

REVIEW

A scoping review of 2018–2020 research on NCDs and physical activity in Ghana: Groundwork for a monitoring system and action plan

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Abstract

Background: Physical inactivity is a risk factor for chronic noncommunicable diseases (NCDs), yet national surveillance of physical activity (PA) levels is not well defined. Though Ghana has a national health policy that emphasizes health promotion and prevention of lifestyle diseases, and an NCD policy with PA recommendations in 2012, it does not have an integrated plan of action to address widespread physical inactivity.

Objective: This review aims to identify the nature and extent of research in NCDs and PA in Ghana to inform the creation of an integrated action plan to address physical inactivity. The review focuses on four research questions: (1) what is the prevalence and monitoring of NCDs in Ghana from the Demographic and Health Survey (DHS) and the World Health Organization (WHO) reports, (2) what are the key risk factors of NCDs in Ghana, (3) what are the identified indicators and benchmarks that enhance or impede PA participation in Ghana, and (4) what are the active interventions and policy directives for NCDs and PA participation in Ghana.

Methods: Ghana-specific articles, reports, and policies related to NCDs and PA were collected traversing 2018–2020. The scoping review included: (1) reviewing articles and documents related to risk factors of NCDs in Ghana, (2) reviewing articles and documents from the Global Observatory for Physical Activity (GoPA!) monitoring and surveillance template for Ghana; (3) reviewing articles and documents on the Active Healthy Kids Global Alliance Ghana Report Card on Physical Activity; (4) the Demographic and Health Survey website and (5) specific searches for World Health Organization reports.

Results: A total of 1763 records were identified through keyword search. Based on eligibility criteria, 4 were relevant to question 1, 23 to question 2, 16 to question 3, and 11 to question 4. For question 1, international benchmark surveys revealed that physical inactivity accounts for 20% of NCD related deaths in Ghana.

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For question 2, 8 records (34.8%) focused on hypertension, 5 (21.74%) body composition and obesity, 4 (17.4%) cardiovascular diseases, 3 (13.0%) on diabetes, 1 (4.4%) on stroke, and 2 (8.7%) on other risk factors. For question 3, 6 records (37%) focused on overall PA, 3 (19%) on the built environment, 2 (12%) active transportation, 2 (12%) on physical inactivity or sedentary behaviors, 2 (12%) on influence of family and peers, and 1 (6%) on active play. For question 4, though multiple national policies exist, including a minimum weekly level of compulsory physical education per week in the school curriculum, data monitoring and surveillance on PA participation are scarce.

Conclusion: Based on the scoping review of articles traversing 2018–2020, this review revealed minimal research on these topics. Data on PA participation is non-existent due to lack of conscious monitoring mechanisms, integrated plan of action, intervention strategies and policy directives. A national research agenda is imperative to better understand the relationship and clear connection between physical inactivity as a risk factor of NCDs.

KEYWORDS

exercise, Ghana, inactivity, monitoring, noncommunicable diseases, physical activity, policy, sedentary behavior, surveillance

1 | BACKGROUND

Noncommunicable diseases (NCDs) and related risk factors are among the top 10 causes of death in Ghana and underscore Ghana's disease burden.^{1–5} Prevalence of NCDs is increasing rapidly.^{3,4,6–9} There has been recognition of a persistent chronic disease burden since the early 1990s and sporadic interventions over the past two decades. Though Ghana has a national health policy that emphasizes health promotion and prevention of lifestyle diseases, and an NCD policy with PA recommendations in 2012, it does not have an integrated plan of action to address widespread physical inactivity.

Physical inactivity is a major risk factor for NCDs, and the fourth leading cause of mortality globally.^{10–14} Epidemiological evidence demonstrates that physical inactivity is associated with increased risk of NCDs,^{15–17} including cardiovascular diseases, diabetes, and cancers, as well as the risk factors such as obesity, hypertension, and high blood sugar.^{18,19} The increasing prevalence of chronic conditions also has major social and financial implications for affected individuals, families, healthcare providers, and government.^{3,4,6,12–14}

Surveillance systems are necessary in public health to identify emerging health threats, monitor changes in risk factors and health outcomes, guide programs to target threats, and prioritize public health action.²⁰ National surveillance data can be used to assess the influence of national policy initiatives on health risks and diseases.²¹

Ghana does not have a surveillance system in place to monitor NCDs and to promote active lifestyles. Physical activity monitoring systems have been applied to NCD risks and are recommended by the Global Observatory for Physical Activity (GoPA!), Active Healthy Kids Global Alliance (AHKGA), United Nations (UN), and the World Health Organization (WHO).^{22,23}

Given the adverse impacts of physical inactivity and the NCD burden in the country, it is important to assess the prevalence of physical inactivity and other risk factors of NCDs. This review examines studies conducted in Ghana during a 3-year period (2018–2020) to identify the nature and extent of research in NCDs and physical inactivity to inform the creation of an integrated action plan to address physical inactivity. It addresses the following four research questions:

1. Within the scope of the available literature, what is the prevalence and monitoring of NCDs in Ghana from the Demographic and Health Survey (DHS) and the WHO reports?
2. Within the scope of the available literature, what are the key risk factors of NCDs in Ghana?
3. Within the scope of the available literature, what are the indicators and benchmarks that enhance or impede PA participation in Ghana?
4. Within the scope of the available literature, what are the active interventions and policy directives for NCDs and PA participation in Ghana?

2 | METHODS

Based on Grant and Booth's typology of reviews,²⁴ a scoping review was selected as the research methodology to identify the nature and extent of research evidence pertaining to PA participation and NCD risk factors in Ghana. The time frame selected was a 3-year period from 2018 to 2020 to meet the minimum span of 12 months or more. A search-synthesis-analysis method was utilized to conduct an assessment of existing evidence and to identify areas of focus for an integrated action plan for physical inactivity and NCD prevention. Specific keywords used in the search process included: physical activity participation, active transportation, active play, organized sports participation, physical fitness, physical education, sedentary behaviors, non-communicable diseases, hypertension, diabetes, body mass index, physical activity policy, noncommunicable diseases policy, surveillance, and monitoring. The articles databases searched included ScienceDirect, Scopus, PubMed, BioMed Central, and Africa Journals OnLine, and JSTOR. The search also included grey literature from the Ministry of Health, Ghana Health Service, Ghanaian health institutions, and media agencies, as well as dissertations and theses hosted by various universities in the country.

3 | ELIGIBILITY CRITERIA

Studies with data collected prior to 2018 were excluded to ensure the recency of data. Studies limited to a single sex were excluded to ensure data representative of the population. Only studies and documents in English were included. Both published and unpublished data from scientific and grey literature were included. The articles and other outcomes of interest for this review included research, articles, and reports on risk factors for NCDs and indicators for PA participation for 2018, 2019, and 2020 including children, adolescents, adults, and the elderly.

4 | RESULTS AND DISCUSSION

A total of 1763 records were identified through keyword search. Records were screened for eligibility. Based on screening, 4 were determined relevant to question 1, 23 were relevant to question 2, 16 were relevant to question 3, and 11 were relevant to question 4. There was some overlap, with 1 record that related to both questions 2 and 3 plus 6 records that related to both questions 3 and 4.

Below is the analysis of the eligible documents for each of the four research questions.

1. Within the scope of the available literature, what is the prevalence and monitoring of NCDs in Ghana from the DHS and WHO reports?

Overall, four documents from the World Health Organization and Ghana Demographic and Health Survey documents met the eligibility criteria for this key area.^{2,12,25,26}

From these documents, physical inactivity accounts for 20% of NCD related deaths, cardiovascular diseases 19%, cancers 5%, diabetes 3%, chronic respiratory disease 2%, and other NCDs (13%). NCDs related deaths accounted for 43% of all deaths.

There is inadequate data from monitoring and surveillance linking the risk factors to the prevalence of NCDs. In fact, the World Health Organization NCDs Countdown 2030 report shows low-income and middle-income countries (including Ghana) having the highest risks of NCD related mortality. This is a setback towards achieving the Sustainable Development Goal (SDG) Target 3.4: "by 2030 reduce by one-third pre-mature mortality from NCDs through prevention and treatment, and promote mental health and wellbeing."

2. Within the scope of the available literature, what are the key risk factors of NCDs in Ghana?

The scoped review articles and documents that met the eligibility criteria for this area included 23 records,^{3,8,10,17,27-46} including seven records from the 2020 GoPA! surveillance card for Ghana. Among the documents analyzed, 8 (34.8%) focused on hypertension, 5 (21.74%) body composition and obesity, 4 (17.4%) cardiovascular diseases, 3 (13.0%) on diabetes, 1 (4.4%) on stroke, and 2 (8.7%) on other risk factors (see Figure 1).

These articles focused on chronic disease risks and experiences, barriers in controlling chronic diseases, active transport, hypertension, diabetes, obesity, stroke, and cardiovascular disease. The populations examined included children and adults. Related risk factors for NCDs highlighted in the studies included low levels of PA coupled with poor dietary habits, such as eating junk foods, excessive amounts of alcohol, and sugary foods and drinks. The aforementioned factors were responsible for high predisposition to hypertension and diabetes among civil servants in Accra. Obesity and overweight increased with age, level of education, and socioeconomic status. Obesity varied by gender; more pronounced among women who were widowed, divorced, or separated, lived in urban areas, worked in professional or

FIGURE 1 NCD risk factors by coverage in reference documents

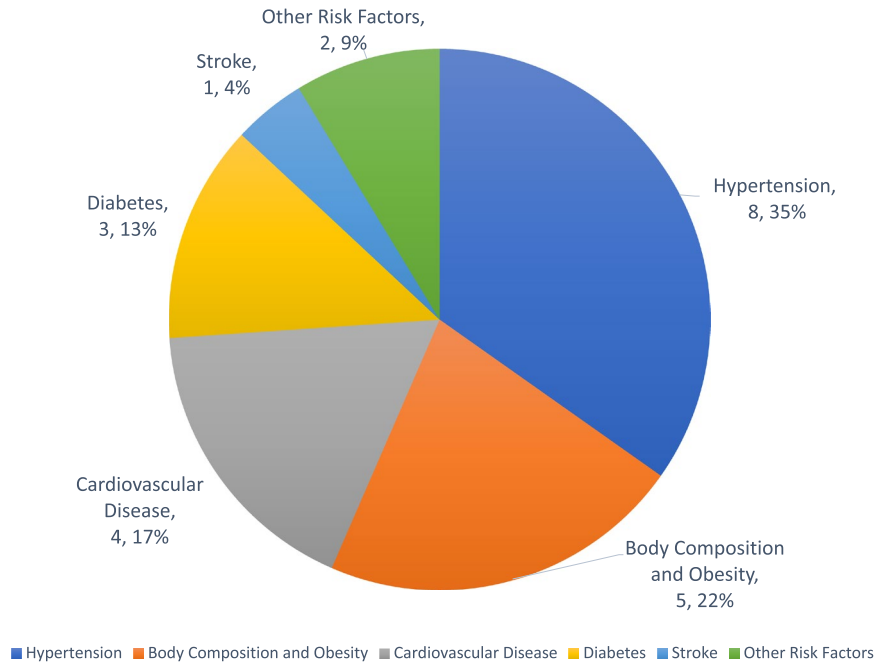
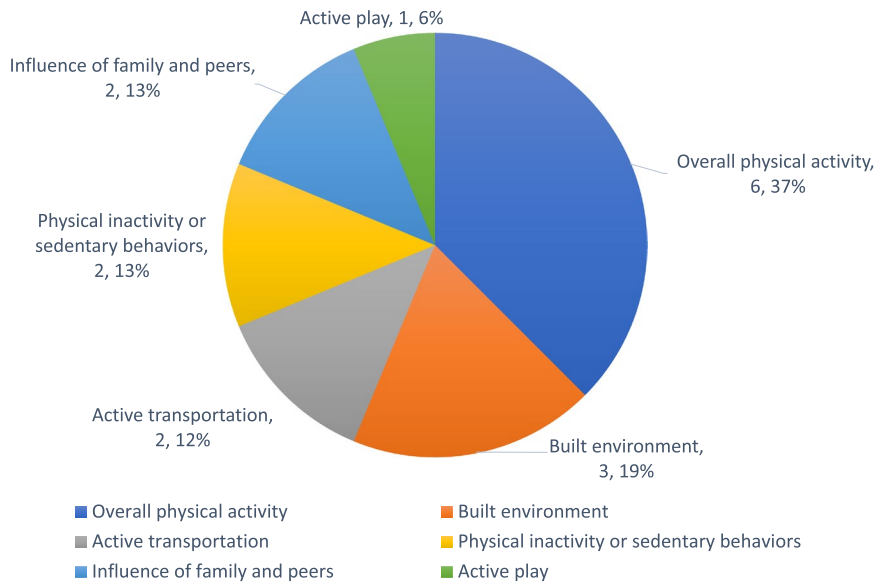


FIGURE 2 Physical activity indicators by coverage in reference documents



managerial or clerical jobs, or had three or more children. Children from high socioeconomic households were more likely to be overweight or obese than those from low socioeconomic households. Television exposure, however, contributed to this.

People with hypertension showed higher levels of adiposity as compared to non-hypertensive people. There was clear correlation of hypertension with leptin and obesity. Lack of knowledge of issues such as recommended PA levels and diet were identified as contributing factors. Obesogenic and alcohol promoting communities had high risks for hypertension, diabetes, and obesity. Obesity and body composition were affirmed as risk factors for NCDs in Ghana.

3. Within the scope of the available literature, what are the identified indicators and benchmarks that enhance or impede PA participation in Ghana?

There were 16 documents that met the eligibility criteria for this area,^{35,47-60} including 13 records from the 2020 GoPA! surveillance card for Ghana. Among the documents analyzed, 6 (37%) focused on overall physical activity, 3 (19%) on the built environment, 2 (12%) active transportation, 2 (12%) on physical inactivity or sedentary behaviors, 2 (12%) on influence of family and peers, and 1 (6%) on active play as depicted in Figure 2.

Studies in this key area focused on PA engagement, physical inactivity and disease prevalence, PA

and mental health, and social support. PA and mental health. They also examined dietary intake, body composition, active transportation, and recommended daily steps, social capital and sedentary behavior, the built environment, sedentary behavior, and environmental factors. The population included children, young adults, adults, and older adults.

Physical inactivity and poor dietary habits are two modifiable important factors that were responsible for high prevalence of overweight and obesity among school-aged children. Sedentary behaviors such as television exposure time was linked with overweight/obesity among women and children.

People who frequently exercise have increased daily calorie expenditure, metabolic age, and bone mass lower total body weight than people who are physically inactive. High density lipoprotein cholesterol concentration improved in people who engage in exercise while the concentration of low-density lipoprotein is elevated in people who are physically inactive. Active movements were correlated with a low prevalence of diabetes among homeless and slum dwellers in Accra. This was accorded to their constant movements across the streets which was a form of exercise unlike the general population.

Children and adolescents who engaged in active play due to availability of space have lower risk of NCDs and related factors. The influences of family and peers also results in high PA level among a population. Sleeping for more than nine hours at night and walking or cycling to school reduced chances of obesity and overweight among children who attended private school.

Impediments to regular PA are lack of knowledge and lack of access to facilities. Moreover, the lack of physical spaces for exercise was noted as a demotivating element for people to engage in physical activity consciously and actively. High prevalence of hypertension, obesity and diabetes was linked with a severe lack of physical spaces for PA. Physical activity was also impeded by lack knowledge on physical activity guidelines and how to achieve them. Peer and family influence, group based physical activity and health professionals' recommendation improved physical activity participation among older adults.

4. Within the scope of the available literature, what are the active interventions and policy directives for NCDs and PA participation in Ghana?

Overall, 11 policy documents and commentaries on the policies were scoped traversing 2018–2020 related to the polices by Ministry of Health (MOH) to promote healthy lifestyle and prevention of diseases.^{61–71} A key nongovernmental organization in this space is the Ghana NCD Alliance (GhNCDA).⁶⁴ GhNCDA was launched in 2018

with a vision to prevent NCDs in Ghana through health promotion, proper coordination (monitoring and surveillance), health system strengthening, and improving the quality of lives of people living with NCDs in the country. From 2007–2012 the Ministry of Health developed the Ghana Dietary and Physical Activity Guidelines, National Health Policy and the Ghana Noncommunicable Disease Policy.

As part of these policies, MOH recommended the inclusion of a minimum of 120 minutes of compulsory physical education per week in the school curriculum and regular physical exercise for all citizens.^{13,62} However, data monitoring and surveillance on PA participation are scarce.⁷² Still, the AHKGA Report Card for Ghana and the GOPA! Ghana Card initiatives show promise for effective monitoring and surveillance of physical activity participation for children, youth, and adults in Ghana. This review captured the 2018 and 2020 Ghana Report Card on PA participation of children and youth and the 2020 GoPA! Ghana Card for adult population in Ghana. The results of Ghana's 2014 and 2016 report cards on physical activity for children and youth were early efforts to address the scarcity of data.^{73,74}

Data from the AHKGA Ghana report cards and associated surveillance mechanisms have influenced the development and implementation pre-tertiary and tertiary curricula for physical and health education training and participation.^{60,61,66–71} Data from the GoPA! Ghana cards and associated surveillance mechanisms is available. Recommendations have been captured in various national policy documents and tertiary level intervention curricula for physical and health education training and participation. Increasing PA and creating supportive environments that promote PA have been identified as one of the major strategies to reduce the rising prevalence of risk factors of NCDs, but until now, not much had been done to enforce or monitor any policy or intervention directive on physical activity in Ghana.

To date, no data is available to assess the impact of implementation of these documents and policy directives. Ghana develops detailed, relevant policy and intervention guidelines, but years pass without documenting their impact. These curriculum intervention documents include monitoring and surveillance mechanisms to generate data that would reveal the state of PA, health and wellbeing of children and youth at pre-tertiary (i.e., primary, and secondary school) by 2025.

5 | CONCLUSION

Based on the scoping review of articles in 2018–2020, this review revealed minimal recent research exists about PA and sedentary behaviors in Ghana and their relationship


to NCD risks and outcomes. Among the available research, there were not clear trends in all four key areas. Ghana has prioritized the fourth key area and is underway to implement robust curriculum interventions at primary, secondary, and tertiary⁷⁵ levels of education in the country.

Data on PA participation is non-existent due to lack of conscious monitoring mechanisms, integrated plan of action, intervention strategies and policy directives. With the active government programs, it is anticipated that by 2025 there will be additional data on the state of PA, health and wellbeing of children and youth at all levels of education in Ghana. A national research agenda is imperative to better understand the relationship and clear connection between physical inactivity as a risk factor of NCDs. Surveillance and monitoring mechanisms are needed for data collection, analysis, or diagnosis to inform development intervention approaches to address the impact of NCDs on the Ghanaian population. Surveillance systems are necessary to find emerging threats and changes in risk factors and guide programs to target threats and prioritize actions.

An integrated plan of action to address widespread physical inactivity. As part of the action plan, government, policymakers, researchers, and key stakeholders must address the following priorities:

1. Develop and implement a national physical activity and sedentary behavior surveillance system in addition to the current NCD policy.
2. Review the current Ghana NCD policy and allocate resources to implement interventions to promote physical activity and reduce sedentary behavior, using the World Health Organization “best buys” for physical activity promotion.
3. Develop a national physical activity plan, using principles from the World Health Organization Global Action Plan for Physical Activity (GAPPA) to provide support for implementation of surveillance mechanisms.

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