

Factors Influencing the Physical Activity Behaviours of Nigerian Adolescents: Qualitative Views of School Principals and Teachers

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Abstract

Background: Insufficient physical activity is a growing public health challenge among Nigerian adolescents. Significant information gap exists on the drivers of the physical activity behaviours of in-school adolescents in Nigeria. This study was conducted to identify the factors influencing the physical activity behaviours of in-school adolescents within the school settings.

Methods: This was a qualitative study conducted in 12 public and private schools in two local government areas of Oyo state, Nigeria. Two key sources of data were used: six key informant interviews with school principals and six focus group discussions with classroom teachers using pre-tested guides. Data was analysed using thematic analysis.

Results: Several factors influence the physical activity behaviours of adolescents. Personal characteristics such as adolescents' sex and age and social factors such as norms associated with gender participation in sports, cultural and religious views influenced the physical activity behaviours of the adolescents. The negative attitudinal dispositions of parents and teachers and low prioritisation of physical education were identified as critical barriers to physical activity participation. Other school-related factors such as increasing demand for classroom academic time, inadequate funding for schools which limits the recruitment of physical health education teachers, provision of facilities and equipment as well as security threats and brawling associated with competitive school-based sporting events were identified also as limiting opportunities for the effective implementation of policies and programmes for physical activity in schools.

Conclusions: Drivers of insufficient physical activity among in-school adolescents are multifactorial. Implementation of holistic, multi-component interventions which address the individual, parental, social and school-level factors and limit students' participation and opportunities for physical activity in schools are recommended.

Introduction

Physical inactivity in childhood and adolescence has been linked to increased risk of cardiovascular diseases, cancers, diabetes mellitus, obesity, anxiety and poor emotional wellbeing [1, 2, 3, 4]. In 2018, the World Health Organisation modified the Global Action Plan on Physical Activity (GAPPA) and set a goal of 15% decrease in prevalence of physical inactivity among adolescent [5]. However, in 2016, 81.0% (77.6% in boys and 84.7% in girls) of adolescents remain physically inactive further rendering a setback to the targeted 15% global adolescent physical inactivity reduction by 2030 [6].

Studies in different regions of Nigeria have documented a high level of physical inactivity among Nigerian adolescents [7, 8, 9, 10, 11]. In a study conducted in Ibadan, Nigeria, more than half of school-going adolescents reported low levels of physical activity (PA) [9]. In another study, over a third of the in-school adolescents (38%) in Ibadan were not involved in sufficient physical activity; 58.8% and 3.2% engaged in low and high intensity physical activity behaviours respectively [7].

The rapid decrease in adolescents' physical activity has been attributed to the automation of daily activities, rapid urbanisation, parental routine/rules for PA during leisure and school session, less emphasis on the importance of Physical Health Education (PHE) in the school setting, poor and inadequate playgrounds, poor PA facilities, reduction in co-curricular school-based activities and poor enabling environment to support PA [4, 6, 12, 13].

To address these factors require proactive action at the school level. Schools are ideal settings for influencing the physical activity behaviours of young people [14, 15] as they provide important social, physical and normative environments where students are inculcated with knowledge and skills which enhance their abilities to observe, model and practice healthy behaviours. In-school adolescents spend the greater part of their waking hours in schools with various opportunities for PA such as break times, after the school day and physical education lessons [4, 15, 16, 17, 18]. Thus, they have great potentials to influence the physical activity behaviours of students [19]. Furthermore, school-based physical activity provides an ideal ecological approach to the design and implementation of holistic behaviour change interventions [20, 21].

Globally, there is a call to address the underlying cause of physical inactivity by implementing population-level interventions in health promoting settings such as workplaces and schools [4]. Considering that in-school adolescents spend up to 8 hours at school and attend several after-school programmes, it is apt to assess the potential barriers or opportunities in schools which influence the physical activity behaviours of in-school adolescents.

Systematic reviews and research studies in other parts of the world have revealed that multiple factors such as individual, parental, household income status, social and school-level factors determine the physical activity behaviours of adolescents [22, 23, 24, 25]. Though a number of research studies on the physical activity behaviours of young people have been conducted in Nigeria, most of these have focused largely on individual behaviours [7, 8, 9, 10, 11] without critical qualitative exploration of the influence of the school settings on their physical activity patterns. Focusing on individualized behaviour change strategies instead of a true public health intervention which requires a systems approach premised on the socio-ecological model [4] reduces the opportunity of maximizing intervention effectiveness. Thus, this qualitative study was conducted to identify facilitators and barriers within the school settings which influence the physical activity behaviours of in-school adolescents in Oyo state, Nigeria. This will guide the design and implementation of interventions which has a potential to improve the physical activity behaviours of adolescents.

Materials And Methods

The data presented in this article is nested within a larger study titled "*Effects of a multi-level intervention on the pattern of physical activity among in-school adolescents in Oyo state Nigeria: a cluster randomised trial*". The study protocol and data collection procedures have been reported in a previously

published article [26]. This article presents the qualitative findings from 12 schools randomly selected out of the 22 schools recruited for the main study.

Study areas and population

The study areas were two Local Government Areas (LGAs) located in two urban cities in Oyo State, Nigeria. Ibadan North-west LGA is located in Ibadan while Ogbomosho North LGA is located in Ogbomosho. Ibadan North-west LGA has 13 public and 18 private secondary schools while Ogbomosho north LGA has 15 public and 26 private secondary schools. The selected schools for this study have a student population ranging from 152 to 1417 with more students in the public secondary schools.

The study population for the qualitative phase of the study were School Principals and Teachers in 12 schools (*comprising eight public and four private schools in both LGA*). Two key sources of data were used: six key informant interviews with School Principals (*three each from each LGA*) and six Focus Group Discussions with Classroom Teachers (*three each from each LGA*).

Instruments

The study tools [see Additional file 1 and file 2] were developed using constructs from the socio-ecological model adapted for physical activity by Sallis et al, 2006 which acknowledges the intricate relationship existing between an individual and the social, physical and policy environment [27]. The model is hinged on the notion that man influences his environment as much as the environment influences the man [28]. Individuals are responsible for implementing lifestyle behavioural changes critical for reducing health risk and improving health, but their ability to implement the proposed behaviour is determined largely by the external environment, e.g. community norms and values, regulations, and policies. In this study, the influence of the schools' external environment (PA Policies, rules, regulations, guidelines, infrastructure availability) on students' physical activity patterns within the context of promoting and hindering factors is the major focus.

The key informant guide for School Principals assessed their perspectives about the level of physical activity among secondary school students in their schools, frequency of engagement in structured and unstructured physical activity and factors (personal characteristics of adolescents' social-cultural, built environment and policy) which influence the physical activity behaviours of the students, the extent to which school guidelines and policies provide opportunities for PA, barriers to the implementation of school physical activity policies and programmes in schools, level of funding and recommended activities to ensure in-school adolescents attain the daily target of 60 minutes of moderate and vigorous daily activity.

The focus group discussion guide for class room teachers was used to assess their opinion about the frequency and opportunities for engagement in structured physical activity (*i.e. sports, class based activities, regular school physical activity programmes*) as well as unstructured activities (*i.e. break*

time(leisure), after school programmes etc.), social support for physical activity, barriers for the implementation of physical activity policies and programmes in schools and feasible interventions.

Data Collection

Data collection spanned 4 weeks, two public health professionals with previous training and experience in qualitative research methods conducted the interviews and focus group discussions and a note taker documented the key points from the discussion verbatim.

Six key informant interviews were held with Principals/Vice principals in selected public and private schools (3 schools each in the Ibadan and Ogbomosho). The key informant interviews were held within the school premises at comfortable venues selected by participants, free of distraction and noise. The participants were provided detailed information on the objectives of the study and assurance of full confidentiality of disclosed information, request for permission to use digital voice recorded was made. Verbal consent was obtained from all the discussant and the mean duration for the KII session was 30 minutes.

Six focus group discussions (FGD) were held with teachers in selected public and private project schools (3 schools each in the Ibadan and Ogbomosho). The participants were provided detailed information on the objectives of the study and assured of their confidentiality and other ethical issues. Request for permission to use digital voice recorded was made and verbal consent was obtained from all the discussant. Participants' names were not obtained but number was assigned to them for easy identification. The focus group discussions were held within the school premises at comfortable venues free of distraction and noise. Each FGD session had a group of discussants ranging from six to ten and lasted for a mean duration of 45 minutes.

Data analysis

All interviews were audio recorded and transcribed *verbatim* to Word files. Data quality checks were ensured throughout the data collection and transcription of the interviews. The research team listened to the interviews and compared to the transcription to identify errors/discrepancies found in the data. The transcribed data was cleaned and saved in word format. Identification codes were assigned to all individual records including audiotapes, transcripts and demographic information. Tentative a priori themes were identified based on the research objectives and how often some features reoccurred in the data but these were modified to capture memorable and useful outliers comments which may help aid the understanding of the data. These themes guided coding and data analysis. The interview (transcripts) data were loaded into NVIVO 10 for data coding and data analysis was done using thematic analysis guided by the study objectives. A public health professional with over 15 years of qualitative experience led the analysis and two trained independent coders with background in public health coded the data. The lead public health professional independently cross checked the data coded to ensure it aligned with the study objectives and themes.

Ethical issues

The study followed ethical guidelines for studies involving human subject research. This study received ethical approval from Oyo State Research Ethical Review Committee (AD13/479/890) and permission from the Oyo State Ministry of Education.

The Local Inspectors of Education of the local government areas and School Principals also provided permission for the conduct of the study. Teachers and Principals interviewed provided written consent for participation and publication of the findings.

Results

Personal characteristics of adolescents in the school setting and their physical activity level

Majority of the respondents felt that adolescents were not attaining their daily recommended levels for physical activity. According to the respondents, there was sex differential in the physical activity behaviours of adolescents; most discussants opined that males were more active than the females. The quote below illustrates these views:

“The adolescents are inactive however; boys are more active than girl. During break time, the males play football and walk around. But the girls just buy food at the vendors and at times they do minor things [minor PA] such as walking around or doing “tenten” [a local games common among females which requires clapping, jumping and singing] FGD discussant from a Public School.

Factors attributed to the sex differential in PA levels include gender norms, the sexuality of the adolescents, the low social interaction by females and more devotion to academic activities as expressed in the quotes from key informants below:

“.....definitely, we know that the feminine nature for females and the masculine nature of the boys influence their physical activity levels” Key Informant from a Public Secondary School.

“..... you know some of them [Girls] are bookworms [individuals who devote a lot of time to academic activities] they don't always interact. Even if a boy is a bookworm, he will always be outside to participate in physical activity and show that he is strong.....” Key Informant from a Private Secondary School.

Another pertinent factor identified as contributing to the low physical activity level of females is the limited gender specific physical activity facilities and equipment for sporting activities in the schools as expressed below”

.....why girls are not fully involved in PA? it is because the facilities for the sport activities which girls like are costly. Girls enjoy sports such as badminton but the equipment are expensivewe can engage them to be active but we are limited because of the equipment..... we don't have equipment for them

[girls]. They also prefer table tennis and prefer volley ball which will not roughen their bodies.....but these are expensive... FGD discussant from a Public School.

Furthermore, the respondents in both public and private schools noted the lower levels of physical activity among older adolescents compared to younger ones as encapsulated in the quote below:"

" The senior classes [students in senior classes who are older adolescents] have minimal PA levels. Even you can see it from those running around. For the younger ones you have to caution them - don't make noise! don't roam around!" FGD discussant from a Private Secondary School.

Factors contributing to the lower levels of physical activity among older adolescents compared to younger ones were increasing age including maturity, external influences and heightened awareness of the opposite sex as expressed in the quotes below:

"they [older adolescents] are matured. They are not as playful as the junior classes" FGD discussant from a Private Secondary School

"I think their level of physical activity is low, the senior students [older adolescents] are influenced by their environment and the females mix with the males [they interact with males], it affects their physical activity levels....they are self-conscious about the males and it affects their physical activity behaviours" Key Informant from a Public School.

Antecedent and socio-cultural factors influencing physical activity behaviours of adolescents

Several factors influencing the physical activity behaviours of adolescents were mentioned by the respondents including the low awareness of the benefits of physical activity as illustrated in the quotes below:

" Majority of the adolescents are not aware of the benefits of physical fitness and their parents are illiterates. They [their parents] don't participate in any exercise " Key Informant from a Public Secondary School.

In addition, respondents opined that parental restraints, social values/gender norms(misconstrued value placed on female virginity), cultural or religious factors may influence the physical activity behaviours of adolescents as expressed in the quotes below:

"In fact, some culture would tell you that you are not supposed to interact with a male or a female [which may be inevitable during sporting activities] all those things are limiting them thereby impacting negatively on their health" FGD discussant from a Public Secondary School.

This was buttressed with a case study as expressed by an FGD discussant below

"..... Yes, I had an example during the last inter-house sport, this girl was so keen, she wanted to run. We had an external coach that came around and he told her that if she does not remove all these things [clothes and garments which cover the body in line with Islamic injunctions], he won't allow her to run, well reluctantly she removed everything and she was begging "please I want to run" and by the time she did it, she came out well in-fact I was encouraged because I had thought that was the end" FGD discussant from a Public Secondary School.

Cultural barriers coupled with myths and misconceptions about the effect of physical activity on the females' physique were barriers mentioned by the respondents as expressed below:

"..... some cultures don't encourage participation, they don't want the females to expose their bodies.....because of the rigour of vigorous exercise, they believe women are weaker vessels and only men should be active in some culture.....in some ethnic groups that is the belief" Key Informant from a Public School

"the society feels that the female body can easily be harmed or injured, because of the way the body structure is made up and the physiological issue [so they don't encourage physical activity]" FGD discussant from a Private Secondary School.

Other fears expressed was the impression that physical exercises can break the hymen of females, result in the development of masculine features which can limit opportunities to get married in future and cause infertility as expressed below:

"some people believe that if a virgin exercises too often, she will become disvirgined. If they run too muchit can make them look more like a man and they will develop muscles. So they discourage their female children that it makes them look like a man and they ask, who will marry you?" FGD discussant from a Private Secondary School.

"Some parent prevent their female children or wards from participating in sporting activities because they believe that they would not be able to give birth to a child later on, so they prevent them from the activities" FGD discussant from a Public Secondary School.

These views highlight the peculiar challenges the female adolescents experience with physical activity.

Also of import is the respondents' viewpoint that parental influence has an implication on the physical activity behaviours of adolescents. For instance, they opined that parents indulge their wards making them depend on motorized transportation rather than active transportation.

"..... many parents are indulging their wards. Instead of encouraging them to walk, they prefer to give them money to take "okada"[motor bicycles] or to take taxis" Key informant from a Public Secondary School.

School-related factors influencing the physical activity behaviours of adolescents

School related factors were identified as a major bane to physical activity among adolescents. According to the respondents, a lot of changes have occurred in the school settings over the years and these have detrimental effects on physical activity and exercise among adolescents. For instance, the number of trained Physical Health Education Specialist Teachers has declined significantly and where they exist, their continuing education and professional development is not prioritised. The quotes below underscore this finding:

*"In times past, schools had at least one or two [PHE teachers] but now If you go to ten schools, I don't think you can get more than two PHE teachers in all the ten schools"*Key Informant from a Public Secondary School

*"..... schools are very poor in staff development programmes because we believe seminars and workshop are not for PHE teachers, we just pick [choice] subjects. We hold seminars and workshops for Mathematic and English teachers, but for PHE teachers, we don't"*Key Informant from a Private Secondary School

Furthermore, in most public and private schools, the delivery of physical health education classes are compromised due to more emphasize on its theoretical concepts to the disadvantage of practical demonstrations stemming largely from the lack of equipment and sporting facilities and large students population without a corresponding number of teachers as opined in the quotes from respondents in the public and private schools below

" Most schools lack the equipment..... look at this school for example, since we've resumed this term, we have not had any PHE lesson, we don't even have a PHE teacher" FGD Discussant in a Private School.

*" In this school particularly. we don't have a large field and we don't have PHE teacher. I will say averagely with my knowledge, the schools I've taught, they don't really have that facility. and there's inadequate man power"*Key Informant from a Public School.

Other factors include the limited time for PHE classes and the emphasis on the theoretical concepts rather than the practical sessions as expressed in the quotes below:

"..... we have limited time for the PHE lecture, we have just 45 minutes so at times we use the whole of 45minutes in the class" FGD Discussant in a Public School.

".....the students take physical health education classes from Junior Secondary School 1 to 3. But they do more of the theoretical sessions than the practical and it is the fault of the government and the school administration" FGD discussant from a Public Secondary School.

Financing was a major factor identified as limiting the availability of facilities and opportunities for PA in schools as illustrated in the quote below:

..... in fact let me tell you,, when you admit a student to the public school, they pay an annual tuition of N630 (\$2), out of that amount, only 50 naira (\$0.14) is allocated for sports. This is insufficient! Key Informant from a Public Secondary School.

Compounding the problem is the poor attitude of teachers, school heads and parents towards the delivery of physical health education as expressed in the quotes below:

“, some School Principal and Teachers believe physical activity /physical education classes is a waste of time the time that the students spend jumping about and doing all those PA can be used for other meaningful subjects. At times, even we [Teachers] will say, what is Physical Health Education /PA? this is not necessary....We also say what is ‘jumpology’? (a derogatory term for Physical Health Education) (scoffs) it is not necessary, we believe that Mathematics, English, Chemistry are important subjects but when it comes to PHE we believe it is not necessary and it is not important and that is why many schools don’t want to invest in it” FGD Discussant from a Private Secondary School

“We still have Physical Health Education [as a subject] on our timetable but the periods may not be similar to what we have for subjects like Mathematics. If Mathematics comes up five times in a week, PHE may be like once, you understand? So that is just it” Key Informant from a Private Secondary School.

The respondents also expressed that despite some regulatory guide for the delivery of PHE, the school management and parents decide how and if they want PHE delivered in schools as expressed below:

“..... the laws are there, PHE is compulsory, it is there but the parents, the school management [school authorities] and the society has already decided on what is paramount [i.e. other core subjects like mathematics and English] and what is not paramount [other subjects like physical health education]” FGD discussant from a Private Secondary School.

In addition, the poor social support from teachers for physical activity in school which is linked to their interest in academic activities such as reading as well as the dislike of physical exercise were noted as influencing factors as reflected in the quotes below:

“..... many teachers, they hinder and prevent the students from being active. Teachers usually prevent them and tell them to go and read even when it is time for them to do physical exercise. So many teachers think that reading, reading and reading only will help students” Key informant from a Public Secondary School.

A quote from a respondent further supports this view as outlined below:

“- I think it is the attitude of teachers and school policy [which influence PA]. Let me use myself as an analogy. I don’t like sports at all, if I see any opportunity where the student can be taken away from the

field back in classroom, I would support such, you understand? I don't like sports". Key Informant from a Private Secondary School.

Opportunities for physical activity promotion in schools

Other extracurricular opportunities for the promotion of physical activity during school hours specifically the assembly grounds, break time, after school and inter house sporting competitions were identified. With regards to school assemblies, the respondents in public schools expressed that PA through this avenue is no longer possible due to a policy directive from the Oyo State Ministry of Education to stop the conduct of school assemblies due to security threats. The quotes below illustrate this finding:

"we used to have school assembly everyday but because of the security issues in the country, we were directed to stop it" Key Informant from a Public School

"We've cancelled it [the School assembly], It has been cancelled, we now conduct class assembly..... [where] they will pray, sing the national anthem, national pledge and the school anthem. Afterward, the normal class work will commence so we don't have physical activity or sporting activity during that period" Key informant from a Public Secondary School

However, private schools still utilise this opportunity as highlighted in the quote below:

"On Monday for instance we were on the assembly ground, we danced for an hour, acrobatic dancing, so we consider physical activity on the school assembly as being very important" Key Informant from a Private School.

This constitutes a missed opportunity for the promotion of PA in school. Furthermore, break time which is another feasible opportunity for PA has been severely constricted due to the introduction of new subjects which expanded the curricula and competing academic time. This presents a challenge to public but not private schools as stated in the quotes below

" and I observe that the private schools have two break times - short break and long break, then it used to be the same in the public schools. However, we only have one period for the break because we have so many subjectssome of these subjects are not useful" FGD discussant from a Public Secondary School

After school sessions can also help promote PA behaviours, however this opportunity is not explored due to the unwillingness of teachers to supervise activities during this period resulting in increased risk of accidents as expounded in the quotes below

"immediately after school hours we expect them to leave the school compound and go home, we don't want any casualties. Even during school hours, we have problems keeping an eye on them, several times they have fractured hand, broken legs and so on" FGD discussant from a Public Secondary School.

A respondent shared an experience as described below:

“..... we had an experience sometimes ago. After school, the students arranged to go and swim. They went to the deepest part of the river and unfortunately we lost the student. We always ensure that students leave the schools immediately just because of that experience” FGD discussant from a Public Secondary School.

Inter house sports competition which holds potential for galvanizing school-wide interest in PA was identified. According to the discussants in the private schools, interhouse sports competition hold regularly but the frequency of its conduct in public schools has reduced drastically due to lack of funding and the aftermath crisis associated with the failure of losing teams to accept defeat in the spirit of sportsmanship. The quotes below illustrate these points:

“We have interhouse sports competition every two years. We group them into houses, some may be for programmes like the 100 m race, the basket ball, table tennis and other things. We also do gymnastics” FGD discussant from a Private Secondary School.

“With regards to inter-house sports, it’s based on the interest of the principal, most of the principals do not like conducting inter-house sports competition, during the inter house sports competitions, students usually fight.... that is the reason why most of the schools are not interested in the event ” FGD discussant from a Public Secondary School.

..... there is hooliganism in sport especially during inter house sports. We usually invite the military and paramilitary personnel to help curb the excesses of the students” Key informant from a Public Secondary School.

Finally, of import is the negative impact of the poor road network, increased accident risks and government policies on the conduct of marathon and cross country races as reflected in the quote below: *“ previously before the inter-house sports or during the time of inter-house sports, we usually take cross country race but that is no more due to government policies and because of the poor connectivity of the roads..... It’s not safe”* FGD discussant from a Public Secondary School.

Discussion

Findings from this qualitative study reveal that, the personal characteristics, parental, social and school-level factors influence the physical activity behaviours of adolescents thus suggesting the need for multi-level interventions to increase the opportunities for physical activity among adolescents’ thereby contributing to improved health among this group. Specifically, individual-level factors such as sex, age and knowledge of the benefits of being active seem to influenced the physical activity behaviours of the adolescents. The school teachers and principals opined that female adolescents were more likely to have insufficient physical activity compared to male adolescents This supports findings of studies conducted in Nigeria [8–10] and other regions of the world [28–32][and may be a reflection of gender disparities in Nigeria linked with the limited opportunities for social activities for females due to parental, societal or school restrictions. Other possible associated factors are religious and cultural standards which pressure

females to conform to cultural norms by appearing feminine in order to be socially and culturally accepted thus limiting their participation in PA [33–35]. Oyeyemi et al 2016 also observed this gender disparity in Northern Nigeria hence, there is a need to explore opportunities to positively influence norms associated with gender participation in sporting and physical activity in Nigeria. This also underscores the need for gender-specific interventions for physical activity promotion among Nigerian adolescents [10]. Similar to what has been documented in other studies, [8, 9, 36–38], the respondents noted the decline in physical activity with increasing chronological age. This observation has grave health sequelae if allowed to persist to adulthood. Hence, the need for age-specific interventions to address the decline in physical activity with increasing chronological age.

Social influences, attitude and support from significant others have implications on the physical activity behaviours of adolescents [21–24; 39]. According to the respondents on this study, teachers especially those who teach other subjects aside physical health education and parents generally have an unfavourable attitude towards the participation of adolescents in physical activity. This is viewed as a waste of time which can be devoted to other academic activities. Similar negative perceptions and attitudes by parents and teachers have been reported in studies from other countries [21–24] and have grave implication on the implementation and sustainability of physical activity policies and programmes in schools as the reality in schools provides little or no motivations to support or trigger adolescent's ability to initiate and sustain PA. To address the physical activity barriers among adolescents, holistic interventions which address the negative attitudinal dispositions of parents and teachers must be taken into consideration and prioritized.

The increasing demand for classroom academic time and pressures on education systems to improve students' performance has had an unintended negative effect on the physical health education curricula thus reducing opportunities for physical activity in Nigeria [8, 40]. Findings from this study revealed that, most secondary schools offer physical education as an optional subject for pupils in the senior secondary level and few schools have PHE teachers to deliver the course thus, students can be exempted or excused. Similar findings have been reported in other studies in Nigeria [8], and other countries [4, 36, 41, 42]. This underscores the need to develop a comprehensive national physical activity policy [43], and review and enforce the school curriculum on physical health education to ensure all students irrespective of their age and classes have opportunities to be active and attain their daily requirements.

Funding was a major factor identified as a barrier limiting the recruitment and availability of human resources, facilities and opportunities for PA in schools. According to the respondents, the number of trained Physical Health Education Specialist Teachers in public and private secondary schools have declined significantly and where they exist, their continuing education and professional development is not prioritized. In addition, findings from this study revealed the dearth of equipment and sporting facilities in the schools. These findings are similar to those obtained from studies in other countries [41, 44, 45]. This situation has compromised physical health education classes in schools in Nigeria resulting in an emphasize on the delivery of theoretical concepts to the in-school adolescents to the detriment of field based activities. Therefore, there is need for the government, school authorities and relevant

stakeholders to increase financial investment to enhance human resources and improve the school environment equipment and facilities as a strategy to improve the physical activity behaviours of the adolescents

There are limited extracurricular opportunities for the promotion of physical activity in public secondary schools during school hours. Physical activity during assembly on the school grounds has been cancelled due to a policy directive from the Oyo State Ministry of Education to stop its conduct due to security threats, instead assemblies are held in the classes. In addition, opportunities for inter house sporting competitions have reduced due to sports-related violence especially brawling and security risk associated with competitive sporting events in public schools in Nigeria. Similar concern was reported in a study conducted among in-school adolescents in the north-central region of Nigeria [46]. This is a public health challenge that has been largely overlooked or ignore [47]. To address this, there is need for multi-component interventions such community and school legislations to prevent violence during supporting events, environmental design of sporting venue and enforcement of sporting rules [47] to improve the school environment for physical activity. Thus, it is expedient for relevant sectors such as the Education, Youth and Sports and Security to work collaboratively to implement multisectoral interventions to provide safe and conducive environment for physical activity programmess and school-based sporting events among adolescents.

Conclusion

Findings from this study underscores the need for holistic, multi-component interventions which address the individual, parental, social and school-level factors which limits adolescents' participation and opportunities for physical activity. There is a need to support the direct engagement of parents and other relevant school stakeholders to prioritize physical activity not only as a form of recreation but establish the current paradigm which stresses its linkages with overall physical and mental wellbeing. Of import is to strengthen government PA policy implementation at the school level through the involvement of policy actors in the overall intervention. There is a need to urgently promote and sustain the girl child participation in school-based physical activity, end the marginalisation and misconception of female participation in PA which is linked to being muscular or losing virginity and encourage the positive impact of girls and boys equal participation in PA in order to mitigate the rising burden of NCDs among the future adults. Multi-sectoral interventions are needed to curtail the prevailing security threats in the country as well as brawling associated with competitive school-based sporting events Finally, stakeholders at the institutional and policy levels need to prioritize the implementation of physical activity policies and programmes by increasing funding for the recruitment of teachers and provision of equipment and facilities in schools.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was granted by the Ethical Review Committee, Oyo State Ministry of Health, Oyo State Nigeria and the assigned reference number is AD13/479/890. Written consents was obtained from all participants as well as the consent to publish the findings.

Consent for publication

Not Applicable

Availability of data and material

Transcripts can be provided upon request to the corresponding author. This can only be used for non-commercial purposes which ensures that participants' confidentiality is protected.

Competing interests

The authors declare they have no competing interest

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Authors contribution

MMO conceived the idea for the study and led data collection, analysis and development of the manuscript; OO provided overall technical guidance and supervision for the study and SEI was involved in data collection and analysis. All authors developed the manuscript and approved the final version prior to submission.

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