

**LEVELS AND CORRELATES OF PHYSICAL
ACTIVITY AMONG HIGH SCHOOL STUDENTS:
A CROSS SECTIONAL STUDY IN KOTTAYAM
DISTRICT, KERALA, INDIA**

MINU ABRAHAM

**Dissertation submitted in partial fulfillment of the
requirement for the award of the degree of
Master of Public Health**



**ACHUTHA MENON CENTRE FOR HEALTH SCIENCE STUDIES
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES &
TECHNOLOGY, TRIVANDRUM**

Thiruvananthapuram, Kerala. India - 695011

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CERTIFICATE

Certified that the dissertation entitled “**Levels and correlates of physical activity among high school students: A cross sectional study in Kottayam district, Kerala, India**” is a bonafide record of original research work undertaken by Ms. Minu Abraham, in partial fulfillment of the requirements for the award of the degree of “Master of Public Health” under my guidance and supervision.

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October, 2015

DECLARATION

I declare that this dissertation is the result of my original field research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged and referenced in the text.

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Glossary of abbreviations

PA	Physical activity
NCDs	NonCommunicable Diseases
WHO	World Health Organization
CDC	Centers for Disease Control and Prevention
DALYs	Disability-Adjusted Life Years
MVPA	Moderate to Vigorous Physical Activity
MET	Metabolic Equivalent of Task or Metabolic Equivalents
PAQ - C	Physical Activity Questionnaire for Children
PAQ - A	Physical Activity Questionnaire for Adolescents
YRBSS	Youth Risk Behavior Surveillance System
IPAQ	International Physical Activity Questionnaire
GPAQ	Global Physical Activity Questionnaire
DLW	Doubly Labeled Water
YPAQ	Youth Physical Activity Questionnaire
MRC	Medical Research Council
YPAP	Youth Physical Activity Promotion
EMPA	Ecological Model of Physical Activity
SES	Socio Economic Status
DPI	Director of Public Instruction
DEO	District Educational Officer
IBM SPSS	International Business Machines Corporation, Statistical Package for the Social Sciences
PI	Principal Investigator
IEC	Institutional Ethics Committee

ABSTRACT

Background: Physical Activity (PA) is considered as an essential factor which prevents early development of noncommunicable diseases and brings better health outcomes. There is a paucity of studies regarding PA among adolescents in India. The current study aimed to assess the levels of PA and its correlates among high school students in Kottayam district, Kerala.

Methods: High school based cross sectional survey was conducted among a sample of 378 high school students (53.7% boys, 13.94± 0.89 years) selected by cluster sampling method in Kottayam district. Physical Activity was measured using a Youth Physical Activity Questionnaire which has been validated in India. Data analysis was done using SPSS version 21. Binary logistic regression analysis was done to find out the correlates of PA.

Results: The median minutes spend on Moderate to Vigorous PA (MVPA) were 52 minutes per day. Only 42.9% (95% CI 37.9-47.8) of the students met the current PA recommendation of 60 minutes of MVPA per day. Boys (56.7%, 95% CI 51.7-61.6) met the recommended levels of PA compared to girls (26.9%, 95% CI 22.4-31.3). The binary logistic regression analysis showed that male sex (OR 3.5, 95% CI 2.2-5.5), studying in government school (OR 1.6, 95% CI 1.0-2.5), having employed father (OR 8.9, 95% CI 1.9-42.1) and presence of sports club in neighborhood were the significant factors associated with meeting recommended levels of PA.

Conclusion: More than half of the high school students particularly girls did not meet the recommended levels of PA per day. Interventions to promote PA among adolescents may have to specifically target girls and be informed of the heterogeneity in adolescent PA across social and environmental factors. Further research with objective measurements of PA as well as qualitative studies exploring the social, cultural, economic and physical environmental factors that influence PA may be required to plan appropriate PA interventions for adolescents in the district.

CHAPTER 1

INTRODUCTION

1.1 Background

Regular Physical Activity (PA) in adolescents has fundamental health benefits. Reports from World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) Atlanta, USA and 2008 American physical activity guidelines identified that regular PA in adolescents is associated with stronger evidence of improved cardiovascular and metabolic health biomarkers, improved cardio respiratory and muscular fitness, good body composition, improved bone health and decreases symptoms of depression (Centre for Disease Control and Prevention, 2015a; US Department of Health and Human Services, 2008; World Health Organization, 2010). Adolescence is one of the critical transitions in the life span which is characterized by tremendous pace in growth and habit formation (World Health Organization, 2015a). Many disease risk factors first begin to develop during adolescence. Adaptation of healthy life styles including PA protects against obesity, reduces the risk of several chronic diseases and improves the quality of life during adulthood.

Physical activity is very essential for the growth and development of children and adolescents; especially for reducing overweight and obesity which is more prevalent during adolescence. Healthy habits, which begin at an early age are carried forward in time and can depict behavior in the later stages of adult life. Researchers have found a direct link between physical inactivity and Noncommunicable diseases (NCDs) including cancer. Developing

countries including India witness a major proportion of death occurring due to NCDs. Thus, increasing levels of PA among adolescents is considered as a public health priority.

Physical inactivity has become a global pandemic. Studies have shown that level of PA tends to decrease with increase in age, which is called as 'tracking' of PA. As adolescents move into adulthood their PA levels continue to decline (Galan et al., 2014). Physical activity in adolescents is associated with multiple factors pertaining to different analytical levels- the individual level, the social level, the environmental level including both social and physical and the policy level. A better understanding of all these factors is an essential prerequisite for planning and implementing intervention programs targeting PA in adolescents.

CHAPTER - 2

REVIEW OF LITERATURE

This chapter presents review of literature on PA among adolescents and its correlates, the measurements used, the conceptual framework of the study and conclude with a summary of the rationale and objectives of the study.

Physical activity is a part of healthy life style behavior. Regular PA provides numerous health related and other benefits to healthy people, people at risk for developing chronic diseases as well as people with current chronic conditions or disabilities (US Department of Health and Human Services, 2008). Physical activity guidelines reports from WHO, USA and Canada have identified the key role of PA in providing long term health benefits in five areas. Regular and adequate levels of PA reduces premature all cause mortality and chronic diseases, improves bone and functional health, improves muscular and cardio respiratory fitness, reduce the risk of falls and hip or vertebral fractures and are fundamental to energy balance and weight control (US Department of Health and Human Services, 2008; Warburton et al., 2010; World Health Organization, 2010). Coronary heart diseases, hypertension, stroke, diabetes, breast and colon cancer, osteoporosis and depression are the major chronic diseases which have a dose response relationship with PA (Warburton et al., 2010).

The link of PA is not only to good health but also associated with high economic cost in terms of sickness, absence from work and health care. Most of the studies on PA and health

expenditure have been conducted in high income countries where it has been estimated that lack of adequate PA is associated with considerable financial burden (Oldridge, 2008).

The recognition and promotion of the benefits of PA to human health is evident from historical records; from the earliest evidence of promotion of organized exercise for health in ancient China approximately in 2500 BC by a Chinese surgeon called Hua T'o and later by Hippocrates (460BC – 370BC), a famous Greek physician who first advised that exercise - though not too much of it is good for health (Mac Auley, 1994). The modern history of PA could be traced from the findings of Professor Jeremy Morris (UK) and his colleagues in mid-20th century that deaths from coronary heart diseases was lower among men who engaged in more physically active occupations (Paffenbarger, 2001). This evidence is believed to have triggered a battery of further research which led to the recognition of the importance of PA as a health determinant and the growth of epidemiology of PA globally.

2.1 Definition of physical activity

Physical activity has been defined by WHO, CDC Atlanta USA, European Food Information Council and Canadian physical activity guidelines in various ways. The most commonly used definition of PA as applied in the field of public health is by WHO, which defines PA as 'any bodily movement produced by skeletal muscles that requires energy expenditure above the basal level. Physical activity includes exercise as well as other activities which involve bodily movement and are done as part of playing, working, active transportation, house chores and recreational activities' (World Health Organization, 2015d).

A shift of focus from exercise to PA occurred as a result of large prospective studies published in the late 1980s and early 1990s which identified the protective nature of PA in

health (Bull et al., 2004). Along with the rising burden of NCDs, results from the 2002 World health report about PA as a major risk factor for NCDs and additional evidences of health benefits of PA from the report of Surgeon General from CDC Atlanta, USA together resulted in prioritizing PA as a major goal by WHO and development recommendations for PA for children, adults and old age people in 2010 (US Department of Health and Human Services, 1996; World Health Organization, 2002, 2010).

2.2 Measures of physical activity and classification

Self reported physical activities are measured in terms of frequency, duration, intensity, type of activity and domains where the activity is performed. Frequency of PA denotes how often PA is undertaken within a defined time frame, the recall period is either past week or a usual week. Duration of PA is usually expressed as total time spent on activities within a defined time period, either in hours or in minutes (Bauman et al., 2006). Intensity and energy expenditure of PA is usually expressed in a physiological measure called Metabolic Equivalent of Task or simply Metabolic Equivalents (METs). The METs is the ratio of a person's working metabolic rate during a specific PA to a resting metabolic rate. The WHO's definition of MET is that 'one MET is the energy cost of sitting quietly and is equivalent to a caloric consumption of one kilocalorie per kilogram per hour or equal to the oxygen cost of sitting quietly and is equivalent to 3.5 milliliter per kilogram per minute' (World Health Organization, 2015e).

Initially MET concept was used in epidemiological surveys to measure PA by asking the respondents about the amount of time spent on specific PA. Later on in 1993, the Compendium of physical activities was developed (Ainsworth et al., 1993) to standardize the

assignment of MET intensities in PA questionnaires and to facilitate the coding of physical activities obtained from PA records, logs, and surveys which promote comparison of coded PA intensity levels across observational studies. The updated version of the Compendium has published in 2000 with two additional items - volunteer and religious activities and it extended the number of specific activities from 477 to 605. It also provides an updated MET intensity levels for selected activities (Ainsworth et al., 2000). In 2008, Compendium of energy expenditures for youth has published. It includes 200 activities and its MET levels which are commonly performed by the youth. But 65 percent of the activity specific MET levels in the youth compendium are derived from adult compendium and are not measured in youth (Ridley et al., 2008). Type of PA is described under classification of PA. Domains of PA include the setting where the activity is performed. It can be occupation, transportation, domestic work, sedentary and leisure time activities (Bauman et al., 2006).

2.2.1 Classification of physical activity

Physical activity has been classified in different ways. World Health Organization has classified PA based on the level of intensity as light, moderate and vigorous intensity PA. Light intensity PA requires less effort and results in an energy cost of less than three METs. Moderate intensity PA accelerates heart rate there by needs moderate amount of effort and the energy cost is three to six METs. Vigorous intensity PA is approximately greater than six METs and it requires large amount of effort which causes rapid breathing and increase in heart rate (World Health Organization, 2015e).

The CDC, Atlanta USA has considered type, purpose and intensity of PA as its basis for classification. Based on type, PA is mechanical or metabolic. Mechanical classification

includes dynamic, isometric and isotonic. In dynamic PA, muscle contractions produce movement of the limb. Isometric PA result in same length movement of the muscle while isotonic changes the muscle length - either shortens or lengthens. Metabolic classification involves aerobic and anaerobic. Based on the purpose, PA is classified as occupational, household, leisure time and transportation. Intensity classification is similar to the WHO's PA classification as light, moderate and vigorous PA (US Department of Health and Human Services, 1996). The 2008 physical activity guidelines for Americans have four categories of aerobic PA for adults. They are inactive - no activity beyond baseline, low - activity beyond baseline but fewer than 150 minutes a week, medium - 150 minutes to 300 minutes a week and high - more than 300 minutes a week (US Department of Health and Human Services, 2008).

Even though there are different classifications for PA, most of the fact sheets from WHO, CDC, Atlanta USA had used the terms 'physically active', 'physically inactive' and 'insufficient PA' to denote the degrees of PA. Physically active person is the one who meets the age appropriate recommendations for PA. Physically inactive person is either not doing PA or doing very little PA at work, at home, for transport or in discretionary time. In insufficient PA, person is doing some PA but less than 150 minutes of moderate intensity PA or 60 minutes of vigorous-intensity PA in a week accumulated across work, home, transport or discretionary domains, or simply the person is doing some PA but not meeting the recommended levels of PA (Bull et al., 2004; Centre for Disease Control and Prevention, 2014). These classifications are the basis for almost all global recommendations for PA across different age groups.

2.3 Global burden of physical inactivity

Physical inactivity has been identified as the fourth leading risk factor for global mortality. Worldwide, around 6 percent of deaths in each year are occurring due to physical inactivity. About 3.2 million death and 32.1 million DALYs (representing about 2.1% of global DALYs) annually are attributable to lack of PA. About 21-25 percent of breast and colon cancers, 27 percent of diabetes and approximately 30 percent of ischemic heart disease burden were estimated to be caused by physical inactivity.

Insufficient PA was found to be 81 percent in adolescents aged 11-17 years in 2010. About 84 percent of adolescent girls and 78 percent of adolescent boys were not meeting the WHO recommended levels of 60 minutes of Moderate to Vigorous Physical Activity (MVPA) per day (World Health Organization, 2015b). A 2012 study by Lancet physical activity series working group has showed that 80.3 percent of 13-15 year old adolescents did not meet the WHO recommended levels of PA per day (Hallal et al., 2012).

2.4 Physical inactivity in developing countries

Developing countries are the major sources for NCDs. Low and middle income countries have high burden of death from NCDS, almost 80 percent (World Health Organization, 2015c). Of the deaths attributable to physical inactivity, 2.6 million are from low and middle income counties (World Heart Federation, 2011). There was a consistent correlation between poorer income and the prevalence of insufficient PA; lower the income lower the prevalence of physical inactivity (Dumith et al., 2011). Evidence from a 2003-2012 systematic review on insufficient PA has identified that developing countries have the highest prevalence of

insufficient PA and they have found urbanization as a key factor linked with lack of sufficient PA (De Moraes et al., 2013).

2.5 National burden

Physical inactivity is a leading problem in India. Studies have shown that lack of PA is attributable for 2.6 percent of coronary heart disease cases, 3.2 percent of type two diabetes cases, 4.8 percent of breast cancer cases, 4.6 percent of colon cancer cases, and 4.2 percent of all cause mortality in India (Lee et al., 2012).

The prevalence of 60 minutes of MVPA among adolescents in India is found to be ranging from 36.8 percent to 78 percent (Bachani et al., 2013; Guthold et al., 2008; Roy and Dasgupta, 2009). This variation is due to difference in the age group, school type and location of the school. Many studies done in India has shown that lower levels of PA among adolescents is associated with higher prevalence of obesity and overweight and the prevalence of overweight among adolescents varies between 5-20 percent (Aggarwal et al., 2008; Ramachandran et al., 2002; Subramanyam et al., 2003). A 2011 study among adolescents in South Gujarat has found higher prevalence of overweight and was mainly due to consumption of junk foods, increased time spent on watching television, and low levels of PA (Goyal et al., 2011).

2.6 State burden

In Kerala NCDs are creating a large disease burden. Reports from Coronary Artery Disease among Asian Indians, Kerala 2012 has found that in comparisons with national average, the prevalence of NCD risk factors is found to be 50-100 percent more in Kerala. Higher

prevalence of overweight, abdominal obesity and diabetes among Keralites is found to be strongly associated with physical inactivity (Coronary Artery Disease among Asian Indians, 2012).

Physical activity level among adolescents is found to be low in Kerala. A 2014 school based study among higher secondary school students in the age group of 15-18 years showed that only 35.8 percent of the students met the WHO recommended levels of 60 minute of MVPA per day on more than three days in a week (Thattil, 2014). In 2012, the prevalence of obesity in students between classes one to ten was 7.5 percent and that of overweight was 21.9 percent (Cherian et al., 2012). But the corresponding figures among school children in 2005 was only 1.7 percent and 4.8 percent respectively (Raj et al., 2009), which clearly indicates a growing epidemics of obesity and overweight in Kerala. Since physical inactivity and unhealthy diet are the main drivers of the rising burden of overweight and obesity, management of overweight and obesity in the state requires targeted interventions to promote healthy diet and regular PA.

2.7 Global recommendations for physical activity

The WHO in 2010 developed global recommendations for PA for three different age groups- 5-17 years, 18-64 years and 65 years old and above. The maximum recommended PA duration is for adolescents followed by 150 minutes of moderate intensity or 75 minutes of vigorous intensity PA over a week for adults of 18-64 years and 65 years and above. Countries like USA and Canada have evolved further recommendations of PA to include more subsections of the populations like children, women (during pregnancy and post partum), adults with disabilities, adults with chronic medical conditions such as type two

diabetes, osteoarthritis and cancer survivors (Tremblay et al., 2011; US Department of Health and Human Services, 2008).

2.7.1 Physical activity recommendations for adolescents

There is a wealth of data and international consensus about adults PA and recommended levels for health benefits. Recommendations for adolescence have evolved over a period of years. Evidence was lacking about the health benefits of adolescent PA and disagreement in the field existed regarding the amount and types of PA that should be recommended for young people. The UK expert consensus conference held in 1997 made a recommendation that all young people of 5-18 years should participate in PA of at least moderate intensity for one hour per day (Cavill et al., 2001).

In the decade following led to the development of new recommendations for adolescent PA from WHO based on the realization that there is a limited existence of national guidelines for PA in low and middle income countries which makes difficulty in national or international comparison of data. And also the need for developing global recommendations that address the links between the frequency, duration, intensity, type and total amount of PA which will helps to prevent NCDs. According to this recommendations (World Health Organization, 2010), children and young people aged between 5-17 years should accumulate,

- i. At least 60 minutes of MVPA daily
- ii. Physical activity of amounts greater than 60 minutes daily will provide additional health benefits
- iii. Most of daily PA should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least three times per week

2.8 Measurement of physical activity

Tools used for measuring PA are given below.

2.8.1 Tools used in adults

Direct or objective and indirect or subjective methods have been employed to study PA among adults. Commonly used indirect methods are self reported questionnaires, time use diaries and log books. Direct measure includes use of devices like accelerometers, pedometers, doubly labeled water (DLW), heart rate monitors and multiple-sensor devices.

1. Indirect methods

Questionnaires

Earliest questionnaires for PA are usually country specific with no standardized approaches that makes difficulty in international comparison and global surveillance. This motivates the WHO to appoint an international consensus group in 1998 with an objective of developing a self-reported measure of PA suitable for assessing PA across countries. They had further developed an International Physical Activity Questionnaire (IPAQ) in 2002 (Craig et al., 2003). It is administered by telephone interview or self-administration in adults of 15-65 years old. IPAQ has a long (31-item) and short (7-item) version with a recall period of seven days and covers five domains of PA – leisure time, work, transportation, household tasks and sedentary behavior (Bauman et al., 2009). Major limitations of IPAQ includes recall bias, complexity of the long version, short version does not allow the differentiation of data from the different domains there by it tends to overestimate the levels of PA, and has less applicability in rural population (Armstrong and Bull, 2006; Lee et al., 2011).

Later on in 2006, WHO has developed another PA questionnaire called Global Physical Activity Questionnaire (GPAQ) by considering all the limitations of IPAQ and to provide a tool especially relevant to developing countries where patterns of energy expenditure differ from developed countries. The GPAQ is an interviewer administered questionnaire used globally to measure the MVPA among adults between 15-65 years of age. The recall period is seven days. In distinction to IPAQ, it covers three domains of PA - activity at work, travel to and from places and recreational activities with 16 questions (Armstrong and Bull, 2006). It is also prone to recall bias and is not a valid tool to measure time spent on sedentary behavior (Cleland et al., 2014).

Diaries and log book

Time use diaries are comprehensive measures providing detailed information about each activity including its duration. Similar to time use diaries, PA log books are the record of checklist of specific activities that are completed during specific time interval or at the end of the day. Though the major strength of these tools are that they are free from recall bias, it needs an additional burden of timely maintenance and requires internal motivation or adherence to complete (Ainsworth et al., 2015).

2. Direct measures

Accelerometer

Physical activity can also be measured by using devices. Accelerometer measures PA by detecting body movements (Warren et al., 2010). It is more accurate and appropriate for all age groups. The major disadvantages are it is expensive, involves complex analysis, it cannot

measure water based activities and cannot give activity specific measurements (Ainsworth et al., 2015; Warren et al., 2010).

Pedometers

It calculates PA by measuring steps on a single axis. Even though it is inexpensive and easy to use, it cannot measure the rate or intensity of activity and is only suitable to measure walking (Ainsworth et al., 2015; Warren et al., 2010).

Heart rate monitors and multi sensors

For monitoring heart rate and energy expenditure in MVPA, heart rate monitors are used. Multi sensor system measures multiple parameters such as heart rate, galvanic skin response, respiration, and skin and core temperature. Both these sensors can measure activities like swimming and other non-ambulatory activities where accelerometer cannot be used. But these are costly, prolonged wearing may cause discomfort and drugs such as anti hypertensive can alter its readings (Ainsworth et al., 2015).

Doubly Labeled Water (DLW)

The DLW is the gold standard device for validating other instruments design to measure energy expenditure. It is a non invasive procedure to assess free-living energy expenditure by ingestion of a quantity of water labeled with a known concentration of naturally occurring stable isotopes of hydrogen and oxygen. As energy is expended in the body, carbon dioxide and water are produced, and the differences between the isotope elimination rates are used to calculate total energy expenditure. High cost of materials and expertise required to analyze the isotope concentrations are the main disadvantages (Klein et al., 1984).

2.8.2 Tools used in adolescents

Tools used for measuring PA among adolescents are similar to those used in adults including indirect tools - questionnaires, diaries, log book and direct tools - mainly accelerometer, pedometer and DLW. The questionnaire which is used globally to measure adolescent PA is IPAQ developed by the WHO. Since WHO has classified adolescence as belongs to the age group of 10-19 years (World health Organization, 2015f) and IPAQ is for 15-65 year old people, most of the studies involving adolescents in the age group of 15-19 years had used IPAQ. However, some studies involving adolescence from France, Europe and India in the age group of 12-15 years have reported that they have used modified or adapted IPAQ, however it is not clear or stated that whether the same aspect have been modified or not (Hagstromer et al., 2008; Roy and Dasgupta, 2009; Vanhelst et al., 2013).

There are many other questionnaires available to measure adolescent PA. In a systematic review on self reported physical activity instruments in adolescents from 1997-2008 has identified 20 instruments for measuring adolescent PA. These questionnaires differ from the adult PA questionnaires in terms of age group of the participant, specific domains covered such as school level activities, physical education classes and sedentary behaviors and characters under measurement like frequency, intensity, duration and type of PA. Of the 20 instruments, researchers have selected three which they found as reasonably reliable and valid. They are Physical Activity Questionnaire for Children (PAQ-C) or Physical Activity Questionnaire for Adolescents (PAQ-A), Youth Risk Behavior Surveillance System (YRBSS) and Teen health survey (Biddle et al., 2011). Table 2.8.2 depicts the tools used in adolescents.

Table 2.8.2 Tools used in adolescents

Questionnaires	Description	Dimensions covered	Strengths	Limitations
PAQ-C and PAQ-A	PAQ-C is for school aged children ages 8-14 and PAQ-A is for high school students ages 14-20.	<ul style="list-style-type: none"> i. Frequency of participation for a list of activities ii. Physical education classes iii. Activities at recess, at lunch, right after school, evenings, about last weekend, sickness and daily participation in PA (Kowalski et al., 2004). 	<ul style="list-style-type: none"> i. Cost effective ii. Time efficient iii. Easy to administer iv. Provides reliable and valid measures of PA (Bervoets et al., 2014). 	<ul style="list-style-type: none"> i. Can use only in school years not in summer or holiday period ii. Provides only a summary score without differentiating the activities as moderate or vigorous. (Kowalski et al., 2004).
YRBSS	Used to monitor health risk behavior among youth and young adults (Kann et al., 2014).	<ul style="list-style-type: none"> i. Number of physically active days ii. Physical education classes iii. Sports and sedentary behavior (Center for Disease Control and Prevention, 2015b). 	<ul style="list-style-type: none"> i. Gives a valid measure of PA ii. Provides clues on sedentary behavior. 	<ul style="list-style-type: none"> i. Doesn't provide activity specific data.
Teen health survey	Two-item instrument measuring MVPA among adolescents.	PA over the past seven days and PA during a typical or usual week (Butcher et al., 2008).	<ul style="list-style-type: none"> i. Provides complete picture of PA behavior. 	<ul style="list-style-type: none"> i. Its applicability to younger children is not yet proved (Biddle et al., 2011).

In India the commonly used questionnaire for measuring adolescent PA is Youth Physical Activity Questionnaire (YPAQ) developed by MRC (Medical Research Council) epidemiology unit, University of Cambridge, UK which has been validated in India in 2010 (Corder et al., 2010). Sports activities, leisure time activities and activities at school are the major domains covered in this questionnaire. This questionnaire provides data on PA in school as well as non school days.

2.9 Factors affecting adolescent physical activity

Many of the socio- ecological model suggested that adolescent PA is characterized by the interplay of multiple factors at multiple levels - mainly individual factors, social factors, neighborhood built environmental factors and school related factors.

2.9.1 Individual factors

Age is the most common factor associated with PA. Studies have shown that as the adolescent moves from early stage of adolescence to middle stage, their compliance with PA recommendations is consistently decreasing (Galan et al., 2014; Odunaiya et al., 2010). The time spent on MVPA is more among older girls and boys than their younger counterparts (Micklesfield et al., 2014). There is also a considerable difference in PA by sex. Many studies have shown that adolescent girls are less physically active compared to boys (Swaminathan et al., 2011; Vasickova et al., 2013). The degree of non- compliance with PA recommendation is also found to be higher among adolescent girls than adolescent boys (Galan et al., 2014). Studies have reported that girls PA is influenced by social norms and perceived barriers such as concern about safety, body-centered issues and influence of

parents and peers which decreases their activity level (Djalalinia et al., 2015; Dwyer et al., 2006; Spencer et al., 2015). Evidences from literatures found that interaction of age and gender is consistently associated with decrease in MVPA among adolescents (Swaminathan et al., 2011). Similar results of differences in PA with age and gender is also reported in developed countries (Currie and World Health Organization, 2004; Kimm et al., 2002).

Behavioral factors tend to influence PA. Studies have found that smoking, obesity and overweight in adolescents is associated with reduction in their PA levels (De Bourdeaudhuij et al., 2005; Pate et al., 1996). Sedentary behaviors among adolescents decrease their PA. Evidence from literatures shows that increased time spent on playing computer games and watching television leads to sedentary behaviors and low levels of PA (Kelishadi et al., 2007; Nelson et al., 2005). In contradiction to all this, a study carried out in Southern Brazil found that age, body mass index and time spent on sedentary behaviors which includes watching television, playing computer games were not associated with PA of both adolescent boys and girls (Fermino et al., 2010).

Individual perceptions and attitudes have a positive effect on adolescents PA. Studies have shown that adolescent boys have greater perception of self-efficacy and fewer perceived barriers that encourage them in participating PA (De Farias et al., 2012; Fermino et al., 2010). Adolescent girls perceive more barriers and have negative attitude towards PA contributing to lower levels of PA among them (De Farias et al., 2012; Yan et al., 2010). Factors such as perception of adolescents about their health status, body weight, satisfaction with life and athletic ability also influences their PA levels (Galan et al., 2014; Leggett et al., 2012).

2.9.2 Social factors

Socio Economic Status (SES) is found to be an important determinant of adolescent PA. Adolescence from lower SES found to spent less time on MVPA and more time on watching television there by having lower levels of PA (Micklesfield et al., 2014; Paudel et al., 2014). Some studies have used surrogate indicators of SES such as education and occupation of the parents and they found that uneducated and unemployed parents contributing to low levels of PA of their adolescents (Federico et al., 2009; Micklesfield et al., 2014). Societal relationships have a significant impact on adolescents PA. Higher levels of PA are associated with adolescents maintaining better relationship with family and friends (Morrissey et al., 2015). Some household factors are also associated with adolescent PA. A study from rural South Africa has shown that adolescents coming from households headed by women are less sedentary in nature (Micklesfield et al., 2014). A 2012 study among adolescents in Canada has identified that urban setting of the household increases adolescent PA (Leggett et al., 2012).

Many studies have found social support as an important factor that promotes PA of the adolescents (Cheng et al., 2014; King et al., 2008). Along with social support, presence of physically active friends, siblings and support from peers are also significant determinants of adolescents PA (Sallis et al., 2000). Parents have a key role in the development of PA behaviors of their children. Parental encouragements for PA, family cohesion and good parent to child communication promote adolescent PA (Ornelas et al., 2007). Similarly, studies done in Spain, Canada and North Eastern Brazil has also identified that physically active parents, parental modeling through good health related behavior and parental support

are directly influencing adolescent PA (De Farias et al., 2012; Galan et al., 2014; Leggett et al., 2012; Sallis et al., 2000).

Utter et al in his study found that neighborhood factors in the society, mainly socially cohesive neighborhood increases PA of adolescents (Utter et al., 2011). In adolescent boys, seeing other adolescents being physically active in neighborhood itself is associated with better PA (Lopes et al., 2014). Societal factors influencing PA is found to be different in girls. Adolescent girl's PA is mainly influenced by the environment, institutions, and the gender norms and roles existing in the society (Spencer et al., 2015).

2.9.3 Neighborhood built environmental factors

Accessibility is the main matter of concern in outdoor PA. Facilities in the neighborhood such as park, playground, swimming pool and sports club near to home increases PA levels of adolescents (Limstrand, 2008; Paudel et al., 2014). Physical activities for travel purpose is influenced by street connectivity and presence of facilities like stores, shopping centers, schools and library near the adolescent home. Neighborhood access and proximity to recreational facilities like gym, dance school and social club also influences the PA pattern of adolescents (De Farias et al., 2011). Contradictory to this, a study done in New Zealand found that there is no significant relationship between PA and neighborhood access to recreational facilities (Utter et al., 2011).

There are mixed findings about PA and perceived neighborhood safety. A study from Nigeria identified safety as an important built environmental correlates of adolescent PA especially in low income neighborhood (Oyeyemi et al., 2014). A reverse association is observed in high income countries (Maddison et al., 2009).

2.9.4 School related factors

School is an important setting for promoting PA among adolescents. Type of school such as government or private influences adolescent PA. Studies from developing countries shows that students from the public schools are meeting the recommended levels of PA compared to students from the private schools (Dambros et al., 2011; Tayyem et al., 2014). Literatures from developed countries show a reverse as well as no association of PA with school type (Galan et al., 2014; Hammerschmidt et al., 2011). School policies related to PA can determine student's PA level. Higher degree of non compliance with PA recommendations is due to lower levels of implementation of school policies related to PA (Galan et al., 2014). Physical education classes in schools have great impact on PA. Adolescent's time spent on MVPA at school is associated with their enrolment in physical education classes and the school policies to provide physical education classes (Hobin et al., 2012). In contradiction to this a study in New Zealand has shown that physical education class attendance has no role in determining adolescent PA (Utter et al., 2011). Facilities available at school also affect adolescents PA. Playground, extracurricular sports activities at school, having an alternative room for PA and availability of sports equipments within the school environment increases the PA in adolescents (Maddison et al., 2009; Paudel et al., 2014).

2.10 Conceptual models of physical activity

There are a number of ecological models highlighting the multi level correlates of health behavior in public health. But conceptual models focusing on PA are less. The major PA conceptual models include environmental and policy intervention model, Youth Physical Activity Promotion (YPAP) and Ecological Model of Physical Activity (EMPA).

Environmental and policy intervention model is adapted from work of the New South Wales (Australia) PA Task Force in 1997. The three components in this model are advocacy, agencies and policies. But this model excludes the individual level factors that also influence PA (Sallis et al., 1998). The YPAP model is developed by Welk in 1999 for guiding PA promotion programs. It includes personal, social and environmental influences of children's PA, but less focus on policy or school level factors. The EMPA is based on a structural model of environment developed by Wachs in 1992. It has several components - physical ecology, dimensions in the macro, exo, meso and micro system, biological and psychological factors which promotes PA participation. It is a very useful model for identifying the ecological determinants and correlates of PA (Spence and Lee, 2003). In my study, I will be using a modified EMPA.

2.11 Rationale of the study

Kerala is the one state in India that has undergone the later phases of epidemiological and demographic transition with the consequence of being faced with growing burden of NCDs including cardiovascular diseases, diabetes and cancer. Life style related risk factors like physical inactivity, unhealthy diet and smoking are common driving factors underlying the NCDs. Childhood and adolescent obesity is considered as one critical area where public health interventions and research are likely to help in controlling the rising NCD burden in the state. Physical inactivity is a well established modifiable factor that promotes health and prevents obesity in adolescents. Participation of adolescents in PA is influenced by multiple factors at different levels; the limitation being that most studies related to the topic are from the high income countries. There are very few studies that have looked into the issue among adolescents in the country including Kerala. An understanding of the levels and correlates of

PA among adolescents is crucial in preventing the rise of obesity among them and the future burden of NCDs in the state.

The results of the study could be useful to develop and implement policies related to PA especially in schools and community.

2.12 Research question

What is the level of physical activity among high school students in the age group of 12-15 years in Kottayam district?

2.13 Objectives of the study

Primary objective

- To assess the levels of physical activity among high schools students in Kottayam district, Kerala.

Secondary objective

- To study the correlates of physical activity among high schools students in Kottayam district, Kerala.

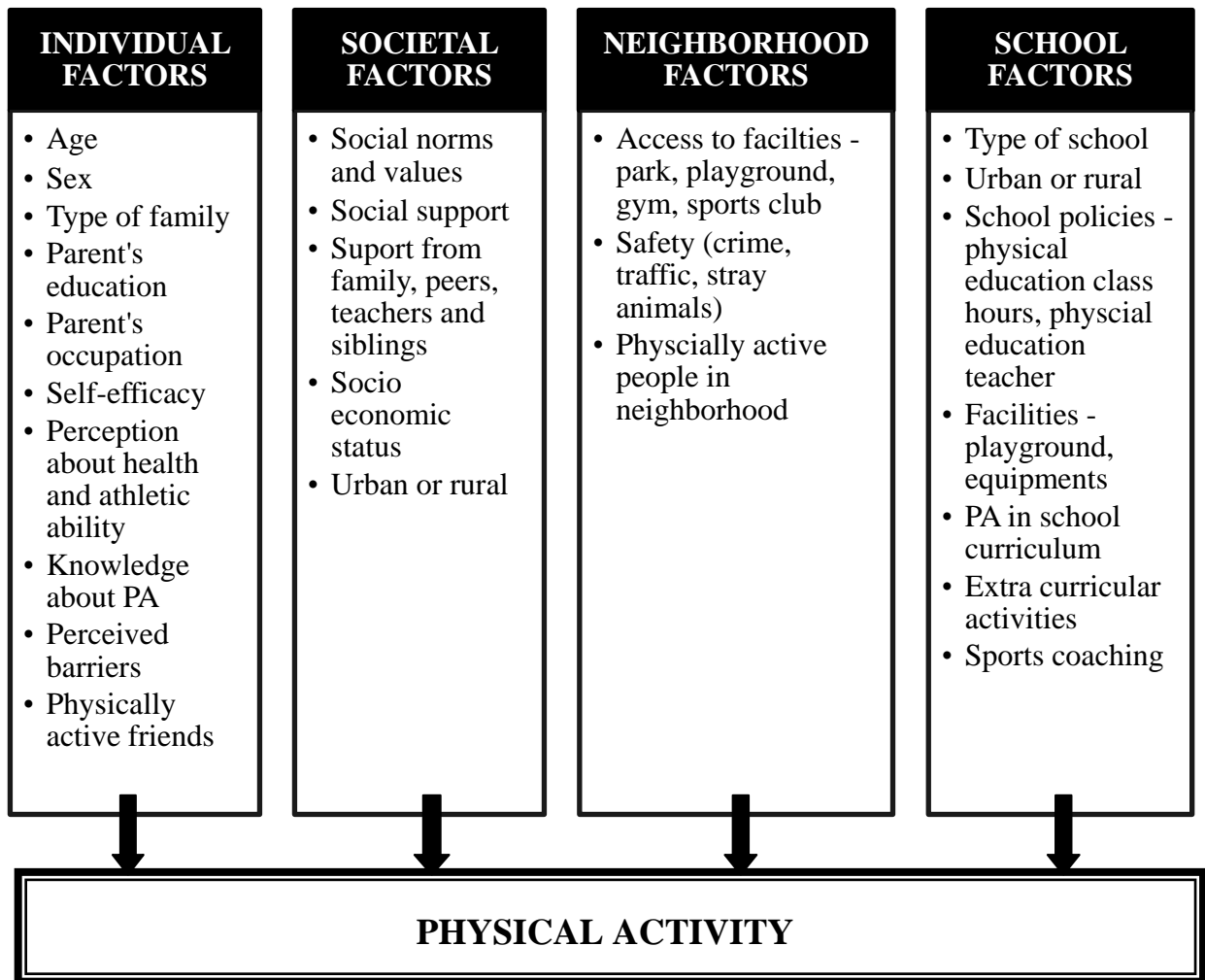
CHAPTER -3

METHODOLOGY

This chapter briefly describes the methodology used to undertake the study.

3.1 Conceptual framework

Fig. 3.1 Conceptual framework for correlates of PA



This conceptual framework was used to describe the correlates of PA among high school students. It is modified from the EMPA framework (Spence and Lee 2003). The questionnaire for the cross sectional survey was based on this modified framework.

3.2 Study design

The study was a school based cross - sectional survey.

3.3 Study setting

Kottayam district has four educational districts¹ - Kottayam, Kaduthuruthy, Kanjirappally and Pala. Out of these four, one educational district was randomly selected for the study. Study setting was government and private aided co-educational high schools in the selected educational district, Kottayam. The selected educational district consists of schools from five block panchayaths.

3.4 Study population

Study population consists of high school students studying in the classes of eight, nine and ten in selected government and private aided co-educational schools in one randomly selected educational district of Kottayam district.

¹ For administrative convenience and efficiency each revenue district is divided into educational districts and further into educational sub-districts

3.5 Sample size

Sample size was estimated by Open epi version 3.03. According to a study done in five districts of India in 2011, the prevalence of 60 minutes of MVPA among adolescents in the age group of 12-15 years was ranging from 42-43 percent (Bachani et al 2013). Taking 42 percent as the anticipated prevalence of MVPA among adolescents, with 95 percent confidence interval, precision of 7 percent, sample size came to 191. As it was a cluster sampling, a design effect of 1.5 was used to calculate the sample size which came to 287. Considering 20 percent non-response rate and rounding it up, the study sample size was fixed as 300.

3.6 Criteria

Before proceeding to the selection of the study participants, following criteria was set forth.

Inclusion

- i. High school children between the ages of 12-15 years in the selected government and private aided co-educational high school divisions
- ii. Children whose parents consented to participate in the study
- iii. Children who give their assent to participate in the study

Exclusion

- i. Children who were severely sick or absent on the day of data collection

3.7 Sample selection procedure

Samples were selected using multistage cluster sampling method. In the first stage of the selection procedure, one educational district was randomly selected using lottery method from the four educational districts in Kottayam. The selected educational district consists of 67 high schools; of which 15 are government, 47 are private aided and five are private unaided schools. Five private unaided schools had to be excluded from the sample selection process since permission to conduct the study was denied by the school authorities. During the second stage of sampling selection, four government and three private aided schools were randomly selected using lottery method, since many of the government high schools have single class division. In the third stage one high school class from each school were selected randomly. In the fourth stage of sampling selection, two high school divisions (each class division as a cluster) from the selected class were randomly selected.

But in the condition of non-availability of expected number of clusters in any school (if only one class division is present), it was planned to take one additional cluster of the same class from the adjacent school. There were 12 clusters - 6 from government schools and 6 from private aided schools. The mean cluster size was 31.5. The study was conducted after obtaining the official permission from the Director of Public Instruction (DPI), Trivandrum and the District Educational Officer (DEO) of the selected educational district. The DEO have informed heads of the selected schools regarding the survey in a meeting held in DEO office on June 2015. The copies of permission letter from both DPI and DEO were submitted to all the selected school authorities.

The survey was carried out among 418 high school students in the seven co educational schools. Out of 418 students, 378 have returned the signed consent as well as assent form (Non response rate=9.5 percent).

The summary of the final sample recruitment process are depicted in Table 3.7

Table 3.7 Summary of the final sample recruitment process

Name of the school	Number of study participants	Number of non - respondents
School number 1	62	8
School number 2	75	9
School number 3	86	5
School number 4	26	2
School number 5	27	3
School number 6	47	7
School number 7	55	6
Grand total	378	40

3.8 Data collection methods and tool

Data collection was done using a self administered questionnaire for assessing the levels and correlates of PA among 12-15 year old high school students. Information on PA was collected using YPAQ developed by MRC epidemiology unit, University of Cambridge, UK which has been validated in India in 2010 (Corder et al., 2010). Four additional physical activities (body building, doing gym based exercises, using tread mill for exercise and doing animal care) were added to list of physical activities included in the YPAQ (Annexure III, item number 13,14,15 and 22). The questionnaire had six sections - general information,

family information, physical activities during the past seven days, school related information, social support and neighborhood facilities. The questionnaire was translated into local language (Malayalam) and back translated till the back translated version matched the original version. This was pretested with ten high school students who did not participate in the final survey. After making corrections, the final questionnaire was prepared.

The information sheet and the consent form for the parent or guardian were given to the children on the first day of visit to each school. The schools were again visited after a planned interval time of three to five days. The consent forms were collected by the respective class teacher and given back to the investigator on her next visit. Questionnaire was administered to those students who had a signed parent consent form as well as a signed assent form. The whole data was collected by the principle investigator herself. Survey was conducted during 15th June, 2015 - 15th August, 2015.

3.9 Data storage and data cleaning

The data were coded and entered in Microsoft Excel 2007 and statistical analysis was done using International Business Machines Corporation, Statistical Package for the Social Sciences (IBM SPSS Statistics) version 21. The hard copies of the questionnaire, consent forms of the parents and assent form of the high school children are stored in a locked chamber under my vigilance. The data file is stored in the computer with password encryption of the file. The privacy and confidentiality of subjects was further maintained by analyzing the data and reporting the results without the identifiers of the students, their respective schools and the educational district.

3.10 Data analysis and statistical methods

Analysis was done using IBM SPSS Statistics software version 21. Univariate descriptive were expressed as frequencies with their percentages. Bivariate analysis was done with levels of MVPA per day as the outcome variable. Chi square tests were used to find the association between outcome variable and predictor variables and Fischer's exact test was adopted when any of the cell in the table had value less than five. For all the tests, p-value of less than 0.05 was considered as significant. For adjustment of possible interaction and confounding factors, binary logistic regression analysis was performed to arrive at a final model. Predictor variables that had p-value less than 0.05 in bivariate analysis were considered for binary logistic regression analysis. The net bearing effect of different predictor variables was explained in terms of odds ratio (OR) with 95% of confidence interval (CI).

3.11 Study variables

The variables used in the study as follows.

3.11.1 Outcome variable

Levels of MVPA per day: Levels of MVPA assessed with YPAQ was categorized into two: Those who met the current WHO recommended level of 60 minutes of MVPA per day for adolescents and those who did not meet the recommended levels (World Health Organization, 2010).

3.11.2 Predictor variables

Initially some of the predictor variables were grouped into a number of groups. But during analysis these were regrouped since the percentages were very less in some categories. Our questionnaire included the following predictor variables.

1. **Age:** Calculated from the date, month and year of birth as reported by the respondent
2. **Sex:** Male or female as reported
3. **Type of school:** Grouped as government or private aided
4. **Class standard:** Reported by the respondents as belonging to the eighth, ninth or tenth standard
5. **Type of family:** Three categories as nuclear, joint and extended family derived from the information regarding the members in the family.
6. **Education of the parents:** Grouped into three categories as up to seven standards (1-7 class), high school (8-10 class) and higher secondary and above (11-12 class and above) based on the seven options provided in the questionnaire.
7. **Occupation of the parents:** Grouped into two categories as unemployed and employed based on the eight options provided in the questionnaire.
8. **Residence:** Rural or urban as reported
9. **Number of physically active school friends:** Grouped into three categories as none, one to two and three to four based on seven options given in the questionnaire.
10. **Physical activities in school curriculum:** Yes or no as reported.
11. **Social support:** Grouped into three categories as support from family, support from friends and support from teachers based on eight options provided in the questionnaire.

12. **Exercising people in family:** Grouped into three categories as parents, siblings and grandparents based on ten options given in the questionnaire.
13. **Barriers in participating physical activities:** As reported by the respondent. The categories included academic issues, illness, problems with dress code, restrictions from family, issues related to menstruation and lack of time.
14. **Presence of neighborhood facilities:** Yes or no as reported
15. **Exercising people in neighborhood:** Yes or no as reported
16. **Neighborhood safety:** As reported by the respondent. The categories included presence of alcoholics or drug addicts or thieves, heavy traffic, lack of foot paths, stray animals, less street lights and open drainage or garbage on the road.
17. **MET minutes:** The duration in minutes of a specific activity was multiplied with the specific MET value from the published youth compendium value (Annexure VIII) to obtain a composite measure comprising duration and intensity (MET-min).
18. **Sedentary activity:** activities with MET levels less than or equals to 1.5 (Sedentary Behavior Research Network, 2012) and included doing homework, drawing, singing, stitching, coin collection, stamp collection, listening or learning music, playing computer games or board games, reading newspaper, talking over phone or computer, watching films in theatre or television videos, aquarium care and inactive ways of commuting to school (other than walking and bicycling).
19. **Screen time:** Calculated by adding the time spent on watching films in theatre or television videos, playing computer games and working on a computer mainly outside the school.

In addition, data related to school level factors such as physical education teacher, physical education class hours per week, play equipments available at school, playground, separate room for indoor games and activities undertaking at school level were also collected.

3.12 Plan for dissemination

Study results will be submitted to the institute as part of fulfillment of Masters in Public Health course by the end of October 2015. The study results will be informed to funding agency. The findings from the study will be presented in scientific meetings like conferences and also be published in peer reviewed journals. The summary of the findings will also be shared with General education department, Government of Kerala and policy makers, including local self government institutions for developing and implementing policies related to PA especially in schools and other neighborhood settings.

3.13 Expected outcome

The study findings would add to the research knowledge regarding the levels of PA and its correlates among high school students in Kottayam district, Kerala.

3.14 Ethical considerations

Ethical clearance was obtained from Technical Advisory Committee (TAC) and Institutional Ethics Committee (IEC) of Sree Chitra Tirunal Institute for Medical Sciences and Technology (Ref No: SCT/IEC/748/JUNE-2015). Prior to data collection, the study had also obtained permission from the Department of General education, Government of Kerala. There were no direct benefits from the study to the participants, but the information provided

by the participants will be helpful for making PA policy recommendations in schools and neighborhood. There was no physical harm to any respondents participating in the study. Written informed consent (Annexure I) and assent (Annexure II) for participating in the study was taken.

Participation in the study was purely voluntary and participants had full freedom of either accepting or refusing to participate, and for withdrawing participation at any time of the study without any explanation and consequences. Data collection was done at the class room itself under the supervision of the principal investigator (PI) without the presence of teachers. The identity of each of the subjects was kept confidential by use of dummy identification numbers in place of name in the data entry sheet. All the information collected was kept under the supervision of the PI and will be destroyed after the period of three years as recommended by the Indian Council of Medical Research (Indian Council of Medical Research, 2006). No sensitive questions were asked to children.

CHAPTER 4

RESULTS

A cross sectional survey was carried out to understand the levels and correlates of PA among high school students in Kottayam district, Kerala; the results of which are presented in this chapter below. The outcome variable of the study was levels of Moderate to Vigorous Physical Activities (MVPA) among high school students per day.

This chapter consists of three sections. The first section describes the study sample in terms of the socio demographic characteristics and other correlates. The second session is on the bivariate analysis of level of MVPA and other correlates. Third session describes the binary logistic regression analysis.

4.1 Sample characteristics

The survey was carried out among 418 high school students in the seven co educational schools. Out of 418 students, 378 have returned the signed consent as well as assent form achieving a response rate of 90.4 percent. There were 40 non respondents (9.5%), of which 31 students (7.4%) did not get the parental consent and nine students (2.1%) did not give their assent to participate in the study.

The final sample therefore was 378 high school students in the age group of 12-15 years.

Section I

4.2 Background characteristics of the study participants

The study participants were students from eight to ten standards. The mean age of the participants was 13.94 years (SD=0.89). The youngest participant was 12.12 years old and the oldest 15.97 years. Most of the students belonged to 13-14 years. More than half (53.7%) were boys. Nearly 60 percent of the students were from private aided high schools. The background characteristics of the study participants are detailed in Table 4.2.

Table 4.2 Background characteristics of the study participants (N=378)

Variables	Numbers (%)
Age in completed years	
12 years	66 (17.5)
13 years	127 (33.6)
14 years	129 (34.1)
15 years	56 (14.8)
Sex	
Boys	203 (53.7)
Girls	175 (46.3)
Type of school	
Government	155 (41)
Private aided	223 (59)
Class	
Standard 8	141 (37.3)
Standard 9	121 (32)
Standard 10	116 (30.7)

4.3 Family characteristics of the study participants

More than half of the students (58.7%) were from nuclear families. There were no illiterate parents and half of the parents (50.8% of fathers and 53.4% of mothers) had completed ten years of schooling. More than half (56.6%) of the fathers were daily wages workers and

57.9 percent of the mothers were home makers. All of the students were from rural area. The family characteristics of the study participants are described in Table 4.3.

Table 4.3 Family characteristics of the study participants (N=378)

Variables	Numbers (%)
Type of family	
Nuclear	222 (58.7)
Joint	131 (34.7)
Extended	25 (6.6)
Education of father	
Up to 7 th standard	66 (17.5)
High school (8-10 class)	192 (50.8)
Higher secondary and above	120 (31.7)
Education of mother	
Up to 7 th standard	30 (7.9)
High school (8-10 class)	202 (53.4)
Higher secondary and above	146 (38.6)
Occupation of the father	
Unemployed	19 (5)
Self employed	64 (16.9)
Employed – daily wages ^a	214 (56.6)
Employed – salaried jobs ^b	81 (21.4)
Occupation of mother	
Homemakers	219 (57.9)
Self employed	11 (2.9)
Employed – daily wages	78 (20.6)
Employed – salaried jobs	70 (18.5)

^aEmployed daily wages: manual laborers and laborers in the employment guarantee scheme

^bEmployed salaried jobs: temporary government or private sector employees, working abroad

4.4 Levels of moderate to vigorous physical activity per day among study participants

The outcome variable of the study was the levels of MVPA per day. Levels of PA were measured in time spent on MVPA in minutes per day. This was based on the WHO recommended levels of at least 60 minutes of MVPA per day for 5-17 years old people (World Health Organization, 2010) which was further categorized into two; those who met the recommended levels of PA and those who did not meet the recommended levels of PA.

The median minutes spend on MVPA among the study participants was 52 minutes per day. It ranged from zero to 360 (zero because only MVPA as per WHO recommendations was considered). For boys, the median minutes of MVPA was 64 minutes per day (range= 4-360) and that of for girls was only 37 minutes per day (range= 0-279). The median MET minutes spend on MVPA was 204 MET minutes per day (range=0-1934). Levels of MVPA per day among study participants were depicted in Table 4.4.

Table 4.4 Levels of moderate to vigorous physical activity per day among study participants (N=378)

Variables	Numbers (%)	95% CI
Students who met the WHO recommended levels of physical activity per day	162 (42.9)	(37.9-47.8)
Students who did not meet the WHO recommended levels of physical activity per day	216 (57.1)	(52.1-62)

4.5 Facilitating factors in schools

All of the students reported that they have a playground in their school but they don't have a separate room for indoor games at school. Nearly 40 percent of the students had friends at

school, who were physically inactive. More than half (62.4%) of the students said that they have learned about physical activities and its importance in school curriculum. Two third (70.4%) of the students had participated in physical education class at school. Findings of the facilitating factors in schools are detailed in Table 4.5.

Table 4.5 Facilitating factors in schools (N=378)

Variables	Numbers (%)
Number of physically active friends in school	
None	144 (38.1)
One to two	151 (39.9)
Three to four	83 (22)
Learnt about physical activities in school curriculum	
Yes	236 (62.4)
No	142 (37.6)
Participation in physical education class	
Yes	266 (70.4)
No	112 (29.6)

4.6 Facilitating factors in society

Among the total, two third (66.9%) of the students had support from the society for participating physical activities and more than half (57.9%) of the students had support from their family than from friends and teachers to engage in physical activities. Though the family support was more, only 41.5 percent of the family members were doing exercises.

Only 28 percent of the students reported that they have barriers in engaging physical activities. Among the girls who had barriers in participating physical activities (n=55), 18.1 percent reported that issues related to menstruation as a reason for the same. Table 4.6 summarizes the facilitating factors in society.

Table 4.6 Facilitating factors in society

Variables	Numbers (%)
Social support (N=378)	
Yes	253 (66.9)
Persons giving support (N= 253)[#]	
Family	219 (57.9)
Friends	112 (29.6)
teachers	96 (25.4)
Exercising persons in family(N=378)	
Yes	157 (41.5)
Persons doing exercise in the family* (N=157)	
Parents	83 (22)
Siblings	106 (28)
Grand parents	10 (2.6)
Barriers in participating PA (N=378)	
Yes	106 (28)
Type of barriers (N=106)*	
Academic issues ^a	62 (16.4)
Illness	26 (6.9)
Restrictions from family	24 (6.3)
Problems with dress code	9 (2.4)

[#] Percentages would exceed 100 when added because of multiple answers

* Percentages do not add to 100 because of multiple answers

^a Academic issues: exams and tuitions

4.7 Facilitating factors in neighborhood

4.7.1 Presence of neighborhood facilities

Swimming pool (70.6%) and play ground (67.2%) were the most common reported facilities present in the neighborhood and least was the park (13%). Table 4.7.1 describes the neighborhood facilities.

Table 4.7.1 Presence of neighborhood facilities (N=378)

Variables	Numbers (%)
Park	
Yes	49 (13)
No	329 (87)
Playground	
Yes	254 (67.2)
No	124 (32.8)
Swimming pool	
Yes	267 (70.6)
No	111 (29.4)
Gym	
Yes	104 (27.5)
No	274 (72.5)
Sports club	
Yes	147 (38.9)
No	231 (61.1)
Dance school	
Yes	125 (33.1)
No	253 (66.9)

4.7.2 Neighborhood safety

More than half (52.1%) of the students reported that they did not see people in their neighborhood doing physical exercises. Nearly 30 percent of the students said that their neighborhood is unsafe for doing physical activities. Presence of stray animals (12.7%), heavy traffic (11.4%) and alcoholics, drug addicts and thieves in neighborhood (8.2%) were the major reported reasons for considering neighborhood as unsafe. Table 4.7.2 describes neighborhood safety.

Table 4.7.2 Neighborhood safety

Variables	Numbers (%)
Exercising persons in the neighborhood (N=378)	
Yes	181 (47.8)
No	197 (52.1)
Neighborhood safety (N=378)	
No	109 (28.8)
Reasons for considering neighborhood as unsafe* (N=109)	
Presence of alcoholics, drug addicts, thieves	31 (8.2)
Heavy traffic	43 (11.4)
Lack of foot paths	18 (4.8)
Stray animals (dogs, goats, cattle)	48 (12.7)
Less street lights	19 (5)
Open drainages, garbage on the road	18 (4.8)

* Percentages do not add to 100 because of multiple answers

4.8 Screen time per day among study participants

Screen time was higher among boys compared to girls. Table 4.8 depicts screen time per day among study participants.

Table 4.8 Screen time per day among study participants (N=378)

Variables	Median (range)
Screen time (minutes per day)	26 (0-274)
Boys	34 (0-274)
Girls	21 (0-116)

4.9 Sedentary activity per day among study participants

About 112 MET minutes per day were spending for doing sedentary activities. Compared to girls, boys spend more time for sedentary activities. Table 4.9 summarizes sedentary activity per day among study participants.

Table 4.9 Sedentary activity per day among study participants (N=378)

Variables	Median (range)
Total sedentary activity duration (minutes per day)	85 (0-479)
Boys	88 (0-479)
Girls	81 (4-326)
Total sedentary activity (MET-minutes per day)	112 (0-658)

4.10 Characteristics of the schools surveyed

The study was conducted among seven high schools in Kottayam district, of which four were government and three were private aided schools. All of the schools were from rural area. Out of the seven high schools, physical education teacher post was vacant in two government schools (28.6%). Majority (80%) of the physical education teachers were females. Physical education class hours were 90 minutes per week for students in the eight standard and 45 minutes per week each for students in the nine and ten standard.

All the schools had at least one indoor and outdoor play equipments at school. Though all the schools had a playground attached to the school, none of the school had a separate room for indoor games. Those schools who did not have a physical education teacher (2 out of 7 schools) were not conducting any activities such as annual sports events, inter school sports competitions, regular sports coaching class, summer or vacation sports coaching class and other extracurricular activities at school. The items of sports coaching at school given to the students differ by sex. For boys, football coaching was the most common (57.1%) followed by badminton, cricket and handball (42.9% each). Coaching for basketball, karate and volleyball was less (28.6% each) for boys. Badminton and volleyball coaching was the main sports coaching items for girls (42.9% each) followed by football, basketball, handball

(28.6% each) and karate (14.3%). Out of the seven, only one school was providing swimming coaching for boys and girls. Table 4.10 explains the characteristics of the schools surveyed.

Table 4.10 Characteristics of the schools surveyed (N=7)

Variables	Numbers (%)
Physical education teacher	
Yes	5 (71.4)
No	2 (28.6)
Physical education class hours per week	
90 minutes per week	2 (28.6)
45 minutes per week	5 (71.4)
Play equipments available at school[#]	
Football	7 (100)
Basketball	4 (57.1)
Badminton racket with shuttlecock	6 (85.7)
Chess board with pieces	7 (100)
Carom board with coins and striker	5 (71.4)
Cricket kit	6 (85.7)
Table tennis kit	1 (14.3)
Volleyball	4 (57.1)
Handball	3 (42.9)
Athletic items ^a	7 (100)
Annual sports events	
Yes	5 (71.4)
No	2 (28.6)
Inter school sports competitions	
Yes	5 (71.4)
No	2 (28.6)
Regular sports coaching class	
Yes	5 (71.4)
No	2 (28.6)
Summer or vacation sports coaching class	
Yes	5 (71.4)
No	2 (28.6)
Extracurricular activities at school^b	
Yes	5 (71.4)
No	2 (28.6)

[#] Percentages would exceed 100 when added because of multiple answers

^a Athletic items: javelin, short put and discus

^b Extracurricular activities: craft works and occasional musical instrument training

Section II

4.11 Bivariate analysis

Levels of MVPA among high school students per day was the outcome variable. Simple Chi-square analysis was performed to examine the possible association of predictor variables with outcome variable. p value less than 0.05 was considered to be significant. Fisher's exact test was considered if any of the cell frequency is less than five.

Tables 4.11.1, 4.11.2, 4.11.3 and 4.11.4 are given below for bivariate analysis to find out the association between predictor variables and outcome variables.

4.11.1 Socio demographic characteristics with levels of PA: Results of bivariate analysis

Sex of the respondent, type of school and occupation of the father were found to be significantly associated with meeting recommended levels of PA. Compared to boys, girls were less physically active and majority (73.1%) of them was not meeting the WHO recommended levels of adolescent PA per day. Students from the government schools and students whose fathers were employed are found to be meeting the recommended levels of PA compared to others.

Table 4.11.1 summarizes bivariate analysis of socio demographic characteristics with levels of PA.

Table 4.11.1 Socio demographic characteristics with levels of PA: Results of bivariate analysis (N=378)

Variables	Recommended PA level		p-value
	Meet n (%)	Did not meet n (%)	
Age in completed years			
12	25 (37.9)	41 (62.1)	0.627
13	52 (40.9)	75 (59.1)	
14	58 (45)	71 (55)	
15	27 (48.2)	29 (51.8)	
Sex			
Boys	115 (56.7)	88 (43.3)	<0.001*
Girls	47 (26.9)	128 (73.1)	
Type of school			
Government	76 (49)	79 (51)	0.043*
Private aided	86 (38.6)	137 (61.4)	
Class			
8 th standard	52 (36.9)	89 (63.1)	0.107
9 th standard	52 (43)	69 (57)	
10 th standard	58 (50)	58 (50)	
Type of family			
Nuclear	86 (38.7)	136 (61.3)	0.112
Joint	62 (47.3)	69 (52.7)	
Extended	14 (56)	11 (44)	
Education of father			
Up to 7 th standard	30 (45.5)	36 (54.5)	0.821
High school	83 (43.2)	109 (56.8)	
Higher secondary and above	49 (40.8)	71 (59.2)	
Education of mother			
Up to 7 th standard	17 (56.7)	13 (43.3)	0.281
High school	84 (41.6)	118 (58.4)	
Higher secondary and above	61 (41.8)	85 (58.2)	
Occupation of father			
Unemployed	2 (10.5)	17 (89.5)	0.035*
Self employed	28 (43.8)	36 (56.3)	
Employed – daily wages	95 (44.4)	119 (55.6)	
Employed – salaried jobs	37 (45.7)	44 (54.3)	
Occupation of mother			
Home makers	87 (39.7)	132 (60.3)	0.488
Self employed	6 (54.5)	5 (45.5)	
Employed – daily wages	36 (46.2)	42 (53.8)	
Employed – salaried jobs	33 (47.1)	37 (52.9)	

*p< 0.05

4.11.2 Facilitating factors in schools with levels of PA: Results of bivariate analysis

Facilitating factors in schools were found to be not associated with meeting recommended levels of PA per day. Table 4.11.2 depicts the facilitating factors in schools with levels of PA.

Table 4.11.2 Facilitating factors in schools with levels of PA: Results of bivariate analysis (N=378)

Variables	Recommended PA level		p-value
	Meet n (%)	Did not meet n (%)	
Number of physically active friends			
None	52 (36.1)	92 (63.9)	0.111
One to two	70 (46.4)	81 (53.6)	
Three to four	40 (48.2)	43 (51.8)	
Physical activities in school curriculum			
Yes	106 (44.9)	130 (55.1)	0.297
No	56 (39.4)	86 (60.6)	
Participation in physical education class			
Yes	113 (42.5)	153 (57.5)	0.820
No	49 (43.8)	63 (56.3)	

4.11.3 Facilitating factors in society with levels of PA: Results of bivariate analysis

Even though having social support in participating physical activities did not have a statistically significant association, support from the family is found to be significantly associated with meeting the recommended level of PA. Table 4.11.3 describes facilitating factors in society with levels of PA.

Table 4.11.3 Facilitating factors in society with levels of PA: Results of bivariate analysis (N=378)

Variables	Recommended PA level		p-value
	Meet n (%)	Did not meet n (%)	
Social support			
Yes	115 (45.5)	138 (54.5)	1.147
No	47 (37.6)	78 (62.4)	
Support from family			
Yes	104 (47.5)	115 (52.5)	0.033*
No	58 (36.5)	101 (63.5)	
Support from friends			
Yes	55 (49.1)	57 (50.9)	0.111
No	107 (40.2)	159 (59.8)	
Support from teachers			
Yes	42 (43.8)	54 (56.3)	0.838
No	120 (42.6)	162 (57.4)	
Exercising persons in the family			
Yes	70 (44.6)	87 (55.4)	0.567
No	92 (41.6)	129 (58.4)	
Barriers in participating PA			
Yes	45 (42.5)	61 (57.5)	0.921
No	117 (43)	155 (57)	

*p< 0.05

4.11.4 Facilitating factors in neighborhood with levels of PA: Results of bivariate analysis

Presence of playground and sports club in neighborhood is found to be significantly associated with meeting recommended levels of PA per day. Students who had a safe neighborhood was found to be more meeting the recommended levels of adolescent PA than students with unsafe neighborhood, though it was not statistically significant. Table 4.11.4 summarizes facilitating factors in neighborhood with levels of PA.

Table 4.11.4 Facilitating factors in neighborhood with levels of PA: Results of bivariate analysis (N=378)

Variables	Recommended PA level		p-value
	Meet n (%)	Did not meet n (%)	
Park			
Yes	16 (32.7)	33 (67.3)	0.122
No	146 (44.4)	183 (55.6)	
Playground			
Yes	120 (47.2)	134 (52.8)	0.014*
No	42 (33.9)	82 (66.1)	
Swimming pool			
Yes	115 (43.1)	152 (56.9)	0.896
No	47 (42.3)	64 (57.7)	
Gym			
Yes	50 (48.1)	54 (51.9)	0.206
No	112 (40.9)	162 (59.1)	
Sports club			
Yes	74 (50.3)	73 (49.7)	0.019*
No	88 (38.1)	143 (61.9)	
Dance school			
Yes	55 (44)	70 (56)	0.752
No	107 (42.3)	146 (57.7)	
Others in neighborhood doing exercise			
Yes	78 (43.1)	103 (56.9)	0.929
No	84 (42.6)	113 (57.4)	
Neighborhood safety			
Yes	119 (44.2)	150 (55.8)	0.394
No	43 (39.4)	66 (60.6)	

*p< 0.05

Section III

4.12 Correlates of PA among high school students: Results of binary

logistic regression analysis

For the adjustment of possible interactions and confounding factors, binary logistic regression analysis was performed to arrive at the final model. Variables with p-value less

than 0.05 in bivariate analysis were considered for binary logistic regression analysis. The outcome variable considered for this analysis was level of MVPA per day.

Table 4.12 Correlates of PA among high school students: Results of binary logistic regression of levels of PA with predictor variables

Variables	Adjusted odds ratio	95% Confidence interval	p-value
Sex			
Girl	1		
Boy	3.5	2.2-5.5	<0.001
Type of school			
Private aided	1		
Government	1.6	1.05-2.5	0.028
Occupation of father			
Unemployed	1		
Employed*	8.9	1.9-42.1	0.005
Sports club in neighborhood			
No	1		
Yes	1.7	1.08-2.6	0.020

*Employed: Self employed, daily wages and formal jobs
Other variables considered in this model and not found to be significant include support from family and playground in neighborhood

Boys were 3.5 times more likely to be meeting the WHO recommended levels of PA per day compared to girls. Students from the government schools are 1.6 times more likely to be meeting the recommended levels of PA than students from the private aided schools. Students whose fathers were employed are 8.9 times more likely to be meeting the recommended levels of PA compared to students whose fathers were unemployed. Since the proportion of unemployed fathers was only five percent, the confidence interval has showed a wide range. Students who had a sports club in their neighborhood are 1.7 times more likely to be meeting the recommended levels of PA per day than students who did not have a sports club in neighborhood.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Findings and literature

The main objective of the study was to assess the levels of physical activity (PA) among high school students in the age group 12-15 years. Less than half (42.9%, 95% CI 37.9-47.8) of the high school students are found to be meeting the WHO recommended levels of 60 minutes of Moderate to Vigorous Physical Activity (MVPA) per day.

Results of this study highlight that around three out of five (57.1%) high school students did not meet the WHO recommended levels of PA per day. Other studies from India done among adolescents using questionnaire have reported the proportion of adolescents not meeting the recommended level of PA as ranging from 22 to 58 percent (Bachani et al., 2013; Roy and Dasgupta, 2009; Swaminathan et al., 2011). These studies had defined adolescents as those between 10-19 years; therefore included older and younger adolescents and most of them were school based studies. However, studies from other developing countries show that higher percentages of their adolescents (65-78%) are not meeting the recommended levels of PA (Duan et al., 2015; Shokrvash et al., 2013). The WHO global level data on adolescent PA also found that 81 percent of adolescents were not meeting the recommended levels of PA with higher prevalence of insufficient PA in the Eastern Mediterranean region, African region and the Western Pacific region (88%, 85% and 85% respectively)(World Health Organization, 2015b).

Most of the studies from the developed countries had used objective measures of PA such as accelerometers where it was estimated that 64-79 percent of the adolescents are not meeting the recommended levels of PA (Aibar et al., 2013; Pearson et al., 2009). Consistent with this, one study from India using accelerometer also found that 69 percent of the adolescents did not meet the recommended level of PA (Coreder et al., 2010). The variation in PA level in different countries are not entirely comparable since they have included different categories of age groups of adolescents within 10-19 years and have used different measures of PA; such as objective and subjective measures.

One of the most consistent factor that was associated with the levels of PA in the current study was sex. Our study found that boys were 3.5 times more likely to be meeting the recommended levels of PA than girls. This is in consistent with majority of the studies from all over the world which has identified that boys were more physically active than girls. These studies have consistently found that boys engaged in vigorous sports significantly more than the girls and therefore had higher levels of PA and thus girls were at more risk of not meeting the recommended levels of PA (Collings et al., 2014; Corder et al., 2010; Jago et al., 2005; Li et al., 2006; Olubusola et al., 2013; Swaminathan et al., 2011). Contradictory to this, a study from India found no significant difference between sex and levels of PA (Roy and Dasgupta, 2009) which could be due to the wider age group and nature of the questionnaire used.

Significant difference in PA between girls and boys are also linked strongly to gendered social norms. Concerns about personal safety, issues related to body image, dress code and influence of parents and peers are found to be the barriers towards participating physical activities among girls (Djalalinia et al., 2015; Dwyer et al., 2006; Spencer et al., 2015). The

significant difference in PA between girls and boys in Kerala needs further exploration with quantitative and qualitative methods designed for the purpose.

In our study, type of school showed an association with levels of PA of high school students. Students from the government schools were found to be 1.6 times more likely to be meeting the recommended guidelines for adolescent PA compared to students from the private aided schools. This finding is in congruence with other studies from the developing countries. They have reported that students attending public schools were more likely to be from lower SES and more likely to actively commute to schools which increases the level of PA of public school students (Dambros et al., 2011; Tayyem et al., 2014). Studies from developed countries especially USA has shown a reverse trend. This could be due to low budget, poor infrastructure and less physical education classes in public schools compared to private schools (Hammerschmidt et al., 2011). Contradictory to this, a study from Spain among 11-18 year old adolescents found no significant association between type of school and meeting recommended levels of PA (Galan et al., 2014). These institutional level factors affecting adolescent PA are not clear which needs to be explored.

Occupation of the father was found to be a significant factor that was correlated with PA of the high school students. Students whose fathers were employed were more likely to be meeting the recommended levels of PA than students whose fathers were unemployed. This correlation may be a reflection of the SES of the family. Several studies from developing as well as developed countries have reported the similar association of SES with levels of PA and they have also found that adolescents from high SES are more likely to get more financial as well as logistic support, good access to facilities, parental cooperation and modeling which increases adolescent PA (Brockman et al., 2009; Federico et al., 2009;

Kantomaa et al., 2007; Nezhad et al., 2012). Contradictory to this, one study from India done among adolescents could not find any statistical differences in adolescent PA with SES (Swaminathan et al., 2011). Type of indicator used for SES could be a reason.

In our study, we have identified that presence of playground and sports club in adolescent's neighborhood is significantly associated with meeting recommended levels of PA. Playground in neighborhood was not significant in multivariate analysis, however due to the cross sectional nature of the study, the causality of association is not certain. It could be that adolescents who are physically active are likely to be more aware of the facilities like sports club in their neighborhood.

Other studies from Nepal, Denmark and USA have also found the similar association between presence of neighborhood facilities such as playground, park, swimming pool and sports club with levels of PA. These studies have found that being an urban resident and having high SES are associated with more access to neighborhood recreational facilities among adolescents which increases their PA (Limstrand, 2008; Niclasen et al., 2012; Paudel et al., 2014). Contradictory to this, one study from New Zealand done among 13-18 year old adolescents could not find a significant association between availability of recreational facilities in neighborhood and levels of PA (Utter et al., 2011). The current study could not find a statistically significant association of PA with other neighborhood facilities including park, gym and swimming pool which could be due to the fact that all the schools in the sample were from a predominantly rural.

Though the support from family was associated with meeting the recommended level of PA among high school students in the bivariate analysis, it was not a significant factor in

multivariate analysis. Results from other studies found that family support through co-participation, positive comments, modeling, financial and logistic support increases the level of MVPA among adolescents (Brockman et al., 2009; Olivares et al., 2015; Ornelas et al., 2007; Mendonca and De Farias, 2015).

5.2 Limitations of the study

Due to the cross-sectional nature of the data the casual inferences cannot be made. Our sample was composed of 12 to 15 years old adolescents and was from rural setting; therefore, the results may not be generalized to older or younger adolescents and urban adolescents. Being children, they would have under or over reported the data. Recall bias is also possible since the recall period was past seven days. Though objective measurements of PA with accelerometer, DLW or pedometer are considered as the gold standard methods, those could not be done due to economic and practical constraints. Our study did not collect data on SES since they were difficult to administer among younger adolescents and the sample was designed to capture the levels of PA, so it did not have sufficient numbers to do further stratified analysis by sex.

5.3 Strengths of the study

There are not many studies assessing the levels and correlates of adolescent PA in India. The survey was done using a validated tool, YPAQ - India to assess PA which has been used to study levels of PA among adolescents in globally. The data collection was done by a single investigator so inter-investigator biases were eliminated. The study was a school based one with high response rate (90.4 percent) thus representative of the high school population in the

selected district and has minimized selection bias. We have calculated the questionnaire derived MET minutes per week for adolescent PA, but which needs to be further explored and validated using standard objective measures of PA.

5.4 Conclusion

More than half of the high school students did not meet the recommended levels of adolescent PA per day. Sex, type of school, employment status of the father and sports club in neighborhood were found to be the significant predictors of meeting recommended levels of PA. School and community based interventions are needed to promote PA which may benefit the adolescents. Significant difference in the proportion of girls meeting the recommended levels of PA and the fact that girls were less likely to be physically active than boys indicate that any efforts that fails to take this sex difference into consideration will leave the girls children behind in meeting recommended levels of PA.

Further research with objective measurements of PA as well as qualitative studies exploring the social, cultural, economic and physical environmental factors that influence PA may be required to plan appropriate PA interventions for adolescents in the district.

5.5 Policy implications

- i. Findings suggest the need for policies that promote physical activities among adolescents in schools and community
- ii. Physical activity promotion efforts may need to specially focus on girls as contextual, cultural and other gendered norms may influence their PA

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**“LEVELS AND CORRELATES OF PHYSICAL ACTIVITY AMONG
HIGH SCHOOL STUDENTS: A CROSS SECTIONAL STUDY IN
KOTTAYAM DISTRICT, KERALA”**

INFORMATION SHEET

I am Minu Abraham, studying Master of Public Health in Achutha Menon Centre for Health Science Studies (AMCHSS) at the Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Thiruvananthapuram. As part of the course requirement, I am undertaking a school based study to assess the **“Levels and correlates of physical activity among high school students: A cross sectional study in Kottayam district, Kerala”**. For the study, I have designed a questionnaire for the students asking for their responses on their physical activity and certain questions related to factors influencing physical activity.

As the high school children in the age group of 12-15 years are considered minors according to the constitution, I need their parents’ permission to include them in the study. Including the child in the study will mean that the researcher would distribute a questionnaire to her or him which they would have to complete. This form is send to you in order to obtain your permission to include your child in this study. Participation in this study imposes absolutely no risk to your child and she/he will only complete a questionnaire. The study findings might not be of direct benefit for you but the information collected will be of great relevance for the community and public health policy making. The study results are intended to be used for research purposes only, and the name of your child and other personal details of your child will be kept confidential and should not be reveal to any other person.

If you have any questions about this study, you may contact me through the following details. For additional queries, you may contact the Member Secretary, Institutional Ethics Committee (IEC) of SCTIMST.

Researcher

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Signature of the researcher:

Date:

If you are willing to allow your child to participate in this study, kindly fill the form given below and sign in the space provided, return the signed form through your child as early as possible.

CONSENT FORM

I, father/ mother/ guardian of..... study in class atschool, hereby state that I have read the information provided to me regarding the study on **“Levels and correlates of physical activity among high school students: A cross sectional study in Kottayam district, Kerala”**. I understand that the participation of my child into the study is entirely based on my consent and it is completely voluntary. I realize that the study will do no harm to my child and she/he has no direct benefits from taking part in the study. Also I understand that the identity of my child and her/his personal information will be kept confidential.

I voluntarily permit my child to take part in your study. I have received a copy of the signed information sheet.

Name:

Signature:

Phone number:

Date:

Annexure –II: Assent form for the high school children (English)

Serial Number -

ASSENT FORM FOR HIGH SCHOOL CHILDREN

(WRITTEN ASSENT FORM)

My name is Minu Abraham. I am a student of Master of Public Health in Achutha Menon Centre for Health Science Studies (AMCHSS) at Thiruvananthapuram. I am going to do a study among high school students in Kottayam district, Kerala to collect some information about their physical activity. Including you in the study will mean that the researcher would distribute a questionnaire which you would have to complete.

Participation in this study imposes absolutely no risk to you; you will only complete a questionnaire. The study findings might not be of direct benefit for you but the information collected will be of great relevance for the community, public health policy making and will help to improve the health of the adolescents in the district. The study results are intended to be used for research purposes only, and the name and other personal details of you will be kept confidential and should not be reveal to any other person especially to your parents, teachers, friends / classmates. You don't have to take part in this study if you are not willing and you can withdraw your participation from this study anytime.

Are you willing to participate in this study? Yes No

Name of the participant:

Signature of the participant:

Date:

Annexure -III: Questionnaire (English)

Serial number: _____

Date: ___/0 /2015

“Levels and correlates of physical activity among high school students: A cross sectional study in Kottayam district, Kerala”

Please note:

- The information given by you will be kept confidential and should not be reveal to any other person especially to your parents, teachers, friends / classmates.
- There are no right and wrong answers – **this is not a test**
- Your truthful responses are really important for this study
- Please answer all questions as honestly and accurately as you can either in Malayalam or English or both using pen
- Circle (○) the number of appropriate answer corresponding to each questions and also fill in the blanks provided

A. General information:

A1	Serial number	
A2	Date of birth(Date) /(Month) /(Year)
A3	Sex	1. Boy 2. Girl
A4	Name of the school	
A5	Class	1. 8 th class 2. 9 th class 3. 10 th class
A6	Division	1. A 2. B 3. C 4. D 5. E

B. Family information:

B1	Who among these are the members currently living with you in your house?	<ol style="list-style-type: none"> 1. Father 2. Mother 3. Brothers 4. Sisters 5. Grandfather 6. Grandmother 7. Uncles 8. Aunts 9. Cousins 10. Others
B2	Highest educational status of the father	<ol style="list-style-type: none"> 1. Lower primary (1-4 class) 2. Upper primary (5-7 class) 3. High school (8-10 class) 4. Plus two / Pre degree (11-12 class) 5. Degree / Diploma 6. Post graduation 7. Others (specify).....
B3	Occupational status of the father (Multiple answers are possible)	<ol style="list-style-type: none"> 1. Not working 2. Own business 3. Manual labor 4. Employment guarantee scheme 5. Government sector 6. Private sector 7. Abroad (out of India) 8. Others (specify).....
B4	Highest educational status of the mother	<ol style="list-style-type: none"> 1. Lower primary (1-4 class) 2. Upper primary (5-7 class) 3. High school (8-10 class) 4. Plus two / Pre degree (11-12 class) 5. Degree / Diploma 6. Post graduation 7. Others (specify).....
B5	Occupational status of the mother (Multiple answers are possible)	<ol style="list-style-type: none"> 1. Not working 2. Own business 3. Manual labor 4. Employment guarantee scheme 5. Government sector 6. Private sector 7. Abroad (out of India) 8. Others (specify).....
B6	Where is your house situated?	<ol style="list-style-type: none"> 1. Rural / Panchayath 2. Urban / Municipality / Corporation

C. Physical activities during the past 7 days*

Following are some questions about physical activities that you might have done in the past 7 days. (*Physical activity is any bodily movement produced by skeletal muscles that requires energy spending. eg: running, dancing, swimming, physical exercise, sports activities etc*). If you choose ‘No’ for any activity in C a, then skip to next activity. If your answer is ‘Yes’, then only fill the columns of C c, C d, C e, and C f.

	C a. Type of activities	C b. Did you do this activity during the past 7 days?	MONDAY TO FRIDAY		SATURDAY TO SUNDAY	
			C c. How many times?	C d. Total minutes spent on this activity	C e. How many times?	C f. Total minutes spent on this activity
C1	Playing basketball	1. Yes 2. No				
C2	Playing volleyball	1. Yes 2. No				
C3	Playing cricket	1. Yes 2. No				
C4	Playing football	1. Yes 2. No				
C5	Playing badminton	1. Yes 2. No				
C6	Jogging	1. Yes 2. No				
C7	Running	1. Yes 2. No				
C8	Dancing	1. Yes 2. No				
C9	Skipping	1. Yes 2. No				
C10	Swimming	1. Yes 2. No				
C11	Bicycling	1. Yes 2. No				
C12	Doing karate / judo	1. Yes 2. No				
C13	Body building	1. Yes 2. No				
C14	Doing gym based exercises	1. Yes 2. No				
C15	Using tread mill for exercise	1. Yes 2. No				
C16	Household works	1. Yes 2. No				
	C16.1	Cleaning	1. Yes 2. No			
	C16.2	Washing clothes by hand	1. Yes 2. No			
C17	Playing in playground	1. Yes 2. No				
C18	Playing with pets	1. Yes 2. No				
C19	Roller- skating	1. Yes 2. No				
C20	Walking with dog	1. Yes 2. No				

	C a. Type of activities	C b. Did you do this activity during the past 7 days?	MONDAY TO FRIDAY		SATURDAY TO SUNDAY	
			C c. How many times?	C d. Total minutes spent on this activity	C e. How many times?	C f. Total minutes spent on this activity
C21	Walking for exercise	1. Yes 2. No				
C22	Doing animal care	1. Yes 2. No				
C23	Doing arts and crafts	1. Yes 2. No				
C24	Doing homework	1. Yes 2. No				
C25	Hobbies (If yes, specify)	1. Yes 2. No				
C26	Listening to music	1. Yes 2. No				
C27	Playing indoor with toys	1. Yes 2. No				
C28	Playing board games (chess, cards, caroms etc)	1. Yes 2. No				
C29	Playing games on computer / mobile	1. Yes 2. No				
C30	Playing musical instruments (If yes, specify the instrument).....	1. Yes 2. No				
C31	Reading book / news paper	1. Yes 2. No				
C32	Talking in person on phone /computer/text messaging	1. Yes 2. No				
C33	Typing on the computer	1. Yes 2. No				
C34	Watching film in a theatre	1. Yes 2. No				
C35	Watching TV / Videos	1. Yes 2. No				
C36	Others (specify)	1. Yes 2. No				

C a. <u>ACTIVITIES AT SCHOOL</u>		C b. Did you do this activity during the past five days - Monday to Friday?	Cc. How many times Monday to Friday?	C d. Total minutes spent on this activity – Monday to Friday
C37	Participating in physical Training (P.T) /drill class	1. Yes 2. No		
C38	Doing physical exercise during school Physical Training (P.T) / Drill time	1. Yes 2.No		
C39	Walking to school (to and from school = 2 times)	1. Yes 2. No		
C40	Cycling to school (to and from school = 2 times)	1. Yes 2. No		
C41	Traveling by auto rickshaw to school (to and from school = 2 times)	1. Yes 2. No		
C42	Others - Public / private bus, car, jeep, van, school bus (to and from school = 2 times)	1. Yes 2. No		

D. School related information:

D1	Do you have a play ground in your school?	1. Yes 2. No
D2	Do you have a separate room for indoor games (chess, caroms etc) in your school?	1. Yes 2. No 3. Do not know
D3	Do you have following play equipments in your school? (Multiple answers are possible)	1. Football 2. Basketball 3. Badminton racket with shuttlecock 4. Chess board with pieces 5. Carrom board with coins and striker(s) 6. Cricket kit 7. Table tennis kit 8. Others (specify).....
D4	How many close school friends do you have?	1. None 2. One 3. Two 4. Three 5. Four 6. Five or more

D5	How many of your above mentioned close friends are actively participating in physical activities? (eg: sports activities, physical exercise etc)	<ol style="list-style-type: none"> 1. None 2. One 3. Two 4. Three 5. Four 6. Five or more 7. Do not know
D6	Have you ever learnt about physical exercise anywhere in your school curriculum?	<ol style="list-style-type: none"> 1. Yes 2. No 3. Do not know

E. Social support:

E1	Do you get support for doing physical exercise from your society? (like encouragement /motivation /guidance/ etc)	<ol style="list-style-type: none"> 1. Yes 2. No
E2	If yes, from whom? (Multiple options are possible)	<ol style="list-style-type: none"> 1. Parents 2. Brothers 3. Sisters 4. Grandparents 5. Friends 6. Teachers 7. Other relatives 8. Others (specify).....
E3	Are there any factors that restrict you from participating physical activity?	<ol style="list-style-type: none"> 1. Yes 2. No
E4	If yes, which all factors? (Multiple options are possible)	<ol style="list-style-type: none"> 1. Exams 2. Tuitions 3. Dress code 4. Restrictions from the family 5. Issues related to menstruation 6. Illness 7. Others (specify).....
E5	Does anyone currently staying with you in your family undertake any forms of physical exercise?	<ol style="list-style-type: none"> 1. Yes 2. No 3. Do not know
E6	If yes, who all? (Multiple answers are possible)	<ol style="list-style-type: none"> 1. Father 2. Mother 3. Brothers 4. Sisters 5. Grandfather 6. Grandmother 7. Uncle 8. Aunt 9. Cousins 10. Others (specify).....

F. Neighborhood facilities:

F 1 Do you have following facilities in your neighborhood?		
F1.1	Park	1. Yes 2. No 3. Do not know
F1.2	Playground (includes grounds near church and temple)	1. Yes 2. No 3. Do not know
F1.3	Swimming pool (includes community ponds / streams for swimming)	1. Yes 2. No 3. Do not know
F1.4	Gym	1. Yes 2. No 3. Do not know
F1.5	Shopping centers	1. Yes 2. No 3. Do not know
F1.6	Sports club	1. Yes 2. No 3. Do not know
F1.7	Dance school	1. Yes 2. No 3. Do not know

F2	Have you seen any people in your neighborhood doing physical exercise?	1. Yes 2. No 3. Do not know
F3	Do you think that your neighborhood is safe for doing outdoor physical exercise (eg: running, swimming, cycling etc)?	1. Yes 2. No
F4	If no, why? (Multiple answers are possible)	1. Presence of alcoholics, drug addicts, thieves 2. Heavy traffic 3. Lack of foot paths 4. Stray animals (dogs, goats, cattle) 5. Less street lights 6. Open drainages, garbage on the road 7. Others (specify).....

Thank you for your cooperation!!!

Annexure- IV:

TO BE FILLED BY THE PRINCIPAL INVESTIGATOR FOR EACH SCHOOL

1	Type of school	1. Government 2. Private Aided			
2	Location of school	1. Rural 2. Urban			
3					
School policies related to physical activities					
3.1	Physical education classes	a. Class		b. Number of physical education classes per week	c. Total hours per week
		3a.1	8		
		3a.2	9		
		3a.3	10		
3.2	Physical education teacher	a. Number of post	b. Occupied	c. Type of post	d. Sex of the teacher
			1. Yes 2. No	1. Temporary 2. Permanent	1. Male 2. Female
3.3	List of play equipments available at school	1. Football 2. Basketball 3. Badminton racket with shuttlecock 4. Chess board with pieces 5. Carrom board with coins and striker(s) 6. Cricket kit 7. Table tennis kit 8. Others (specify).....			
3.4	Separate room for indoor games	1. Yes 2. No			
3.5	Activities undertaking at school level				
3.5.1	Annual sports events	1. Yes 2. No			
3.5.2	Inter school sports competitions	1. Yes 2. No			

		3.5.3	Regular sports coaching classes	a. Boys – Sports items	b. Girls – Sports items
				1. Foot ball 2. Basketball 3. Badminton 4. Cricket 5. Karate / Judo 6. Swimming 7. Others (specify)	1. Foot ball 2. Basketball 3. Badminton 4. Cricket 5. Karate / Judo 6. Swimming 7. Others (specify)
		3.5.4	School sports team	1. Foot ball 2. Basketball 3. Badminton 4. Cricket 5. Others (specify)	1. Foot ball 2. Basketball 3. Badminton 4. Cricket 5. Others (specify)
		3.5.5	Summer / vacation sports coaching classes	1. Yes 2. No	1. Yes 2. No
		3.5.6	Other regular extracurricular activities at school	1. Dance training 2. Musical instruments (specify the instruments) 3. Craft works 4. Others (specify)	1. Dance training 2. Musical instruments (specify the instruments) 3. Craft works 4. Others (specify)

Annexure -V: Informed consent (Malayalam)

ക്രമ നമ്പർ :

കോട്ടയം ജില്ലയിൽ ഉൾപ്പെടുന്ന ഹൈ സ്കൂളുകളിലെ കുട്ടികളുടെ കായിക പ്രവർത്തികളുടെ നിലയും, അനുബന്ധ ഘടകങ്ങളെയും കുറിച്ചുള്ള പഠനം

പഠന വിവരണം

ഞാൻ മിനു എബ്രഹാം, ശ്രീ ചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയിലെ അച്ചുത മേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിൽ പബ്ലിക് ഹെൽത്ത് അഥവാ പൊതുജനാരോഗ്യം എന്ന വിഷയത്തിൽ ബിരുദാനന്തര ബിരുദത്തിനു പഠിക്കുന്നു. പഠനത്തിന്റെ ഭാഗമായി കോട്ടയം ജില്ലയിൽ ഉൾപ്പെടുന്ന ഹൈ സ്കൂളുകളിലെ കുട്ടികളുടെ കായിക പ്രവർത്തികളുടെ നിലയും, അനുബന്ധ ഘടകങ്ങളെയും കുറിച്ച് ഒരു പഠനം നടത്തുന്നു. ഈ പഠനത്തിനു വേണ്ടി ഞാൻ ഒരു ചോദ്യാവലി തയ്യാറാക്കിയിട്ടുണ്ട്. അതിൽ കുട്ടികളുടെ കായിക പ്രവർത്തികളെയും, അതിനെ സ്വാധീനിക്കുന്ന ഘടകങ്ങളെയും കുറിച്ചുള്ള ഏതാനും ചോദ്യങ്ങളാണ് ഉൾപ്പെടുത്തിയിട്ടുള്ളത്.

നമ്മുടെ ഭരണഘടന പ്രകാരം പന്ത്രണ്ടു മുതൽ പതിനഞ്ച് വയസ്സു വരെ ഉള്ള കുട്ടികൾ പ്രായപൂർത്തി ആകാത്തവരാകയാൽ അവരെ പഠനത്തിൽ ഉൾപ്പെടുത്തുവാൻ രക്ഷിതാക്കളുടെ സമ്മതം ആവശ്യമാണ്. കുട്ടികളെ പഠനത്തിൽ ഉൾപ്പെടുത്തുക എന്നതു കൊണ്ട് ഉദ്ദേശിക്കുന്നത് ഗവേഷക നൽകുന്ന ചോദ്യാവലി അവൾ / അവൻ പൂരിപ്പിച്ചു തരണം എന്നതാണ്. താങ്കൾക്കു തന്നു വിട്ടിരിക്കുന്ന ഈ ഫോറം താങ്കളുടെ കുട്ടിയെ ഈ പഠനത്തിൽ ഉൾപ്പെടുത്തുവാനുള്ള സമ്മതം ലഭിക്കുന്നതിനു വേണ്ടിയാണ്. ഈ പഠനത്തിൽ പങ്കെടുത്തത് കൊണ്ട് താങ്കളുടെ കുട്ടിക്ക് യാതൊരു ദോഷവും സംഭവിക്കുകയില്ല - അവൾ / അവൻ ഒരു ചോദ്യാവലി മാത്രമേ പൂരിപ്പിക്കുകയുള്ളൂ. ഈ പഠനം മൂലം താങ്കൾക്ക് നേരിട്ട് പ്രയോജനം ഒന്നുമില്ലെങ്കിലും ശേഖരിക്കുന്ന വിവരങ്ങൾ സമൂഹത്തിനും, പൊതുജന ആരോഗ്യസംരക്ഷണ നയ രൂപീകരണത്തിനും പ്രയോജനം

ചെയ്യും. പഠനത്തിന്റെ ഫലങ്ങൾ ഗവേഷണത്തിന് മാത്രമായിട്ടാണ് ഉപയോഗിക്കുന്നത്. പക്ഷെ, താങ്കളുടെ കുട്ടിയുടെ പേരും, മറ്റു വ്യക്തിപരമായ വിവരങ്ങളും രഹസ്യമായിതന്നെ സൂക്ഷിക്കുന്നതാണ്.

ഈ പഠനത്തെ കുറിച്ച് താങ്കൾക്ക് എന്തെങ്കിലും സംശയങ്ങൾ ഉണ്ടെങ്കിൽ താഴെ കൊടുത്തിരിക്കുന്ന ഫോൺ നമ്പർ മുഖേന എന്നെ ബന്ധപ്പെടാവുന്നതാണ്. കൂടുതലായുള്ള അന്വേഷണങ്ങൾക്ക് നീതി നിർവാഹക സമിതി (ഐ .ഇ .സി) സെക്രട്ടറി ഡോ. മാല രാമനാഥനെ ഫോണിൽ ബന്ധപ്പെടാം.

ഗവേഷക

മിനു എബ്രഹാം
പബ്ലിക് ഹെൽത്ത് വിദ്യാർത്ഥി
മൊബൈൽ നമ്പർ: 9605541899
minuabraham13.03@gmail.com

മെമ്പർ സെക്രട്ടറി(ഐ.ഇ.സി)

ഡോ. മാല രാമനാഥൻ
നീതി നിർവാഹക സമിതി സെക്രട്ടറി
ഫോൺ നമ്പർ : 0471-2524234
mala@sctimst.ac.in

ഗവേഷകയുടെ ഒപ്പ്:

തീയതി:

താങ്കളുടെ കുട്ടിയെ ഈ പഠനത്തിൽ പങ്കെടുപ്പിക്കുവാൻ താൽപ്പര്യമുണ്ടെങ്കിൽ ദയവായി താഴെക്കൊടുത്തിരിക്കുന്ന ഫോറം പൂരിപ്പിച്ച്, താങ്കളുടെ ഒപ്പും ഇട്ട് ഏതായാലും വേഗം കുട്ടിയുടെ കൈയിൽ കൊടുത്തുവിടണമെന്ന് അപേക്ഷിക്കുന്നു.

സമ്മത പത്രം

എന്റെ പേര് ശ്രീ / ശ്രീമതി ,
ഞാൻ സ്കൂളിൽ
ക്ലാസ്സിൽ പഠിക്കുന്ന എന്ന വിദ്യാർത്ഥി / വിദ്യാർത്ഥിനിയുടെ മാതാവ് / പിതാവ് / രക്ഷകർത്താവാണ്. കോട്ടയം ജില്ലയിൽ ഉൾപ്പെടുന്ന ഹൈ സ്കൂളുകളിലെ കുട്ടികളുടെ കായിക പ്രവർത്തികളുടെ നിലയും, അനുബന്ധ ഘടകങ്ങളെയും കുറിച്ചുള്ള ഈ പഠനത്തെക്കുറിച്ച് ഞാൻ വായിച്ചു മനസ്സിലാക്കിയിട്ടുണ്ട് . എന്റെ കുട്ടിയുടെ ഈ പഠനത്തിലുള്ള പങ്കാളിത്തം പൂർണ്ണമായും എന്റെ തീരുമാനത്തിലധിഷ്ഠിതമാണെന്നും, അത് സ്വമേധയാ ആണെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. ഈ പഠനത്തിൽ പങ്കെടുത്തത് കൊണ്ട് എന്റെ കുട്ടിക്ക് യാതൊരു ദോഷവും സംഭവിക്കുകയില്ലെന്നും, അവൾ / അവൻ - ന് നേരിട്ട് ഒരു പ്രയോജനവും ലഭിക്കുകയില്ലെന്നും എനിക്കറിയാം. കൂടാതെ, എന്റെ കുട്ടിയുടെ പേരും, മറ്റ് വ്യക്തിപരമായ വിവരങ്ങളും രഹസ്യമായിത്തന്നെ സൂക്ഷിക്കുന്നതാണെന്ന് ഞാൻ മനസ്സിലാക്കിയിട്ടുണ്ട്.

ഞാൻ സ്വമേധയാ എന്റെ കുട്ടിയെ ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ അനുവദിക്കുന്നു. ഒപ്പോടുകൂടിയ പഠന വിവരണത്തിന്റെ ഒരു പകർപ്പ് എനിക്ക് ലഭിച്ചിട്ടുണ്ട്.

പേര് :

ഒപ്പ് :

ഫോൺ നമ്പർ:

തിയതി:

Annexure VI- Assent form for the high school children (Malayalam)

ക്രമ നമ്പർ :

ഹൈ സ്കൂൾ കുട്ടികൾക്കുള്ള സമ്മത പത്രം

എന്റെ പേര് മിനു എബ്രഹാം . ഞാൻ തിരുവനന്തപുരത്തുള്ള അച്യുത മേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിൽ പൊതുജനാരോഗ്യം എന്ന വിഷയത്തിൽ ബിരുദാനന്തര ബിരുദ വിദ്യാർത്ഥിനിയാണ്. കോട്ടയം ജില്ലയിൽ ഉൾപ്പെടുന്ന ഹൈ സ്കൂളുകളിലെ കുട്ടികളിൽ അവരുടെ കായിക പ്രവർത്തികളെക്കുറിച്ച് അറിയുവാനായി ഞാൻ ഒരു പഠനം നടത്തുന്നുണ്ട്. താങ്കളെ ഈ പഠനത്തിൽ ഉൾപ്പെടുത്തുക എന്നതു കൊണ്ട് ഉദ്ദേശിക്കുന്നത് ഗവേഷക നൽകുന്ന ചോദ്യാവലി താങ്കൾ പൂരിപ്പിച്ചു തരണം എന്നതാണ്.

ഈ പഠനത്തിൽ പങ്കെടുത്തത് കൊണ്ട് താങ്കൾക്ക് യാതൊരു ദോഷവും സംഭവിക്കുകയില്ല -താങ്കൾ ഒരു ചോദ്യാവലി മാത്രമേ പൂരിപ്പിക്കുകയുള്ളൂ. ഈ പഠനം മൂലം താങ്കൾക്ക് നേരിട്ട് പ്രയോജനം ഒന്നുമില്ലെങ്കിലും ശേഖരിക്കുന്ന വിവരങ്ങൾ സമൂഹത്തിനും , പൊതുജന ആരോഗ്യസംരക്ഷണ നയ രൂപീകരണത്തിനും, ജില്ലയിലെ കൗമാര പ്രായക്കാരായ എല്ലാ കുട്ടികളുടേയും ആരോഗ്യം മെച്ചപ്പെടുത്തുന്നതിനും സഹായിക്കും. പഠനത്തിന്റെ ഫലങ്ങൾ ഗവേഷണത്തിന് മാത്രമായിട്ടാണ് ഉപയോഗിക്കുന്നത്. പക്ഷെ , താങ്കളുടെ പേരും, മറ്റു വ്യക്തിപരമായ വിവരങ്ങളും രഹസ്യമായി തന്നെ സൂക്ഷിക്കുന്നതാണ്, അവ മറ്റൊരാളോടും പ്രത്യേകിച്ച് താങ്കളുടെ അധ്യാപകരോടോ , മാതാപിതാക്കളോടോ, സുഹൃത്തുക്കളോടോ, സഹപാഠികളോടോ വെളിപ്പെടുത്തുകയില്ല.

താങ്കൾക്ക് താല്പര്യമില്ലെങ്കിൽ ഈ പഠനത്തിൽ പങ്കെടുക്കേണ്ടതില്ല , കൂടാതെ എപ്പോൾ വേണമെങ്കിലും താങ്കൾക്ക് ഈ പഠനത്തിൽ നിന്ന് പിന്മാറാവുന്നതാണ്.

ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ താങ്കൾക്കു സമ്മതമാണോ? അതെ
 അല്ല

പങ്കെടുക്കുന്ന ആളിന്റെ പേര്:

പങ്കെടുക്കുന്ന ആളിന്റെ ഒപ്പ്:

തിയതി:

Annexure -VII: Questionnaire (Malayalam)

ക്രമ നമ്പർ:

തീയതി:

കോട്ടയം ജില്ലയിൽ ഉൾപ്പെടുന്ന ഹൈസ്കൂളുകളിലെ കുട്ടികളുടെ കായിക പ്രവർത്തികളുടെ നിലയും, അനുബന്ധ ഘടകങ്ങളെയും കുറിച്ചുള്ള പഠനം

ദയവായി ശ്രദ്ധിക്കുക:

- താങ്കൾ നൽകുന്ന വിവരങ്ങൾ രഹസ്യമായി തന്നെ സൂക്ഷിക്കുന്നതാണ്, അവ മറ്റൊരാളോടും പ്രത്യേകിച്ച് താങ്കളുടെ അധ്യാപകരോടോ, മാതാപിതാക്കളോടോ, സുഹൃത്തുക്കളോടോ, സഹപാഠികളോടോ വെളിപ്പെടുത്തുകയില്ല.
- ഇവിടെ ശരിയെന്നോ, തെറ്റെന്നോ ഉള്ള ഉത്തരങ്ങൾ ഇല്ല - ഇത് ഒരു പരീക്ഷയല്ല.
- താങ്കളുടെ ശരിയായ പ്രതികരണങ്ങൾ ഈ പഠനത്തിനു വളരെ പ്രധാനപ്പെട്ടതാണ്.
- ദയവായി എല്ലാ ചോദ്യങ്ങൾക്കും സത്യസന്ധതയോടും, കൃത്യതയോടും കൂടെ താങ്കൾക്കു കഴിയുന്ന വിധം ഉത്തരങ്ങൾ പേന ഉപയോഗിച്ച് മലയാളത്തിലോ, ഇംഗ്ലീഷിലോ രേഖപ്പെടുത്തുക.
- ഓരോ ചോദ്യത്തിനും അനുയോജ്യമെന്ന് തോന്നുന്ന ഉത്തരങ്ങളുടെ നമ്പരുകളിൽ വൃത്തം വരുകയും, ഉചിതമെങ്കിൽ വിട്ട ഭാഗം പൂരിപ്പിക്കുകയും ചെയ്യുക.

എ. പൊതുവിവരം

എ 1	ക്രമ നമ്പർ	
എ 2	ജനനത്തിയതി(തീയതി) /.....(മാസം) / (വർഷം)
എ 3	ലിംഗം	1. ആൺകുട്ടി 2. പെണ്ണുകുട്ടി
എ 4	സ്കൂളിന്റെ പേര്	

എ 5	ക്ലാസ്സ്	1. 8 ക്ലാസ്സ് 2. 9 ക്ലാസ്സ് 3. 10 ക്ലാസ്സ്
എ 6	ഡിവിഷൻ	1. എ 2. ബി 3. സി 4. ഡി 5. ഇ

ബി .കുടുംബ സംബന്ധമായ വിവരങ്ങൾ

ബി 1	താഴെപ്പറയുന്നവരിൽ ആരൊക്കെയാണ് ഇപ്പോൾ താങ്കളോടൊപ്പം വീട്ടിൽ അംഗങ്ങളായിട്ടുള്ളത്?	1. അച്ഛൻ 2. അമ്മ 3. സഹോദരന്മാർ 4. സഹോദരിമാർ 5. മുത്തച്ഛൻ 6. മുത്തശ്ശി 7. അമ്മാവന്മാർ 8. അമ്മായിമാർ 9. മാതാപിതാക്കളുടെ സഹോദരീ സഹോദരന്മാരുടെ മക്കൾ 10. മറ്റുള്ളവർ
ബി 2	അച്ഛന്റെ ഉയർന്ന വിദ്യാഭ്യാസം	1.ലോവർ പ്രൈമറി (1-4 വരെ) 2.അപ്പർ പ്രൈമറി (5-7 വരെ) 3.ഹൈ സ്കൂൾ (8-10 വരെ) 4.പ്ലസ് ടു / പ്രീഡിഗ്രി (11-12 വരെ) 5.ബിരുദം / ഡിപ്ലോമ 6.ബിരുദാനന്തര ബിരുദം 7.മറ്റുള്ളവ(വ്യക്തമാക്കുക).....
ബി 3	അച്ഛന്റെ ജോലി (ഒന്നിലധികം ഉത്തരങ്ങൾ സാധ്യമാണ്)	1. ജോലി ചെയ്യുന്നില്ല 2. സ്വന്തമായ കച്ചവടം 3. കൂലിപ്പണി 4. തൊഴിലുറപ്പ് 5. സർക്കാർ മേഖലയിൽ 6. സ്വകാര്യ മേഖലയിൽ 7. വിദേശത്ത് (ഇന്ത്യക്ക് പുറത്ത്) 8. മറ്റുള്ളവ(വ്യക്തമാക്കുക).....
ബി 4	അമ്മയുടെ ഉയർന്ന വിദ്യാഭ്യാസം	1.ലോവർ പ്രൈമറി (1-4 വരെ) 2.അപ്പർ പ്രൈമറി (5-7 വരെ) 3.ഹൈ സ്കൂൾ (8-10 വരെ) 4.പ്ലസ് ടു / പ്രീഡിഗ്രി (11-12 വരെ)

		5.ബിരുദം / ഡിപ്ലോമ 6.ബിരുദാനന്തര ബിരുദം 7.മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
ബി 5	അമ്മയുടെ ജോലി (ഒന്നിലധികം ഉത്തരങ്ങൾ സാധ്യമാണ്)	1. ജോലി ചെയ്യുന്നില്ല 2. സ്വന്തമായ കച്ചവടം 3. കൂലിപ്പണി 4. തൊഴിലുറപ്പ് 5. സർക്കാർ മേഖലയിൽ 6. സ്വകാര്യ മേഖലയിൽ 7. വിദേശത്ത് (ഇന്ത്യക്ക് പുറത്ത്) 8. മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
ബി 6	താങ്കളുടെ വീട് സ്ഥിതി ചെയ്യുന്നത് എവിടെയാണ്?	1. ഗ്രാമം / പഞ്ചായത്ത് 2. നഗരം /മുനിസിപ്പാലിറ്റി/ കോർപ്പറേഷൻ

സി. കഴിഞ്ഞ ഏഴു ദിവസങ്ങളിലെ കായിക പ്രവർത്തികൾ

കഴിഞ്ഞ ഏഴു ദിവസങ്ങളിൽ താങ്കൾ ചെയ്തിരിക്കാൻ സാധ്യതയുള്ള കായിക പ്രവർത്തികളെ കുറിച്ചുള്ള ഏതാനും ചോദ്യങ്ങൾ താഴെ കൊടുത്തിരിക്കുന്നു. ഊർജ്ജം ചിലവഴിച്ചുകൊണ്ടുള്ള ശരീരത്തിന്റെ എല്ലാ ചലനങ്ങളെയും ആണ് കായിക പ്രവർത്തികൾ എന്നത് കൊണ്ട് ഉദ്ദേശിക്കുന്നത് (ഉദാ:ഓട്ടം, നൃത്തം, നീന്തൽ, ശാരീരിക വ്യായാമം, സ്പോർട്സ് മുതലായവ).

സി എ-യിലെ ഏതെങ്കിലും പ്രവർത്തിക്ക് താങ്കളുടെ ഉത്തരം “ഇല്ല” എന്നാണെങ്കിൽ അടുത്ത പ്രവർത്തിയിലേക്ക് പോകുക. എന്നാൽ “ഉണ്ട്” എന്നാണ് ഉത്തരമെങ്കിൽ മാത്രം സി-സി, സി-ഡി, സി-ഇ, സി-എഫ് എന്നീ കോളങ്ങൾ പൂരിപ്പിക്കുക.

	സി-എ വിവിധതരം പ്രവർത്തികൾ	സി-ബി താകൾ ഈ പ്രവർത്തി കഴിഞ്ഞ ഏഴു ദിവസങ്ങളിൽ ചെയ്തിരുന്നുവോ?	തികൾ മുതൽ വെള്ളി വരെ		ശനി മുതൽ ഞായർ വരെ	
			സി-സി ഏത്ര പ്രാവശ്യം	സി-ഡി മൊത്തം ഈ പ്രവർത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവഴിച്ചു	സി-ഇ ഏത്ര പ്രാവശ്യം	സി-എഫ് മൊത്തം ഈ പ്രവർത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവഴിച്ചു
സി.1	ബാസ്കറ്റ് ബോൾ കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.2	വോളീ ബോൾ കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.3	ക്രിക്കറ്റ് കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.4	ഫുട് ബോൾ കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.5	ഷട്ടിൽ കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.6	ചെറിയ വേഗത്തിൽ ഓടുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.7	നന്നായി ഓടുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.8	ന്യൂത്നം ചവിട്ടുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.9	കയർ ഉപയോഗിച്ച് ചാടുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.10	സൈക്കിൾ ചവിട്ടുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.11	നീന്തൽ	1. ഉണ്ട് 2. ഇല്ല				

	സി-എ വിവിധതരം പ്രവർത്തികൾ	സി-ബി താകൾ ഈ പ്രവർ ത്തി കഴിഞ്ഞ ഏഴു ദിവസ ളിൽ ചെയ്തി രുന്നു വോ?	തികൾ മുതൽ വെള്ളി വരെ		ശനി മുതൽ ഞായർ വരെ	
			സി- സി ഏത്ര പ്രാവ ശ്യം	സി-ഡി മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു	സി-ഇ ഏത്ര പ്രാവ ശ്യം	സി-എഫ് മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു
സി.12	കരാടെ / ജൂഡോ ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.13	ബോഡി ബിൽഡിങ് ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.14	ജിം-ൽ പോയി വ്യായാമങ്ങൾ ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.15	ട്രെയിനിംഗിൽ ഉപയോഗിച്ചുള്ള വ്യായാമം ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.16	വീട്ടുജോലികൾ					
	സി. 16.1	വൃത്തിയാ ക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല			
	സി. 16.2	തൂണികൾ കൈ കൊണ്ട് അലക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല			
സി.17	മൈതാനത്ത് കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.18	വളർത്തു മൃഗങ്ങളോടൊപ്പം കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.19	സ്കേറ്റിംഗ്	1. ഉണ്ട് 2. ഇല്ല				

	സി-എ വിവിധതരം പ്രവർത്തികൾ	സി-ബി താകൾ ഈ പ്രവർ ത്തി കഴിഞ്ഞ ഏഴു ദിവസ ളിൽ ചെയ്തി രുന്നു വോ?	തികൾ മുതൽ വെള്ളി വരെ		ശനി മുതൽ ഞായർ വരെ	
			സി- സി ഏത്ര പ്രാവ ശ്യം	സി-ഡി മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു	സി-ഇ ഏത്ര പ്രാവ ശ്യം	സി-എഫ് മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു
സി.20	നായയുടെ കൂടെ നടക്കാൻ പോകുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.21	വ്യായാമത്തിനു വേണ്ടി നടക്കാൻ പോകുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.22	മൃഗ പരിപാലനം	1. ഉണ്ട് 2. ഇല്ല				
സി.23	കലാ സൃഷ്ടി / കൈ വിരുതുകൾ ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.24	ഗ്രഹപാഠം ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.25	ഹോബികൾ (വ്യക്തമാക്കുക)	1. ഉണ്ട് 2. ഇല്ല				
സി.26	സംഗീതം ശ്രവിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.27	വീടിനകത്ത് കളിപ്പാട്ടം വച്ച് കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.28	ബോർഡിൽ വെച്ചുകളിക്കുന്ന കളികൾ(ഉദാ;ചെ സ്സ്,ചീട്ട്, കാരംസ്) കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				

	സി-എ വിവിധതരം പ്രവർത്തികൾ	സി-ബി താകൾ ഈ പ്രവർ ത്തി കഴിഞ്ഞ ഏഴു ദിവസ ളിൽ ചെയ്തി രുന്നു വോ?	തികൾ മുതൽ വെള്ളി വരെ		ശനി മുതൽ ഞായർ വരെ	
			സി- സി ഏത്ര പ്രാവ ശ്യം	സി-ഡി മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു	സി-ഇ ഏത്ര പ്രാവ ശ്യം	സി-എഫ് മൊത്തം ഈ പ്രവർ ത്തിക്കു വേണ്ടി ഏത്ര മിനുട്ട് ചിലവ ഴിച്ചു
സി.29	കമ്പ്യൂട്ടർ/ മൊബൈൽ ഫോണിൽ ഗെയിം കളിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.30	സംഗീത ഉപകരണങ്ങൾ വായിക്കുന്നു (ഉപകരണം.....)	1. ഉണ്ട് 2. ഇല്ല				
സി.31	പുസ്തകം / പത്രം വായിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.32	മറ്റുള്ളവരോട് ഫോൺ/കമ്പ്യൂട്ടർ/ ടെക്സ്റ്റ് മെസ്സേജ് വഴി സംസാരിക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.33	കമ്പ്യൂട്ടറിൽ ടൈപ്പ് ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.34	തിയേറ്ററിൽ പോയി സിനിമ കാണുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.35	ടെലിവിഷൻ / വീഡിയോ കാണുന്നു	1. ഉണ്ട് 2. ഇല്ല				
സി.36	മറ്റുള്ളവ (വ്യക്തമാക്കുക)	1. ഉണ്ട് 2. ഇല്ല				

	സി-എ സ്കൂളിലെ പ്രവർത്തകർ	തീകൾ മുതൽ വെള്ളി വരെ		
		സി-ബി താങ്കൾ ഈ പ്രവർത്തി കഴിഞ്ഞ അഞ്ചു ദിവസങ്ങളിൽ ചെയ്തിരുന്നൂവോ?	സി-സി ഏത്ര പ്രാവ ശ്യം	സി-ഡി മൊത്തം ഈ പ്രവർത്തി ക്കുവേണ്ടി ഏത്ര മിനുട്ട് ചിലവഴിച്ചു
സി.37	കായിക പരിശീലനം / ഡ്രിൽ ക്ലാസ്സിൽ പങ്കെടുക്കുന്നു	1. ഉണ്ട് 2. ഇല്ല		
സി.38	സ്കൂളിലെ കായിക പരിശീലന ക്ലാസ്സിൽ ശാരീരിക വ്യായാമം ചെയ്യുന്നു	1. ഉണ്ട് 2. ഇല്ല		
സി.39	സ്കൂളിലേക്ക് നടന്നു പോകുന്നു (അങ്ങോട്ടും ഇങ്ങോട്ടും = 2 തവണ)	1. ഉണ്ട് 2. ഇല്ല		
സി.40	സൈക്കിൾ ചവിട്ടി സ്കൂളിലേക്ക് പോകുന്നു (അങ്ങോട്ടും ഇങ്ങോട്ടും = 2 തവണ)	1. ഉണ്ട് 2. ഇല്ല		
സി.41	ഓട്ടോ റിക്ഷയിൽ സ്കൂളിലേക്ക് പോകുന്നു (അങ്ങോട്ടും ഇങ്ങോട്ടും = 2 തവണ)	1. ഉണ്ട് 2. ഇല്ല		
സി.42	വീട്ടിൽ നിന്നും സർക്കാർ / സ്വകാര്യ ബസ്, വാൻ, സ്കൂൾ ബസ് എന്നിവയിലൂടെ സ്കൂളിലേക്ക് പോകുന്നു	1. ഉണ്ട് 2. ഇല്ല		

ഡി. സ്കൂളുമായി ബന്ധപ്പെട്ട വിവരങ്ങൾ

ഡി1	താങ്കളുടെ സ്കൂളിൽ മൈതാനം ഉണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല
ഡി 2	താങ്കളുടെ സ്കൂളിൽ അകത്തിരുന്നു കളിക്കുന്ന കളികൾക്കായി (ഉദാ: ചെസ്സ് ,കാരംസ്) പ്രത്യേക മുറി ഉണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
ഡി 3	താഴെപ്പറയുന്ന കായികോപകരണങ്ങൾ താങ്കളുടെ സ്കൂളിൽ ഉണ്ടോ?	1. ബാസ്കറ്റ് ബോൾ 2. ഫുട് ബോൾ 3. ഷട്ടിൽ ബാറ്റും കോക്കും 4. ചെസ്സ് ബോർഡും കറുക്കളും 5. കാരംസ് 6. ക്രിക്കറ്റ് കിറ്റ് 7. ബേബിൾ റെനീസ് കിറ്റ് 8. മറ്റുള്ളവ(വ്യക്തമാക്കുക)
ഡി 4	താങ്കൾക്കു സ്കൂളിൽ എത്ര ഉറ്റ സുഹൃത്തുക്കൾ ഉണ്ട്?	1. ഒന്ന് 2. രണ്ട് 3. മൂന്ന് 4. നാല് 5. അഞ്ചും അതിലധികവും
ഡി 5	മുകളിൽ പറഞ്ഞിരിക്കുന്ന സുഹൃത്തുക്കളിൽ എത്ര പേർ കായിക പ്രവർത്തികളിൽ നന്നായി ഏർപ്പെടുന്നവരാണ്? (ഉദാ: ശാരീരിക വ്യായാമം, സ്പോർട്സ് മുതലായവ)	1. ആരുമില്ല 2. ഒന്ന് 3. രണ്ട് 4. മൂന്ന് 5. നാല് 6. അഞ്ചും അതിലധികവും 7. അറിയില്ല
ഡി 6	താങ്കൾ സ്കൂളിലെ പാഠ്യപദ്ധതിയിൽ എപ്പോഴെങ്കിലും ശാരീരിക വ്യായാമത്തെക്കുറിച്ച് പഠിച്ചിട്ടുണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല

ഇ.സാമൂഹിക പിന്തുണ

ഇ 1	താങ്കൾക്കു ശാരീരിക വ്യായാമങ്ങളിൽ ഏർപ്പെടാൻ സമൂഹത്തിൽ നിന്നും പിന്തുണ (ഉദാ: പ്രോത്സാഹനം/ പ്രചോദനം / മാർഗനിർദ്ദേശം) ലഭിക്കാറുണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല
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ഇ 2	ഉണ്ടെങ്കിൽ ആരീൽ നിന്ന്?	<ol style="list-style-type: none"> 1. മാതാപിതാക്കൾ 2. സഹോദരന്മാർ 3. സഹോദരിമാർ 4. മുത്തച്ഛൻ 5. മുത്തശ്ശി 6. സുഹൃത്തുക്കൾ 7. അധ്യാപകർ 8. മറ്റു ബന്ധുക്കൾ
ഇ 3	ശാരീരിക വ്യയാമങ്ങളിൽ ഏർപ്പെടാൻ താങ്കൾക്ക് ഏതെങ്കിലും ഘടകങ്ങൾ തടസ്സമായിട്ടുണ്ടോ?	<ol style="list-style-type: none"> 1. ഉണ്ട് 2. ഇല്ല
ഇ 4	ഉണ്ടെങ്കിൽ ഏതെല്ലാം? (ഒന്നിലധികം ഉത്തരങ്ങൾ സാധ്യമാണ്)	<ol style="list-style-type: none"> 1. പരീക്ഷ 2. റ്റ്യൂഷൻ 3. വസ്ത്ര ധാരണ ശൈലി 4. വീട്ടിൽ നിന്നുള്ള നിയന്ത്രണം 5. ആർത്തവ സംബന്ധമായ പ്രശ്നങ്ങൾ 6. അസുഖം 7. മറ്റുള്ളവ(വ്യക്തമാക്കുക) <p>.....</p>
ഇ 5	താങ്കളോടൊപ്പം ഇപ്പോൾ കുടുംബത്തിൽ താമസിക്കുന്ന മറ്റാരെങ്കിലും ശാരീരിക വ്യയാമങ്ങളിൽ ഏർപ്പെടാറുണ്ടോ?	<ol style="list-style-type: none"> 1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
ഇ 6	ഉണ്ടെങ്കിൽ ആരെല്ലാം?	<ol style="list-style-type: none"> 1. അച്ഛൻ 2. അമ്മ 3. സഹോദരന്മാർ 4. സഹോദരിമാർ 5. മുത്തച്ഛൻ 6. മുത്തശ്ശി 7. അമ്മാവന്മാർ 8. അമ്മായിമാർ 9. മാതാപിതാക്കളുടെ സഹോദരി 10. സഹോദരന്മാരുടെ മക്കൾ 10. മറ്റുള്ളവർ

എഫ്. ചുറ്റുമുള്ള പ്രദേശം

എഫ്1. താങ്കളുടെ ചുറ്റുമുള്ള പ്രദേശത്ത് താഴെപ്പറയുന്ന സൗകര്യങ്ങൾ ലഭ്യമാണോ?		
എഫ്1.1	പാർക്ക്/ പൊതുവായ ഉദ്യാനം	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.2	മൈതാനം (പള്ളിയുടേയും അമ്പലത്തിന്റേയും സമീപത്തുള്ള മൈതാനവും ഉൾപ്പെടുന്നു)	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.3	നീന്തൽക്കുളം (പൊതുവായ കുളം / തോട് എന്നിവയും ഉൾപ്പെടുന്നു)	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.4	ജിം	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.5	കടകൾ	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.6	സ്പോർട്സ് ക്ലബ്ബ്	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്1.7	ന്യുനത വിദ്യാലയം	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ്.2	താങ്കളുടെ ചുറ്റുമുള്ള പ്രദേശത്ത് താമസിക്കുന്ന ആളുകൾ ശാരീരിക വ്യയാമങ്ങളിൽ ഏർപ്പെടുന്നതായി കണ്ടിട്ടുണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല 3. അറിയില്ല
എഫ് 3	താങ്കളുടെ ചുറ്റുമുള്ള പ്രദേശം വീടിനു പുറത്തു വെച്ച് ചെയ്യുന്ന വ്യയാമങ്ങൾക്ക് (ഉദാ;ഓട്ടം, നീന്തൽ, സൈക്കിൾ ചവിട്ടുക മുതലായവ) സുരക്ഷിതമാണെന്ന് തോന്നുന്നുണ്ടോ?	1. ഉണ്ട് 2. ഇല്ല

<p>എഫ് 4</p>	<p>ഇല്ലെങ്കിൽ എന്തുകൊണ്ട്?</p>	<ol style="list-style-type: none"> 1. മദ്യപാനികൾ, മയക്കുമരുന്നിനു അടിമകൾ, കള്ളന്മാർ എന്നിവരുടെ സാന്നിധ്യം 2. തിരക്കേറിയ ഗതാഗതം 3. നടപ്പാത ഇല്ലാത്തതുകൊണ്ട് 4. അലഞ്ഞു തിരിഞ്ഞു നടക്കുന്ന മൃഗങ്ങൾ (നായ്ക്കൾ, കന്നുകാലികൾ) 5. വഴി വിളക്കിന്റെ അഭാവം 6. റോഡിലെ മാലിന്യങ്ങൾ, മലിന ജലം
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താങ്കളുടെ സഹകരണത്തിന് നന്ദി !

Annexure -VIII: MET intensities of adolescent physical activities

Sl no	Activities	Youth compendium	2011 Adult compendium
1	Playing basketball	7.2	6.5
2	Playing volleyball	3	3
3	Playing cricket	3.5	4.8
4	Playing football	8.8	6.6
5	Playing badminton	4.5	5.5
6	Jogging	8.5	7
7	Running	8.5	7.7
8	Dancing	5.5	5
9	Skipping	8.3	8.8
10	Swimming	4	3.5
11	Bicycling	6.2	7.5
12	Doing karate / judo	10	10.3
13	Body building	6*	6
14	Doing gym based exercises	5.5*	5.5
15	Using tread mill for exercise	9*	9
16	Household works		
	Cleaning	2.5	2.5
	Washing clothes by hand	2.6	4
17	Playing in playground	5	5
18	Playing with pets	2.8	2.8
19	Roller- skating	6.5	7
20	Walking with dog	3*	3
21	Walking for exercise	4.8*	4.8
22	Doing animal care	2.5	2.3
23	Doing arts and crafts	1.6	1.8
24	Doing homework	1.4	1.3

Sl no	Activities	Youth compendium	2011 Adult compendium
25	Hobbies		
	Drawing	1.4	1.8
	Singing	1.4	1.8
	Stitching	1.5	1.8
	Coin collection	1.5	1.8
	Stamp collection	1.5	1.8
	Painting	1.9	1.8
	Cooking	2	2
	Photography	2*	2
Gardening	3.7	3.8	
26	Listening to music	1.3	1.3
27	Playing indoor with toys	1.6	2.8
28	Playing board games (chess, carrom, cards etc)	1.5*	1.5
29	Playing games on computer / mobile	1.5	1
30	Playing musical instruments		
	Keyboard	1.7	2
	Chenda	4	3.8
	Drums	4	3.8
	Flute	2	2
	Guitar	2	2
	Harmonium	1.7	2
	Thabala	3*	3
	Veena	1.7	2.5
Violin	1.7	2.5	
31	Reading book / news paper	1.3	1.3
32	Talking in person on phone/computer/text messaging	1.5	1.5

Sl no	Activities	Youth compendium	2011 Adult compendium
33	Typing on the computer	1.8	1.3
34	Watching film in a theatre	1.2	1.5
35	Watching TV / Videos	1.2	1.3
36	Learning music	1.3	1.8
37	Agriculture	3.8*	3.8
38	Yoga	2.5	2.5
39	Aquarium care	1.4*	1.4
40	Doing physical exercise during school Physical Training (P.T) / Drill time	5*	5
41	Walking to school (to and from school = 2 times)	3.5*	3.5
42	Cycling to school (to and from school = 2 times)	6.2	6.8
43	Traveling by auto rickshaw to school (to and from school = 2 times)	1.4	1.3
44	Others - Public / private bus, car, jeep, van, school bus (to and from school = 2 times)	1.4	1.3

*Since the youth compendium does not have MET intensities for many activities, MET intensity values from 2011 adult compendium has been taken

Annexure -IX: Institutional Ethics Committee clearance certificate

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान
तिरुवनन्तपुरम - 695 011, केरल, भारत
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY
THIRUVANANTHAPURAM - 695 011, INDIA
(An Institute of National importance under Govt. of India)



Institutional Ethics Committee
(IEC Regn No. ECR/189/Inst/KL/2013)

SCT/IEC/748/JUNE -2015

10-06-2015

Ms. Minu Abraham
MPH Scholar, AMCHSS,
SCTIMST, Thiruvananthapuram

Dear Ms. Minu Abraham

The Institutional Ethics Committee reviewed and discussed your application to conduct the study entitled "Levels and correlates of physical activity among high school students: A cross sectional study in Kottayam district, Kerala, India" (IEC/748) on 2nd June, 2015.

The following documents were reviewed:

Original submission

1. Covering letter.
2. TAC clearance letter.
3. IEC application for Ethics review.
4. Curriculum Vitae of the PI.
5. TAC approved proposal.
6. Informed consent – English.
7. Translated informed consent – Malayalam.
8. Self administered questionnaire – English.
9. School check list.
10. Translated self administered questionnaire - Malayalam.
11. Permission letter from DEO, Kanjirappally.
12. Budget.

Revised submission

1. Covering letter addressed to the Chairperson, IEC, SCTIMST dated 08.06.2015.
2. Modified Proposal was submitted.
3. Modified self administered questionnaire -Malayalam

Page 1 of 2

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E-mail : sct. @sctimst.ac.in
वेबसाइट
Website : www.sctimst.ac.in

The following members of the Ethics Committee were present at the meeting held on 2nd June, 2015 at G. Parthasarathi Board Room, AMCHSS, SCTIMST.

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Dr. R.V.G. Menon	PhD	Male	Lay Person	No
2.	Smt. Sathi Nair	MA	Female	Lay Person	No
3.	Dr. Kala Kesavan. P	MD	Female	Pharmacologist	No
4.	Dr. Mala Ramanathan	MSc, PhD, MA	Female	Ethicist/Social Scientist (Member Secretary)	Yes

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team /guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,



Mala Ramanathan
Member Secretary, IEC