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CASE REPORT

Physical Inactivity as a Wicked Problem in Sub-Sahara Africa: Overview and Recommendations

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Abstract:

Physical Activity (PA) is a public health concern and has been listed as the fourth primary risk feature for Non-Communicable Diseases (NCDs). Physical inactivity has been understood as one of the wicked problems of the 21st century. The worldwide load of illnesses connected with physical inactivity is significant. This paper, from a viewpoint, discusses what can be done to reduce the wicked problem of physical inactivity in sub-Saharan African (SSA) nations. Physical inactivity is a wicked problem because it avoids direct suppression and is difficult to resolve in a way that is modest or absolute. Physical inactivity may be comprehended as the continuum of any decline in a person's movement that yields a reduction in energy outflow regarding basal level, which is a direct opposite of physical activity definition. Physical inactivity has been documented several years ago and was believed that regular light and moderate exercise could present confrontation with disease and counter physical deterioration. Despite PA's defensive factors for the avoidance and management of the foremost NCDs, other important NCD risk factors, and psychological health (WHO, 2002), many people still do not participate. In sub-Saharan Africa, physical inactivity and low levels of physical activity were among the 10 top-ranked risk factors for the attributable burden of disease. One review paper recently published documents that the prevalence of physical inactivity stands at twenty-two percent, which is close to the global average of twenty-seven percent and has been projected to increase in the nearest decades. Therefore, confronting "wicked problems" of physical inactivity in the sub-Sahara Africa region requires an urgent collaborative transdisciplinary approach backed up with good policy implementation and resources.

Keywords: Wicked problem, Policy implementation, Transdisciplinary approach, Physical activity, Health promotion, Rehabilitations.

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1. INTRODUCTION

Viewing physical activity from the concept of movement is understood to be any change in the position of one's body parts in relation to one another, which is a premeditated or deliberate movement that is focused on accomplishing a particular goal [1]. Movement has also been understood as the natural prerequisite of every single existing human being; in fact, "movement is a life" [2]. Today, the lack of movement has led to the surge in a huge amount of illnesses and disabilities which require management, rehabilitation, and treatment [2]. The science of movement is a universal language spoken by all persons irrespective of their sex, age, race, and profession [2]. Movement is believed to be a requisite for psychophysiological characteristics and responses. Movement is seen in physical activity and vice versa. The lack of body movement or physical activity has been linked to several health issues.

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2. PHYSICAL INACTIVITY AS A PUBLIC HEALTH PROBLEM

Physical inactivity has turned out to be a public health issue throughout the world for people of all ages. Physical inactivity has also been recognised by public health researchers as a complex health behaviour that needs serious attention and intervention. Physical inactivity can be defined in numerous ways depending on the purpose for which it is being used. The definition used in this paper follows the definition used in Booth *et al.*'s [3] review paper. Booth and colleagues defined physical inactivity as the range of any reduction in individual movements that generate reduced energy spending to the basal level, which is a direct opposite of the physical activity definition. Physical inactivity was documented several years ago, and it was assumed that consistent participation in moderate physical exercise presents confrontation with disease and counters bodily deterioration [3]. Furthermore, consumption of food and exercise participation has also been reported to work together to produce quality health and overall wellbeing [3].

Physical (in)activity is currently the fourth principal risk

influence for NCDs. The worldwide load of illnesses connected with physical inactivity is significant [4]. Universally, data have shown that 1 in 4 adults and 80% of young persons do not meet the minimum worldwide recommended standard [5]. Katzmarzyk *et al.* [4] reported that a high percentage of all-cause and cardiovascular disease mortality were ascribable to physical inactivity globally. Furthermore, the magnitudes of NCDs due to physical inactivity ranged from almost two percent for high blood pressure to more than eight percent for dementia.

In the United States, almost 86% of people do not meet PA engagement recommendations [3]. Moreover, there is an increase in the yearly cost of physical inactivity among those who are not active and not sufficiently active (ranging between \$131 and \$333 billion) [6]. However, physical inactivity has been declared a pandemic [3, 7]. Meanwhile, those who are inadequately engaged in PA could be 20-30% exposed to a high risk of mortality [5]. Despite PA's defensive features for the avoidance and management of the foremost NCDs (stroke, heart ailments, diabetes, and colon and breast cancer), additional key NCD risk factors (overweight and obesity, hypertension), and psychological health (mental health, cognition, memory, depression, anxiety, stress, inception of dementia deferment and enhanced quality of life and well-being) [8], many people still do not participate. It is important to recognise that regular engagement in physical activity further has numerous public and cost-effective profits. In addition, approximately five million deaths could be prevented by regularly participating in PA. Consequently, not participating in physical activity could lead to severe consequences for individual wellbeing and quality of life [8].

3. PHYSICAL INACTIVITY IN SUB-SAHARA AFRICA

In sub-Saharan Africa, physical inactivity and low levels of physical activity were among the 10 top-ranked risk factors for the attributable burden of disease [9]. One review paper recently published in *Global Heart* summarized the express epidemiology of cardiovascular diseases in SSA and compared them with high-income countries. The authors document that the prevalence of physical inactivity stands at twenty-two percent, which was closed to the global average of twenty-seven percent, and has been projected to increase in the nearest decades [10]. Although the comparative load of disease is highest in high-income nations, the utmost number of individuals affected by physical inactivity were residing in low-middle-income nations following the population size [4]. The somewhat elevated level of physical activity participation in some industrialised nations seems to have resulted from effective planning, backed up with good health promotion policies and their implementation [11]. The situation in industrialised nations seems contrary to what is obtainable in Africa, especially sub-Saharan nations.

Consequently, the inability to have control over the large burden of infectious diseases in low-middle-income countries (LMICs) coupled with the lack of resources has made it a tough process to give NCDs and their risk factors required attention [12]. It is important to note that the burden of non-communicable diseases in the sub-Saharan African region is

already presenting a large threat to the health system, a region that is still battling transmissible illnesses and maternal, neonatal, and child mortality [13]. This was recently compounded with a global frightful severe acute breathing syndrome coronavirus II (SARS-CoV-2) pandemic, a deadly disease that could cause a respiratory tract infection, aggravate other health conditions (especially in those with pre-existing health conditions or conditions that are usually believed to be existing for a lengthy period and/or chronic diseases) and lead to death.

From this observation, some of the highlighted causes of physical inactivity were an increase in inactive conduct during work-related and leisure activities; preferring the use of an automated machines (*e.g.*, motor vehicles, lifts/elevators) over walking; modification of urban design of towns and cities; upsurge in expansion or urbanisation leading to numerous environmental factors (such as: violence, high-denseness of traffic especially road traffic, reduced quality of air, toxic waste, lack of parks and space/playground, non-existence sidewalks and sports or recreation facilities) [5]; lack of planning, good policies and its implementation; vested interest in policy driven; lack of comprehensive monitoring systems similar to WHO worldwide monitoring structure to cover NCDs and the policies that target the reduction; lack of data and data repository [11]; lack of awareness of negative consequences of inactivity; lack of leadership and role models; lack of time; lack of interest; laziness; lack of safety or insecurity; lack of support; removal or neglect of physical education from school curriculum in some country/school; grant challenge for researchers to conduct research and collect quality data on physical activity in sub-Saharan Africa; poverty; culture, religion and beliefs; unwillingness to share data [11]; corruption; misinformation; political instability; lack of funding among others. Additionally, solving the problem of physical (in)activity remains complex and has also been linked to an increase in many other public health issues, such as the epidemic of obesity and non-communicable disease risk factors [14]. This complexity is assumed to have been embedded in systems science.

4. SYSTEMS SCIENCE AS IT RELATES TO PHYSICAL (IN)ACTIVITY AND HEALTH SYSTEMS IN SSA

Systems science can be described as an interdisciplinary field that studies systems' nature, which ranges from simple to complex [15]. Meanwhile, the information flow between independent areas of different specialisations has been understood to be boosted by the system theory within systems science [16]. Therefore, systems theory is related to more than one branch of knowledge or unified collection of interconnected, inter-reliant portions that can either be derived from nature or caused by humankind. It is also connected within a larger, more complex system [15].

The main impression of systems theory is that the whole is bigger than the entirety of its portions [17]. Exploring how smaller systems originated and merged to affect the bigger complex system could be difficult to clarify when observing it partly. On the other hand, Kernick [18] reiterated that both complexity and chaos theory encompass systems that transform

with time and validate a multifaceted association between contributions and output, which is due to repetitive response scopes in the system (non-linear systems). In this regard, the measurable instruction of these types of systems could be understood as a chaos theory, while the unmeasurable perception and descriptions that are originated from chaos theory could be described as complexity theory [18]. Therefore, both complexity and chaos theory could possess a small input that may result in a large system effect. Consequently, large inputs could result in small system modifications [18]. For example, in the case of physical (in)activity and probably some health systems in sub-Saharan Africa, several determinants are the sum of parts. This determinant includes age, ethnicity, and planning [19], behavioural [20], psychological [21], socio-economic [22], biological [23], socio-cultural [24], environmental [25], and policy [26]. Viewing all these highlighted problems/determinants as a whole could be seen as interconnected complex health issues that are difficult to explain and resolve. Consequently, at times, a minor solution to the problem of physical inactivity could have a hugely positive effect among people in a particular community; contrarily, a big contribution towards reducing an inactive lifestyle could yield small-to-no effects. At this juncture, it is important to understand that physical inactivity complexity is non-linear, which means that all measures and approaches put in place to reduce physical inactivity could prove abortive.

5. SOCIOLOGICAL MODEL FRAMEWORK AND COMPLEXITY OF PHYSICAL INACTIVITY

Socio-ecological model frameworks could be another way to reveal the complexity and interconnected nature of physical inactivity [27]. Social-ecological prototypes provide an all-encompassing structure to comprehend the weaknesses and a promotor of physical activity behaviour, as it is not only concentrating on personalities but also takes into contemplation the public and environmental perspectives that may comprise

family, regions, friends and companions, ceremonial and unceremonious establishments, urban planning, and amenities which promote or prevent physical (in)activity [28]. Accordingly, a socio-ecological approach to understanding the influence of physical activity allows investigators to ascertain enormous prospects to promote the acceptance and preservation of health-improving physical activity behaviour, instead of permitting traditionally inaccessible single-mindedness [28]. Looking at it from this perspective, it could mean that physical (in)activity can be viewed as a system with many interrelating variables, making it a difficult health problem with a difficult solution. In the same vein, wicked problems are known to be a problem that can be challenging to resolve since they are entrenched in the socio-ecological system exemplified by complexity and complications [29].

6. WICKED PROBLEM DEFINED

In 1973, the word “wicked problem” was devised and defined as complex problems which are difficult or cannot be resolved at a particular point in time [30]. It is understood as a problem in which its resolution necessitates a significant number of individuals to change their mentalities, approaches, behaviour, and the way things are viewed [31]. This could be due to imperfect or conflicting understanding, the number of persons involved and their opinions, large economic load, and how one problem is connected to other problems [31]. On the other hand, as one problem is solved, another problem emerges, which has been likened to a cobweb [32]. Wicked problems have been understood to cut across all facets of life. Numerous communal complications and encounters confronted with today were branded by complicated connections and unswervingly or incidentally affect one another [33]. However, it is important to use the concept of “wicked problem” to develop a point of departure that relates to the definition of “wicked problem” with physical inactivity for more understanding and clarity as adapted from Jonsson *et al.* [33]. (Table 1).

Table 1. The definition of “wicked problem” as is related to physical inactivity.

No.	Definition of Wicked Problem	Example from Physical Inactivity
1	No absolute formula exists for a wicked problem.	The problem is physical inactivity. The evidence utilised to denote a physical inactivity challenge rests on the variation in non-academic performers’ and organisations’ ideas for resolving the problems.
2	Wicked problems have no discontinuing regulation.	It is difficult to recognise whether one’s resolution is absolute. What has considered a “good enough” level of physical activity is conditional and always changing.
3	Resolutions to wicked problems are not accurate or incorrect but may be worthy or flawed	Solutions to physical inactivity are likely to be contrarily adjudicated. This rest on the exceptional sets of benefits and socio-political partialities of players and organisational parties or individual gains.
4	Resolution to a wicked problem may not be tested immediately. In other words, a speedy and decisive resolution to the wicked problem does not exist.	The full penalties of strategies directed at decreasing physical inactivity may not be evaluated till the impact have come to an end.
5	Each resolution to a wicked problem is a “one-shot operation” due to the lack of prospects to gain knowledge <i>via</i> trial-and-error, <i>i.e.</i> , repeated, varied attempts that are continued until success, or until the one stops trying. Every attempt counts significantly.	Every action taken to increase physical activity participation is consequential for family members, inhabitants, or the country.
6	A number of probable resolution or tactics does not end for a wicked problem	Physical inactivity does not possess a calculable set of prospective resolutions. Moreover, clear-cut approved procedures do not exist. Several innovative viewpoints or determinations to reduce physical inactivity among people of all ages may become relevant as a resolution.

(Table 1) contd....

No.	Definition of Wicked Problem	Example from Physical Inactivity
7	Each wicked problem is fundamentally irreplaceable or unique	The basis for decision-making related to the increase in physical activity participation to be localised, well-timed, coupled with existing resources (e.g., technical, monetary, parks, space) and the precise true condition (e.g., social, cultural).
8	Every wicked problem is believed to be an indicator of alternative difficulty.	The settled problem level rests on the number of those who make the judgement. The greater the level of problem creation, the wider and the more collective it turns out to be.
9	The actuality of an incongruity signifying a wicked problem may be explicated in so many directions. Furthermore, the wicked problem is explained, or the nature of the problems determine how the problem would be resolved	Different views and plans are key influential factors for various decisions made. There are no optimal resolutions or agreed-upon procedures to gauge physical (in)activity.
10	The planner has no right to be wrong	Those who make decisions are accountable for the outcomes of the measures taken to reduce physical inactivity. The increasing multiplicity of the public, who utilise diverse and conflicting descriptions and scales to ascertain the concerns of resolutions may escalate the wicked problem.

Adapted from Rittel and Webber's [30] ten properties Adapted from Jonsson *et al.* [33].

Consequently, the word 'wicked' has been used severally in health to depict many difficult and multifaceted issues which put human health at risk and in danger [34]. These wicked health problems include climate change, loss of biodiversity, poverty, obesity, epidemic, food insecurity [34], non-communicable diseases (NCDs) [cardiovascular disease (CVD); cancer; diabetes; prolonged respirational sicknesses; mental and neurological conditions] which kill 41 million every year corresponding to seventy-one percent of all mortality throughout the world, and their risk factors (unhealthy diet; tobacco use; unsafe use of liquor; physical inactivity; airborne contamination) which intensify the risk of being killed by NCD [35], coupled with coronaviruses pandemics, a communicable diseases which aggravate mortality in people, especially those with pre-existing conditions. Eighty-five percent (85%) of premature death from NCDs is understood to be occurring in low-middle-income countries [35]. Most countries in Africa are regarded as low-middle-income nations, especially countries in the sub-Sahara region of Africa. Signal *et al.* [36] reported that insufficient physical activity levels, excessive body fatness, and an undernourished diet could be regarded as wicked health problems that have caused a tremendous increase in NCD globally. One editorial comment that discusses what can be done to address the wicked problem of obesity reported an urgent need to address the wicked problem of physical inactivity [11]. To reduce or solve the menace of the wicked problem of physical inactivity, Jonsson and colleagues [33] suggest that the problem must not be viewed from only one line of confrontation but multiple approaches due to its multifaceted characteristics.

7. TRANSDISCIPLINARY APPROACHES AND COLLABORATIONS

However, a transdisciplinary partnership is necessary to build a research arena that recognises environmental factors and public and private policies that have the prospect to positively impact physical (in)activity and sedentary behaviour [37] in SSA. This transdisciplinary research collaboration (the approach involves numerous disciplines coming together to solve communal problems) could then help build policy-relevant inquiry and ideologies for using inquiry to update policy and courses of action [38, 39], especially in sub-Sahara African nations where research data that may inform policy is lacking.

Although, since the wicked problem of physical inactivity remains a global problem, the World Health Assembly (WHA) recently proposed and agreed on a global action plan that seeks to lower the wicked problem of physical inactivity across the board and make more people active for a productive, better, and the healthier planet by 15% by the year 2030 [40]. As part of this process, four strategic objectives included in 20 policy actions were proposed. These include 1.) Creation of active societies (4 policy responses) - that generate optimistic societal rules and insurances and transition in the community by improving understanding and awareness of numerous welfares by involvement in consistent physical activity based on the capability at all ages. 2.) Creation of dynamic environs (5 policy actions) –to address the necessity and generate spread outs and areas that stimulate and protect the constitutional rights of persons, notwithstanding the level of their capabilities. This could help improve the impartial entree to secure spread-outs and areas within the community where they can regularly freely participate in physical activity. 3.) Creation of dynamic individuals (6 policy actions) – seek to increase agenda and prospects to help individuals participate in consistent physical activity, including families and the public. 4.) Creation of a dynamic structure (5 policy actions) – seeking to shape the assets required to reinforce the structures that may be used to instigate active and harmonised universal, countrywide, and grassroots engagement to intensify physical activity participation and lower inactive lifestyle. To achieve this, it requires the instigation from “governance, leadership, multisectoral partnerships, workforce capabilities, advocacy, information systems, and financing mechanisms across all relevant sectors” [40].

The above highlighted collaborative strategic points backed up with policy seem important, came at the right time, and could be a game-changer if fully implemented at all levels of governance. However, the shortcomings could lie in the full implementation of the policies, especially in the sub-Sahara region of Africa. However, public initiation of policies might be a difficult task, but the institutional determination to implement those policy decisions may also remain a test [41]. On the other hand, the most worrying is being able to put into practice the policy decisions, which remains one of the argumentative issues in LMICs. It is important to understand that several good policies have been formulated in the past, while their implementation has failed due to the inability to

implement the policy across all levels of governance.

8. CONFRONTING THE WICKED PROBLEM OF PHYSICAL (IN)ACTIVITY

One of the multiple approaches that can be used to tackle the wicked problem of physical (in)activity is a good policy recommendation and implementation [12]. Although, one study that attempts to track the policy response that seeks to address the physical activity, fat, fruit, and vegetables, and consumption of salt in LMIC's found that a detachment exists between a load of NCDs and policy reactions [12]. Furthermore, policy response structures that cater for physical inactivity and poor nutrition were found in very few low-middle-income countries which were not in line with the 2004 World Health Assembly guidelines [11], especially for physical activity, which recommends a minimum of half an hour of consistent moderate-intensity physical activity on the greatest number of days during an individual's lifetime [12].

Bolaji *et al.* [41] believe that being able to achieve desirable policy outcomes depends largely on having motivated, accountable, and focused political leaders at various levels of authority; and truthful and devoted administrative leaders at the panel level who could be more inclined to ensure that policies effectively address societal problems. This could help to overpower administrative issues that are responsible for the irregular implementation of many health policies, unprincipled use of funding, corruption, and political influences [41]. Furthermore, Ajulor [42] reiterated that realistic goals that meet people's needs should be set; political instability should be avoided; adoption of foreign-made solutions and implementations should be avoided since the settings are not the same. Furthermore, attitudes toward physical activity, as well as the way communities are designed and constructed must be changed [37].

CONCLUSION

Physical (in)activity is a system with many interdependent factors and a challenging health problem that cannot be effortlessly fixed. Therefore, confronting wicked problems of physical (in)activity in the sub-Saharan Africa region requires an urgent and serious collaborative transdisciplinary approach backed up with good policy implementation and resources at all levels.

LIST OF ABBREVIATIONS

PA	= Cardiometabolic disease
NCDs	= Non-Communicable Diseases
SSA	= Sub-Saharan Africa
WHO	= World Health Organisation
CVDs	= Cardiovascular Diseases
LMICs	= Low-Middle-Income Countries
SARS-COV-2	= Severe Acute Respiratory Syndrome Coronavirus 2
WHA	= World Health Assembly

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CONFLICT OF INTEREST

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