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Analytical study of physical activity, calorie intake and screen time of high school students from Kannur City

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Abstract
In present investigation researcher has studied the current levels of high school student's physical activity, calorie intake and screen time. There is a necessity for information about the associations among adolescents physical activity, calorie intake and screen time. Therefore, the objective of this study is to examine the current levels of physical activity, calorie intake and screen time of high school students from Kannur City. Researcher collected data through children's self-reported sheet and to find out if any correlation exists among the variables.

In this study researcher used quantitative and qualitative methods for the data collection. The study included 74 students. Self-reported sheets were used as a tool for the data collection, and the students average time spent for PA was 26 min, 25.5 Sec. and their minimum and maximum was 18 min., 25.7 Sec and 78 minutes respectively and their twenty fifth percentile was 1200 seconds,ie.20 minutes and 75th percentile was 1729 seconds, i.e. 28 minutes. Whereas the average calorie intake was 2131 Cal, and the minimum was 1931 Cal. and maximum was 2351Cal, and their 25th percentile was 2037Cal and 75th was 4607 cal. Similarly average screen time was 1 hour 12 minutes and minimum was 43 min, 34.3 Sec. and maximum was 1 hour 37min, 51.43 Sec. and whereas 25th percentile was 4018 seconds, i.e. 66 minutes and 75th percentile was 4607 seconds, i.e.76 minutes. The result shows that, among high school children's, lack of physical activity leads to increased sedentary behavior and screen time were relatively higher than physical activity and there is no correlation between Physical activity and Screen time.

Keywords: physical activity, calorie intake, screen time

1. Introduction

1.1 Back ground of the study

There is enough evidence that supports the close association between physical activity, calorie intake and screen time (including both the television, video games and computers) with negative health problems in high school students (adolescents). The act of establishing healthy physical practices and activities, healthy screen time and enough calorie intake behaviors among the adolescents is essential for their current health state as well as their future health behaviors which can be later linked to adulthood. Furthermore, most of chronic diseases and health problems are believed to be in young age of childhood and adolescence (Armitage & Conner, 2001) [5]. Physical activity, calorie intake and screen time guidelines are key especially when educating high school students about the appropriate and the recommendable amount of each of these behaviors. Most of the high school students are adolescents. Adolescence is a gradual transitional phase of one's growth and development between adulthood and childhood. WHO defines adolescents as people between the ages of ten and nineteen WHO defines young people as individuals between the age of ten and twenty-four. In various societies, adolescence is further narrowly equated to puberty and the cycle of visible physical changes that marks reproductive maturity. In other societies, the age of adolescence is understood as a broader term that entails social psychological and physical aspects of maturation. In order to fully understand what is needed for physical maturation an analysis of physical exercise, screen time and calorie intake among highs school students is key (Hallal *et al*., 2012) [35].

1.2 Physical Activity

Physical activity basically refers to any notable bodily movements that can be produced by one's skeletal muscles and lead to energy expenditure. Physical activity includes four essential components, namely: - Intensity, volume, type and frequency. All of these major components can in a way or another contribute to health matters. However, our analytical analysis of physical activity will focus on volume, the intensity of physical activity and volume. The volume part of physical activity outlines the minimum amount of time high school students should engage in forms of physical activities per day. The standard Canadian Physical Activity procedures and guidelines highlights that each of the physical exercise minutes should be keenly accrued to in bouts (Armitage & Conner, 2001) [5]. There are other guidelines from accredited researchers that recommend overall accumulation of physical exercises and activities throughout the day. Frequency analysis will major on the number of times high school students should engage

themselves in physical exercises and activities per week. Intensity can the thought as the manner and degree of exertion of physical exercises. Physical activities normally relate to the type of physical activities the high school student should engage themselves into (Hallal *et al*., 2012) [35].

Physical activity is an important and essential aspect of our daily life to achieve optimum health and wellbeing now a days. It's not only any particular type physical activity which results in health benefits, but all forms of physical activity can provide if undertaken regularly and of sufficient duration and intensity. The term physical activity should not be confused with exercise, which is the subgroup of physical activity. Exercise is planned, organized, repetitive movements carried out to sustain or improve health and fitness. Apart from exercise any other physical activity that is done during leisure time, for getting transport to and from places, doing paid or unpaid)domestic tasks or as part of person's work (lifting, carrying or other active tasks)and recreation has a health benefit. By becoming some active throughout the day in relatively simple ways is more beneficial than doing none. Some small changes in daily routine can make a difference. Taking stairs instead of elevators, walking or using bicycle instead of driving to neighborhood grocery shop, milk booth, such types of changes in everyday life can keep us healthy. Moreover, the health benefits of physical activity are maintained only with regular practice. Regular physical activity is beneficial in many ways as it reduce the risk of non-communicable diseases, heart diseases, hyper tension, stroke, diabetes, breast and colon cancer, depression. Additionally, it also prevents, overweight and obesity and can improve mental health, musculoskeletal problems. Physical activity has multiplicative health, social and economic benefits. Actions to promote physical activity will directly contribute to achieving the target of 15% relative reduction in the global prevalence of physical inactivity in adults and in adolescent's by 2030 and achieving many of the 2030 sustainable development goals.

1.3 Calorie Intake

Calories defines the amount of energy contained in the food to be consumed by an individual. Some food has a greater number of calories than others. Caloric intake entails the number of calories one should consume on a day. It is not only confined to a day since individuals can as well determine their overall calorie intake on a defined timeline or weekly basis. The key to losing or adding weight is quite straightforward and simple. In order for individuals to lose weight, they are typically required to reduce the number of calorie intake to a level relatively below their BMR (Basal Metabolic Rate). In order to increase weight, one is required to increase the number of calorie intake to a level relatively higher than their BMR. In order to meet the micro and macronutrient requirements of high school students, optimal nutrition is key (Hallal *et al*., 2012) [35]. These nutrition requirements are quite different for females and males. To curb the menace of nutrition extremes among high school students, where they consume over and under what is necessary, World Health Organization recommends a healthy diet comprising of vegetables and fruits. The provided recommendations have been promoted to all social age groups with an aim of minimizing any possible developments of cancer, heart diseases and other chronic diseases (Eisenmann, Bartee, & Wang, 2002) [27].

Food and nutrition is a basic human need for healthy life. An essential diet is very much required for proper life growth, development and to remain active. Dietary intake is largely depends on production, distribution and which determine the health and nutritional status of the society. The recommended dietary allowances (RDA) are nutritionally-centered and technical in nature and in addition supplying nutrients, foods provide a host of other components which have a positive impact on health. Dietary guidelines are provide a scientific knowledge on nutrients into specific diet. Therefore these kind of instruction must be followed in order to achieve the result. The main food issues of concerns are insufficient or imbalanced intake of foods and nutrients. The main nutritional problems of India's are low birth weight, malnutrition, energy deficiency in adults and diet related non-communicable diseases. Recnt studies shows that lack of nutrition may leads to the chronic diseases in future life. Increased population, demographic changes, fast urbanization and changes in traditional habits will leads to certain unhealthy practices and physical inactivity, resulting in diet related chronic diseases. The dietary guidelines will help the people to understand how to prevent diseases of all age groups such as infants, children and adolescents. In India there are a variety of food preparations and culinary practices but it is a big issue to calculate standard portion sizes common to all regions of India. Nevertheless, attempts are made to give proper portion sizes and exchanges.

1.4 Screen Time

In a population-based research, screen time marks one of the most common effective measure of sedentary behaviors which includes time spent playing video games, in computers and watching television visual images. Therefore, sedentary behaviors include those activities where the overall energy expenditure of an individual remains close to the low resting levels including reading, listening to audio music and surfing the internet via a mobile phone. Many research works focus on screen time since it is quite simple to quantify and measure and also it has been closely linked to negative health outcome to victims such as aggressive behavior, obesity and early sexual behaviors especially among the adolescents. Recently, relevant attention has been shifted towards activity level during screen time commonly referred to as incidental movement. Incidental movements entail movements outside the structured physical activity including relevant short busts of low physical exercises like walking around the house, climbing up and down stairs as well as fidgeting (Tremblay *et al*., 2012) [19]. Screen time is the amount of time spent in front of a screen, such as watching TV, computer, smart phone, playing video games etc. Actually it is a sedentary activity, experts have suggested that excessive screen time is harmful, especially the content is violent but some experts disagree with it. The study of increased screen time in children is fairly new and the researchers have not been able to observe affects and make a solid conclusion on it. There is no denying that an individual's screen time has increased exponentially in the

past decade. It is no longer controversial to suggest that humans and their smartphones aren't always a healthy combination, because many research suggesting that looking at screens for hours a day can have some serious health and mental problems.

1.5 Key facts
The American Academy Pediatrics (AAP) has changed their previous stance because of current state of research on the use of screen time on children and adolescents. AAPis limiting screen time for children aged between 3 to 5 years is 1 hour per day, whereas 6 and older, be consistent with the amount of time spending for screen and don't allow to interfere with sleep, physical activity and other activities essential to good health.

2. Methodology
2.1 Method of Research
In this study the researcher intended to determine the current levels of physical activity, calorie intake and screen time of high school students. Therefore descriptive statistics were utilized to condense factors from the study.

2.2 Population
The population of the study subject was selected from Chovva high school Kannur City. The study involved 74 students and they were studying in grade seventh, eighth and ninth respectively. The samples were selected using the convenient method.

2.3 Sample
For the present study Chovva higher secondary school, Kannur was delimited and therefore it is selected by convenient sample technique and the total number of 74 samples was selected by using Random sample method. Because of Random sampling each individual in the population has an equal chance of being selected. The age samples ranged between 12-14 years.

2.4 Data Collection Tools
In this study, the researcher has used three different types of data collection tools for the investigation, namely such as self-reported physical activity sheet, self-reported meal report sheet and self-reported screen time report sheet. And it is used for analyze current levels of physical activity, calorie intake and screen time of high school students from Kannur city.

2.5 Procedure of the Study
To investigate the total time/duration spent for physical activity for the last 7 days, To investigate the total calorie intake of students from Chovva high school for the last 7 days, To investigate the total time/duration spent for different screens for the last 7 days and To find out, if any correlation exists among the variables.

2.6 Method of data analysis
The researcher intended to determine the current levels of physical activity, calorie intake and screen time of high school students, hence, here employed descriptive statistics. The statistical tools used in this study were descriptive tools like mean, median, mode and standard deviation. For find out the correlation, here, the researcher employed Spearman's correlation.

3. Results

Table 1: Descriptive Analysis of Physical Activity of high school students (N=74)

Statistics	Duration of time (sec)
Mean	1586
Median	1337
SD	628
Min.	1106
Max.	4680
25^{th} Percentiles	1200
75^{th} Percentile	1729

3.1 Description on statistical analysis of physical activity
It has been analyzed in table 1, the average time spent for physical activity by 12 to 14 years students of Chovva high school was 1586 seconds, that means 26 minutes, 25.5 seconds. It also seen that minimum time spent in physical activity was 1106 seconds, however it indicates,18 minutes and 25.7 seconds and maximum time spent was 4680 seconds,ie,78 minutes spent for physical activity. Moreover, their 25 percentiles was 1200 seconds, i.e 20 minutes, and 75 percentile was1729 seconds, i.e 28 minutes. So table 1, also revealed that from the sample, 75% of students performed physical activity per day was only 28 minutes, this interpret that physical activity level of selected sample is very poor. As recommended by WHO, 12-14 years of students must be active minimum of 60 minutes per day in order to maintain good health.

Table 2: Descriptive Analysis on Screen Time of high School Students (N=74)

Statistics	Duration of time (sec.)
Mean	4330
Median	4243
SD	565
Min.	2614
Max	5871
25^{th} Percentiles	4018
75^{th} Percentile	4607

3.2 Description on statistical analysis of Screen Time
From the table 2 shows that, the average time spent on screen by the students of Chovva high school was 4330 seconds, that means 1 hour 12 minutes and 10.3 seconds. It also seen that minimum time spent on screen was 4330 seconds, ie, 43 minutes and 34.3 seconds and whereas maximum time spent on screen was 5871 seconds, which means 1 hour 37 minutes and 51.43 seconds and at the same time their 25 percentiles was 4018 secconds,ie,66.96425 minutes (1 Hr. 6 minutes) and 75 percentiles was 4607 seconds,ie.76 seconds(1 Hr.16 minutes).From the above table 2 tell us about the quite alarming situation of adolescents boys of Chovva high school, because 75% of boys are constantly using screens daily minimum of 1 Hr. 16 minutes. According to American Pediatrics tell us adolescents should be restricted weekly not more than 1 hour, so this result is an eye opener for entire society

So it has been interpret that 12 to 14 years students from Chovva high school was spent minimum 43 min.34.3 seconds for screen and maximum of 1hour 37 min, 51.43 seconds.

Table 3: Descriptive Analysis on Calorie Intake of high School Students (N =74)

Statistics	Calories
Mean	2131
Median	2142
SD	111
Min.	1931
Max	2351
25th Percentiles	2037
75th Percentile	2217

3.3 Description on statistical analysis of Calorie Intake

Similarly in table 3 shows that, Calorie intake of 12 to 14 years students from Chovva high school was being presented here. There were 74 subjects from high school, the average calorie intake was 2131 cal, Whereas, the median was 2142 cal and the standard deviation was 111 cal, minimum calorie intake of the high school students was 1931 cal. and the maximum was 2351cal, at the same time their 25 percentiles was 2037 cal, and 75 percentiles was 4607 cal. From the table 3 also tell us the importance of diet in our daily life, especially adolescents boys, because this study reveals that the participants were (all most all) met the recommended daily allowance of nutrients according to their age (RDA), irrespective of healthy or unhealthy food. Because if it is unhealthy it will give adverse effect on health, but at the same time if it is healthy food it is quite desirable.

So the above mentioned result was interpreted,12 to 14 years of students from high school,the minimum calorie intake was 1931 cal and the maximum was 2351 cal.

Table 4: Correlation analysis for physical Activity, Calorie intake and Screen time of high School students (N=74)

Spearman's Correlation				
		Physical Activity	**Energy in Calories**	**Screen Time**
Physical Activity	Correlation Coefficient	1.000	0.011	---_ 0.020
	Sig.(2-tailed)		0.924	0.867
Calorie Intake	Correlation Coefficient	.011	1.00	0.253*
	Sig.(2-tailed)	0.924		0.030

3.4 Description of Correlation analysis for Physical Activity, Calorie intake and Screening time in high school students

From table, 4, shows that there is no correlation between physical activity, calorie intake and screen time. There is no significant coefficient correlation between physical activity, screen time. But screen time and calorie intake, there is a correlation. From these results describe that there is slight coefficient correlation between screen time and calorie intake, which indicate a positive relationship between screen time and calorie intake with 0.05 level of significance.

This research observed whether the possible correlation between three variables namely physical activity, calorie intake and screen time of grade seven, eight and nine, high school students. But the result shows that there is no correlation among the variables except of screen and calorie intake.

4. Discussion

In this research a cause and effect association among PA and screen time cannot be determined. For this reason, interpreting the result that highlighted a significant negative relationship between physical activity and screen time. The current result for school student is reliable with earlier study, in which it was exposed that screen time was more than compare to PA levels in school children. While the suggestions create in the current examination was slightly stronger, the result is difficult to interpret from a student's perspective only. This finding between PA and screen time of students cannot be dispersed; the additional investigation is necessary to counter the convincing indication described in earlier studies that PA and quite performance are dissimilar and subsequently do not dislocate one another. Result provide provision to the argument that young calorie intake and PA are unconnected and may not be second sides of the similar coin. Restriction of the existing study comprise the cross-sectional investigation. The present study result is an eye opener for entire adolescents. Because the negative correlation between physical activity and screen time was created a quite alarming situation among the adolescents. The present study tell us more about their physical activity duration, screen time duration and calorie intake among the participants and its correlation. The study participants average physical activity time was 26 minutes, which means it is very far away from the required level of physical activity. According to World Health Organization, Upto 17 years children must do minimum 60 minutes physical activity per day to stay active, but very unfortunately our present study shows that our children were very far behind from the required level. Moreover, the very alarming thing is, they were more addicted for screen devices. Now a days everyone's having minimum one Mobile phone, that is more than enough for our childrens. The main reason for inactivity was excessive usage of screening devices. So the school authority or state education board must and should take the preventive action to overcome this situation, especially in school children. The authority must and should organize more and more day to day activities, competitions, seminars, nutrition programs in association with expert in the field of physical education, other sports organizations and sports council.

The main asset of this research is the severe valuation of school students PA behavior. On calorie intake, the researcher examined different screen time behaviors as a grouping marker for fitness risk. An earlier study highlighted how exploratory screen viewing seems to be a deceiving marker of calorie intake in School. Thus, the current study went outside the occurrence of screen viewing in an attempt to understand this complex behavior.

5. Summary

The purpose of this study is to determine current levels of physical activity, calorie intake and screen time of high school students from Kannur City. In addition, it determines, if any correlation exists among the variables. Moreover, this study provided some new knowledge for decreasing sedentary behaviors among the children's and increasing levels of physical activity and balance diet too.

The study involved 74 students and the methodology employed by the researcher is described in chapter III. The data analysis and its interpretation presented in chapter IV. However, this study was to determine current levels of physical activity, calorie intake and screen time of Chovva high school students from Kannur City, there are three different Self-reported data sheet was being used, namely self-reported physical activity sheet, Meal report sheet and self –reported screen time sheet was used as a tool for the data collection, and the data was converted into numerically and descriptive statistics was applied to analyze the data. It has been analyzed that, average time spent at physical activity by 12 to 14 years students from Chovva high school was 1586 Sec., that means 26 minutes, 25.5 Sec. It also seen that minimum time spent at physical activity was 1106 seconds,i.e,18 minutes,25.7 seconds and the maximum was 4680 Sec. It means 78 minutes spent for physical activity. Whereas, the average calorie intake by the students of high school was 2131 Cal. and at the same time the minimum calorie intake by the students was 1931 Cal. and the maximum was 2351 Cal. Similarly, the average time spent on screen was 4330 Sec.i.e,1 hour,12 minutes,10.3 Sec. It also seen that minimum time spent on screen was 2614 Sec. It means that,43 minutes,34.3 Sec. and the maximum was 5871 Sec.,i.e., 1 hour,37 minutes,51.43 Sec. The above result shows that screen time is greater than physical activity, it's not a good sign for adolescents, whereas low calorie intake also effect the health as well, so it's an eye opening result, hence they have to wake up and get more active in physically rather than addicted screen along with balanced diet.

The research available to develop well-informed physical activity, calorie intake and screen time guidelines for children and youth is lacking. Greater consideration needs to be given to the minimal and optimal volume of physical activity, the appropriate intensity of physical activity, and the necessity of accumulating physical activity in bouts. Greater consideration also needs to be given to the effects of sedentary time, which includes screen time and incidental movement, on the health of children and youth. Consequently, the research outlined in this study aims to provide evidence that will better inform public health recommendations for physical activity, calorie intake and screen time.

6. Conclusion

This investigation outspreads the debate about the relationship between school students physical activity, calorie intake and screen time. Results suggests that cooperatively the variables of physical activity and screen time have slight or no effect in the prediction. The result of this study suggested that screen time is significantly and negatively associate with PA in high school students.it seems to be quite alarming. There is correlation between calorie intake and screen time. So in light of the present study it is concluded that if there is a proper planning, guidance, motivation, encouragement and awareness program will bring the change in decreasing screen time and increasing physical activity along with taking healthy food.

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