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## SASP: A School-Based Structured After School Program to Reduce Childhood Obesity of Primary School Children in Bhutan

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**Abstract:** Childhood obesity has become a growing issue in Bhutan and it poses impending challenges. There are lots of preventable diseases and negative social impacts associated with obesity. Bhutan has no structured intervention in place and the increase in sedentary behavior is escalating the global epidemic. Incorporating physical activities in the school routine can bring positive outcomes since there is strong relationship amongst obesity, sedentariness and physical activity. This paper discovers that children are motivated to be obese because schools and communities do not provide platforms for children to be active. Schools need to provide a platform for children to be active and after school hours can be the best period. Hence, the paper argues and concludes that a School-based Structured Active After School Program (SASP) can reduce obesity and regulate sedentary behavior of Bhutanese children.

Since programs like SASP are new to Bhutan, the paper reviews various literature from leading journals and other relevant sources that report on childhood obesity, sedentary behavior, after school programs et al.

Nonetheless, Childhood obesity cannot be solved overnight. So future research is required to study the impact and advance accordingly. Nutrition related program should be included in future to improve the outcome.

**Keywords:** School-Based Structured Active After School Program (SASP); Childhood obesity; Sedentary behavior in children; Physical activity; Primary school children in Bhutan.

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## Introduction

Although children are normally assumed as the most active group of society, recent studies have proven that most primary school children are overweight or obese and sedentary lifestyle has been a significant contributing factor apart from nutrition, living standards and societal factors. Bhutan is a small developing country but it is not excluded from the global epidemic of obesity and overweight amongst primary school children. There are no official records but one can easily observe the increase in childhood obesity or overweight amongst Bhutanese children. Once believed to be a problem with developed countries, overweight and obesity are now increasing in low and middle-income countries. The rate of increase in childhood overweight and obesity in developing countries is 30% higher than developed countries <sup>[2]</sup>. Bhutan is cautious in embracing modernization and its impact, still Bhutanese children have started to increasingly lead a sedentary lifestyle due to the recent exposure to television and digital games as well as the lack of structured physical activity time. All this has motivated children to be seated and stay inactive and there is a constant increase in overweight children in the society compared to the last decade.

The prevalence of global childhood overweight and obesity increased from 4.2% in 1990 to 6.7 in 2010 and it estimates about 43 million children as overweight or obese. Trends estimate an alarming increase in global childhood obesity to 9.1% in 2020, that is a concerning 63 million children <sup>[1]</sup>. This deadly trend will be the future if timely intervention is not in place. Physical inactivity and sedentary lifestyles has been the key cause of childhood obesity and its related diseases. Sedentary behavior amongst children is encouraged due to the advancement of technology and modern comforts wherein children get easily motivated to be seated in front of a television or be engrossed for hours playing digital games. Until the early 2000, only 2-3 out of 10 Bhutanese households owned a television set but now, especially in urban areas, a Bhutanese child proudly has a television set at home along with personal digital and electronic gadgets and the fact that they are monitored rarely is causing more problem. WHO fact sheets blames rise in obesity on the increase in physical inactivity caused by the increasing sedentary nature of people <sup>[2]</sup>. However, there is lots of evidence showing interventions from different sections of the society and there are other major factors that contribute to the global epidemic. Most studies have shown that physical activity along with diet control can be the leading factor in preventing the trend. Children aged 5-17 should be engaged in at least 60 minutes of moderate to vigorous intensity physical activity on a daily basis. Moreover physical activity is a key factor of energy expenditure and it is beneficial to energy balance and weight control <sup>[3]</sup>. Thus, it is highly recommended for children to be physically active for at least the recommended time or more in order to prevent obesity and its related diseases. There is no better way to provide this physical need than through fun

and meaningful programs like SASP (Structured Active After School Program).

A typical primary school child in Bhutan starts the day with a brief play before the morning assembly at 8.30 AM, and then the child is basically sitting in the classroom for 8 periods of 40 minutes each with two short recess and an hour long lunch break in between. There is very less opportunity for the child to engage in physical activity. Once in a week, children have physical education classes but most of the physical education classes are theoretical and underutilized owing to the absence of structured curriculum or implementation strategies. Physical education curriculum is in its initial phase and undergoing a lot of changes, which requires time to adapt properly. After the school hours, children are at home watching television or playing games on a digital media for hours. Children rarely go out to play or be engaged in some sort of active play.

Further, making the problem worse for Bhutan is the fact that there is very less structured school hours or after school hour's programs and interventions organized by schools or the communities. Bhutanese schools do not have structured physical activity programs apart from the once a week physical education class. The schools do organize games and sports competitions on regular intervals but these competitions lacked mass participation and it benefitted the already active group of children only. Accordingly, the paper argues that children are not provided with the adequate avenues to be active. Based on general observation, the increased obesity and overweight problems among Bhutanese primary school children is caused by insufficient physical activity time and increase in sedentary behaviors. While these statements are based on a general observation and require future research, they hold much truth and validity for now.

This paper strongly recommends that the introduction of SASP can reduce overweight and obesity as well as regulate the sedentary lifestyles of primary school children in Bhutan. SASP is recommended based on the common understanding that one possible reason for children's inactivity could be the lack of opportunity given to children to be active. Hence, SASP can compensate the inadequate hours of physical activity that children receive within school hours and keep children active during the after school hours. The program will be able to deliver the recommended time for physical activity in children. After school hours is given focus because it is the best time to implement the program. The period wouldn't affect the daily teaching-learning cycle and it empowers children to use their leisure time positively. It is also evident from literature that after school period is increasingly becoming popular for intervention and research in childhood obesity prevention <sup>[19]</sup>.

### Literature review

As there is no research or literature on after school activities, school-based interventions and childhood obesity in Bhutan, the paper reviews literature on after school activities in other parts of the

world, physical activity and health benefits, sedentary lifestyles in children, obesity and related diseases in children from various academic journals and relevant web sources. Keeping in mind the standard and relevancy, the paper has mainly focused on the information from varied journal articles such as Journal of School Health, Obesity, Obesity Reviews, International Journal of Behavioral Nutrition and Physical Activity, American Journal of Preventive Medicine, International Journal of Obesity et al and various materials from World Health Organization and Google Scholar.

Though it is not a systematic review, the paper analyzes, adapts, accepts and challenges the discoveries and conclusions made in the literature based on their feasibility, practicality and effectiveness in the Bhutanese context.

### **Cause and Effect of Childhood Obesity**

Childhood obesity has gained much attention as a global epidemic that needs necessary interventions before it goes out of control. Bhutanese people blame that obesity and sedentariness is increasing due to the good food and comfortable lives people lead. People's lives are too comfortable and easy that they have machines and science to do their jobs. On the same note, Bhutanese people also argue that food production and food habits have undergone unbelievable change, which has motivated the children as well as adults in choosing tasty but unhealthy and easy yet fatty food over organic and nutritious food. According to the general Bhutanese understanding, it is the physical inactiveness and nutrition that is causing all the increase in childhood obesity. Now the question lies in: What are the Bhutanese schools and communities or organizations doing to regulate this epidemic?

The increased sedentariness of children is one major cause for childhood obesity. It is well supported that every extra hour of sedentary behavior increases the chance of obesity [8]. In addition to the discoveries, the paper argues that the conditions in the society give birth to the sedentary behavior of children. Children are encouraged to be inactive because we don't provide platforms to stay active. In Bhutan, children are enjoying unlimited hours of television during after school hours and children are usually in the classroom just sitting during school hours. They are rarely involved in active lifestyles. Walking to school is common to remote schools only and sports are mostly played by a small section of the group. Bhutanese society doesn't promote fast food or take-away food but the rich oily and fatty Bhutanese curries are another addition to the growing number of overweight and obese children. Most Bhutanese diet consists of more oil, fat and carbohydrates. The time has come to introduce a nationwide program to get children active.

Childhood obesity and related diseases can be the ugly global future. The epidemic has numerous direct and indirect effects on the particular child and their society. Everybody agrees that the health of children means the life and future of the society. Obesity leads to an endless list of diseases and the

irony is that these diseases are preventable diseases. The paper is not here to argue about the diseases but to establish a consensus for introduction of a working intervention for childhood obesity so that the diseases are automatically taken care of. On one side, the treatment of these lifestyle diseases puts much pressure on the health budget, which can be otherwise used for other better alternatives. Obesity poses a serious hazard to the basic health care system in addition to the cardiovascular, emotional and social issue that it impacts <sup>[8]</sup>. In the US alone complications due to excess weight cause 300000 deaths and cost \$ 147 billion annually <sup>[11]</sup>. It is a well-accepted fact that obesity causes a great amount of harm to the particular person as well as the society. Bhutan is a one of the least developed countries and the expenses on these preventive diseases can be a very costly to the government.

Sedentary behaviors, increased physical inactiveness and unhealthy food habits has accelerated the prevalence of childhood obesity globally. The ill effects of childhood obesity are the increased number of preventive diseases and their numerous negative effects to the child and the society. Bhutanese children's issue with obesity and sedentary behavior is no different and there is no structured intervention to confront it. Thus it is more than necessary for a working intervention. Bhutanese children must come out and get active during their after school hours so that their sedentariness and weight is regulated.

### **Relationship between Physical Activity, Obesity and Sedentary Behavior**

Almost every literature review here supports that there is strong relationship between sedentary behaviour, obesity and physical activity. Activities that do not increase energy expenditure substantially above the resting level inclusive of activities like sleeping, sitting, lying down and watching television as well as other forms of digital entertainment is referred as sedentary behaviour <sup>[4]</sup>. Similarly, children sitting in the classroom are also leading a sedentary behaviour because they are usually just listening, talking, colouring, writing or reading. According to WHO, obesity and overweight are referred to the abnormal or excessive fat accumulation that may have adverse effect on health and emphasizes that the main cause of childhood overweight and obesity is an energy difference between calories consumed and calories expended <sup>[2]</sup>. A consensus is drawn affirming that sedentary lifestyle largely contributes to childhood obesity. Basically, children are not burning out what they have consumed. This brings us to understand that the global epidemic of obesity and overweight is on a rapid rise because children spend very less time in active physical activities within school hours and rarely after school hours. During after-school hours, most children neither go out nor engage themselves in active physical activity rather than spending their time on technology like television and digital games. The advancement in food and nutrition in the form of dense calories that children consume further escalates the problem.

Physical activity is any bodily movement produced by skeletal muscles and requires energy

expenditure <sup>[5]</sup>. Recent public health recommendations for moderate and vigorous physical activity are based on results of more than 60 years of scientific research that concluded a link between physical activity and health <sup>[6]</sup>. Due to the fact that physical activity can regulate energy expenditure, the paper resolves to physical activity as the best means to reduce both childhood obesity and sedentary behavior. A systematic review of controlled trials of school-based interventions suggested that interventions that increase activity and reduce sedentary behavior might help children with maintaining a healthy weight <sup>[7]</sup>.

Numerous studies point towards significant relationship between sedentary behavior, obesity and physical activity wherein increase in physical activity could bring positive impact on obesity and sedentary behavior. Bhutanese schools do encourage physical activity but the programs are not regular, structured and efficient. Consequently, it is through a structured physically active program that we can regulate obesity and sedentary behavior among Bhutanese children.

### **School-Based Obesity Interventions**

School-based interventions are the most appropriate and practical initiatives to reduce childhood obesity and encourage active lifestyles. A school can impact a large section of the children and the organized structure with professional staff working together for a common goal is an advantage. In addition to schools being the best setting to influence a large number of children, children also spend much of their weekdays at schools and have many potential opportunities for daily physical activity <sup>[12]</sup>. This paper believes that schools can provide the platform for children to spend after school hours actively rather than sitting in front of the digital media for hours and become obese. As a school, it can organize mass campaigns and activities to reduce the epidemic. Some studies suggest that school-based physical activity interventions are effective in increasing children's engagement in physical activity and that these kinds of intervention reduce the amount of time children spend watching television <sup>[10]</sup>. A similar review of school-based obesity intervention report that though studies are heterogeneous, school-based interventions have significantly contributed to weight management <sup>[15]</sup>. When it comes to providing interventions, schools play a vital role and school-based programs will be the best alternative in preventing obesity and regulating sedentary behavior. Bhutanese schools organize meaningful literary and cultural programs in the after school hours but lack mass involving physically active programs. There is a need to bring in a structure physical activity program.

### **Results of the study**

Bhutanese children are gradually getting obese and there are no concrete working interventions. The problem of childhood obesity can be costly to our developing nation's budget and it imposes lot of health risks on the child in picture. Thus, it is an important need for the schools to provide a challenge

to this epidemic. Like in any school, children are usually into their academics during the day and there is very less room to incorporate physical activities. The after school hours are mostly underutilized thereby making it a promising period to get children active. Based on the assuring results of school-based after school interventions in many parts of the world; therefore, this paper recommends SASP as a promising intervention to confront childhood obesity and sedentary behaviors of Bhutanese primary school children.

### **SASP as a Promising Intervention**

After-school hours are the most crucial and convenient period to engage children in active physical activity. This period is usually spent in front of the television or other media and indulging in unhealthy eating habits. Obesity interventions in after school hours settings provide potential returns than other settings because of the large amount of open time available for physical activity and the possibility to reduce snack food consumption that happens during this period <sup>[14]</sup>. Much reviews of after-school physical activity programs report positive on weight management of children. One such assessment of an after school physical activity program concludes that the after school program was effective on reducing obesity and it was a cost effective that is easily generalizable to other schools <sup>[18]</sup>. The fact that it is cost effective is very important for the Bhutanese budget too. SASP is a rewarding and cost effective intervention because it mostly uses the already available resources.

Children's academic sessions are not hampered by SASP. There are recent studies that support after school setting as a suitable context to promote health-enhancing levels of physical activity <sup>[9]</sup>. SASP would bring in a lot of positive outcome without disturbing the school's daily cycle. Through a structured and supervised physical activity program, children will be engaging in varied games and sports in a meaningful and safe manner. Like Active After School Communities of Australia helps children foster for a lifelong interest in sport, gain healthier mind and body, have fun and learn sport activities and games in a safe environment <sup>[13]</sup>, SASP will also have a similar impact and the health of the children will surely improve.

The program provides a platform for children to be active. When children get active, they expend calories and it has a direct effect on the weight of children. The program also promotes children's love for games and sports, which they will carry into their adulthood and this is likely to have a positive impact on the child's health and lifestyle <sup>[13]</sup>.

Through SASP, children can develop various social, mental and personal skills. Overall, children grow personally. The social interaction skills, mental alertness and development of motor skills are added benefits of a structured physical activity program. In addition, SASP can also bring people together for health through its program. The program can encourage and sensitize people on physical

activity and its numerous benefits. Community based health interventions to confront obesity and sedentary behaviors can be motivated in the close future.

SASP in Bhutanese primary schools can be the start of a nation-wide intervention to combat childhood obesity and related diseases. It will be first of its kind and the results would be multifaceted. However, the paper recommends piloting SASP in few schools in order to study the impact before going nation-wide.

### **Proposed SASP Model**

After studying the Active After School Communities of Australia, which is now known as Sporting Schools, SASP will have a similar model. The philosophy of Sporting Schools of Australia is that all activities will be game-based and generate a safe, inclusive and challenging environment that helps children in developing skills while having fun <sup>[13]</sup>. Almost similar to Sporting Schools, through a supervised and structured program, children will be engaging in various games and sports activities from 4.00 PM to 5.00 PM for 5 days a week. Since every Bhutanese school has trained Health and Physical Education instructors and teachers, the major role of organizing and scheduling of the daily programs will be carried out by these staff. This will drastically reduce the cost in hiring professionals from outside the school. As every other school activity, the planning of SASP should be done at the beginning of the academic session so that the program is ready to start in the first week of the academic session. The whole school staff will be involved in the hour-long program and every staff will hold various responsibilities. Children and staff will be engaged in active play for one hour. The program should also be closely monitored for safety reasons and consistency. Timely changes to improve the program should always be encouraged and incorporated.

However, there will be an official program guide. The program guide should be given due importance and involve professionals from relevant sectors. Contemporary tutorials, safety instructions, feasible activities and monitoring tools should be included in the official program. A good amount of research, resource and budget is recommended for writing the program.

### **Limitations**

SASP is not at all a comprehensive solution to the increasing epidemic. The outcome will be vague without a proper research after few years of piloting the program. Moreover, owing to the wealth status of Bhutan as a developing country, the budgeting of the program will be another hindrance. The program will require a good amount to start functioning. The paper recommends a separate budget for the program.

Since it is a very new system to the school and students of Bhutan, the acceptance and



implementation feasibility is always a challenge. Like all new programs, SASP will require consistent observation and feedback mechanism. It would be a challenge to have it in between the cultural, literary and other programs that the schools already have in place.

In all, SASP looks much promising in its near future after piloting, researching and strengthening the program, rather than the initial years. The program would also require inclusion of nutrition programs alongside physical activities for better outcomes.

### **Implications for school health**

A school represents the biggest section of any society and it is a place where the future members of the society are nurtured. The health of a school is the collective responsibility of school personnel, parents, children, health workers and the local government. There are strong reasons to emphasize on the academic side of schooling but it is also equally important to take into account the health of the students. School age children are facing a lot of preventable health complications due to sedentary behaviors and physical inactivity. Schools can play a key role in regulating the health of the children through various school-based programs. Studies have proved that physical activity will have numerous positive implications on the health of children in school. The majority of a typical school day is used up in the teaching-learning cycle wherein physical movement is very much limited. The recess and after school hours are the best time to organize health intervention programs. There is a review that supports school-based interventions to increase physical activity and reduce sedentary behavior might help maintaining healthy weight and moreover, physical activity interventions are more successful in younger children <sup>[17]</sup>. So SASP is one promising physical activity program that would improve the weight and overall health of school children. Through the program, children can learn to lead a healthy life by being physically active and reducing sedentary behaviors. The program will have great impact on the school health, as it would involve children in a regular and structured active physical activity program. The long-term impact of SASP looks promising for the general health of the school. Future inclusions in the SASP can be nutrition classes and programs. There is a general agreement that the school-based intervention should be long-term and consistent. A meta-analysis of school-based childhood obesity intervention showed that long-running school-based interventions were effective in preventing the epidemic <sup>[20]</sup>. SASP should be applied and tested for a couple of years so that the impact of the program on school health can be effective and prove positive outcomes.

### **Conclusion**

Childhood obesity in Bhutan is equally threatening as in other parts of the world. Bhutanese children are increasingly becoming obese and leading sedentary lifestyles. The study has analyzed much

literature and discovered that physical activity, childhood obesity and sedentary behavior are closely related. Physical activity is the most important factor in tackling both obesity and sedentary behavior. The paper argues and concludes that the introduction of SASP in Bhutanese primary schools can reduce childhood obesity and regulate sedentary behavior. The hour long SASP will empower children to be active, which would automatically watch their weight and sedentary behavior. Since it is a very new program, the program should be piloted in few schools around the country before it can be adopted as a national policy.

It is also evident that minor challenges would be presenting with regard to introduction and sustainability of SASP but it can be solved through the support from stakeholders through a consistent observation and feedback mechanism and future research too. The overweight and obesity interventions can be sustained only through ongoing support from multiple sectors in the society as well as the problem of childhood obesity is too extensive and the consequences are too severe to postpone interventions <sup>[16]</sup>.

SASP can also be used to initiate similar programs at the community level that goes beyond children and schools. The paper also suggests that SASP can have long-term benefits on children's life in terms of leading active and healthy lives when they leave school, thereby helping to create a healthier future generation. Moreover, there is a good reason to include nutrition as a part of the program in the future because nutrition also plays an important role in obesity. The paper strongly recommends future research after starting the program in order to study the feasibility and practicality of the program in Bhutan.

### **Conflict of Interest**

The authors declare that they have no conflicts of interest to this work

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