losses. In light of these findings, the article strongly underscores the importance of immediate and concerted efforts to promote physical activity worldwide. These efforts must target regions and populations with alarmingly low activity rates, address gender disparities, and consider the economic implications. Encouraging physical activity not only improves individual health but also holds the potential to alleviate the economic burden and strain on healthcare systems caused by NCDs and their associated risks. Ultimately, the article serves as a compelling call to action for global health organizations, policymakers, and individuals to prioritize and prioritize regular physical activity as a means to enhance health and well-being across the globe.

Discussion

The article provides a comprehensive examination of the critical role of regular physical activity in preventing Non-Communicable Diseases (NCDs), improving overall well-being, and addressing the economic costs associated with physical inactivity. Let's delve into a more extended discussion of the key points and implications of this important piece of research.

Promoting Physical Activity for Health and Well-being:

The article's primary message is clear: regular physical activity is a potent shield against NCDs and is pivotal for maintaining overall health and well-being. The evidence presented underscores the far-reaching benefits of adhering to recommended levels of physical activity. Notably, individuals who engage in regular physical activity experience a significant 20-30% reduction in the risk of premature mortality(Hazratkulov, 2023; Joseph et al., 2013). This finding alone underscores the life-saving potential of something as simple as moving more(Balwan & Kour, 2021; S. Kumar, n.d.; Mousavi Bazaz et al., 2022). Beyond mortality reduction, the article emphasizes the preventive role of physical activity in specific NCDs. Cardiovascular disease, depression, dementia, and type-2 diabetes are among the conditions where increased physical activity can significantly reduce the incidence. This is a compelling argument for the integration of physical activity promotion into public health strategies, given the increasing prevalence of these conditions worldwide(Organization, 2002; Petersen, 2008).

Inclusivity of Physical Activity

One of the strengths highlighted in the article is the inclusivity of physical activity. The recommendations provided by the World Health Organization (WHO) encompass a wide range of age groups, from infants to older adults, pregnant women, and individuals with chronic conditions (Lurati, 2018; McKenzie et al., 2022; Sanyaolu et al., 2019). This inclusivity ensures that almost everyone can find a suitable form of physical activity tailored to their needs and preferences. Furthermore, the article emphasizes the versatility of physical activity options. From brisk walks to cycling, sports, and recreational pursuits, there are countless ways for individuals to incorporate physical activity into their daily lives. This adaptability is vital, as it recognizes that one size does not fit all when it comes to promoting physical activity (Bull et al., 2020).

Global Trends and Disparities

The article offers a stark reality check by presenting global trends in physical inactivity. Despite the well-documented benefits of physical activity, nearly 28% of the global population was found to have insufficient physical activity levels. This alarming statistic calls attention to the urgent need for targeted interventions. (Henriksson et al., 2019; Mateo-Orcajada et al., 2022) Of particular concern are the disparities noted between genders and regions. Women and certain

geographical areas, such as Latin America and south Asia, exhibit higher rates of insufficient physical activity. These disparities highlight the importance of addressing cultural, social, and economic factors that may hinder physical activity participation in specific populations (Krutsevich et al., 2021).

The Economic Burden of Physical Inactivity

The economic costs associated with physical inactivity are a critical aspect of this article's discussion. The research estimates that the global cost of physical inactivity in terms of healthcare expenditure and productivity losses was INT$ 67.5 billion per year in 2013. This is a staggering figure that underscores the financial impact of not prioritizing physical activity. Furthermore, the projections of almost 500 million new cases of preventable NCDs between 2020-2030, with associated treatment costs, paint a dire economic picture (S. Kumar et al., n.d.; Larsen et al., 2017; Menescardi et al., 2019). The burden falls disproportionately on lower- and upper-middle-income countries, with high-income countries also facing substantial costs. This economic burden serves as a wake-up call for policymakers, as it highlights the need for preventive measures and health promotion interventions (Organization, 2003).

Addressing the Challenge

The article serves as a powerful call to action. It emphasizes that physical inactivity is not only a personal health concern but a global one with significant economic implications. To address this challenge, a multi-faceted approach is required. Public Health Initiatives: Governments and health organizations should prioritize physical activity promotion in their public health campaigns (Ardern et al., 2015; Santana et al., 2022; Taskin, 2009). This includes creating accessible and safe environments for physical activity, promoting active transportation, and integrating physical activity into education and healthcare systems. Education and Awareness Raising awareness about the benefits of physical activity and providing education on how to incorporate it into daily life is essential. This should target all age groups, including children and adolescents. Reducing Disparities Efforts should be made to reduce gender and regional disparities in physical activity levels (Markovic & Mikulic, 2010). This may involve culturally tailored interventions and addressing socioeconomic barriers. Economic Considerations Policymakers should recognize the economic costs of physical inactivity and allocate resources to preventive measures. Investments in physical activity promotion can yield substantial long-term savings in healthcare costs. Individual Responsibility Individuals must also take responsibility for their own health by prioritizing physical activity in their daily routines (Chatterjee & Sharma, 2023; Fleih, 2023). Small lifestyle changes can have a significant impact on health outcomes. The article provides a compelling argument for the global promotion of physical activity as a means to prevent NCDs, improve well-being, and reduce healthcare costs. The findings and recommendations presented should serve as a catalyst for action at both the individual and societal levels, with the goal of creating a healthier, more active world (Heydari et al., 2018; Lurati, 2018; Oguntuase & Sun, 2022).

Identified Risks of Physical Inactivity

Physical inactivity is one of the leading risk factors for noncommunicable disease mortality. People who are insufficiently active have a 20% to 30% increased risk of death compared to people who are sufficiently active.

Conclusion

In conclusion, this article underscores the profound impact of regular physical activity on individual and global health. It has been made abundantly clear that adhering to recommended levels of physical activity offers a formidable defense against Non-Communicable Diseases (NCDs), reducing the risk of premature mortality and preventing a substantial portion of NCD cases. The inclusivity of physical activity, catering to individuals of all ages and abilities, reinforces its universal relevance and adaptability to diverse preferences and needs.Yet, sobering global trends reveal a significant shortfall in meeting recommended physical activity levels, with

gender and regional disparities further exacerbating the challenge. These disparities call for targeted interventions that address cultural, social, and economic factors hindering physical activity participation. The economic implications of physical inactivity, both in terms of healthcare costs and productivity losses, cannot be overstated. The burden of preventable NCDs resulting from insufficient physical activity places a substantial financial strain on healthcare systems and economies, with high-income countries shouldering a significant share of these costs.

To address this multifaceted challenge, a comprehensive approach is required. This includes prioritizing physical activity in public health campaigns, creating supportive environments for active living, promoting behavior change and habit formation, and beginning physical activity education from early childhood. Reducing socioeconomic disparities, leveraging digital health tools, and integrating physical activity into corporate wellness programs and healthcare systems are essential steps toward a healthier and more active world. In essence, this article serves as a compelling call to action. It highlights not only the individual benefits of physical activity but also the collective responsibility to promote it on a global scale. Embracing physical activity as a fundamental aspect of daily life is not only a matter of personal health but a societal imperative. By working together to break down barriers, raise awareness, and prioritize physical activity, we can reduce the burden of NCDs, improve overall well-being, and secure a healthier, more prosperous future for all. The time to act is now, and the stakes could not be higher.

Implementation of the study

Implementing the insights gleaned from this study, which underscores the critical role of regular physical activity in mitigating Non-Communicable Diseases (NCDs) and enhancing overall well-being, necessitates a comprehensive and collaborative approach. Governments must take the lead by launching public health campaigns that emphasize the manifold benefits of physical activity across diverse age groups, while simultaneously integrating physical education into school curricula. Safe and accessible environments that promote walking, cycling, and outdoor activities are paramount, requiring urban planning and community collaboration. Additionally, employers should establish workplace wellness programs, and healthcare systems must incorporate physical activity assessments and counseling into routine patient care. Digital health tools, equitable access to physical activity resources, and culturally tailored interventions are vital components of reducing disparities. Policymakers can enact legislation that supports physical activity promotion, and ongoing monitoring and evaluation are essential to gauge progress. Ultimately, individuals should be empowered to take responsibility for their own health, and global cooperation can facilitate the sharing of best practices. Through these multifaceted efforts, societies can prioritize physical activity, thereby reducing the burden of NCDs, improving well-being, and forging a healthier future.

Conflict of interest: The authors do not have any conflicts of interest.

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