Physical Activity Patterns and its Determinants among Adolescents of Kerala

Ramya K. R.

Author Affilation-

M Sc Nursing (AIIMS, New Delhi), Jubilee Mission College of Nursing, Thrissur, Kerala.

Reprint Request
Ramya K. R., Kundayi House, Chembamkandam, Ponnukkara P.O., Thrissur, Kerala-680306
E-mail: raviramya11@gmail.com

Abstract

Background: According to World Economic Forum report 2011, more than 60% of deaths worldwide are due to Non Communicable Diseases (NCDs), killing 36 million people each year. The beneficial role of physical activity in the prevention of NCD in adults has long been recognized. It is well established that health and development during adolescence in turn affect health during the adult years. *Aims:* To explore the patterns of physical activity and its determinants among school going adolescents. *Methods & Materials:* A school based descriptive survey conducted among 96 eligible adolescents selected using a multi-stage cluster sampling technique in Thrissur district, Kerala, with a structured pretested and validated questionnaire. Physical inactivity was defined as less than one hour of moderate and vigorous physical activity in a day. *Results:* The mean age of participants was 12.75±.92years. It was found that 57.3% don't meet the requirements for 6 hrs of physical activity in a week 46.9% of children spent >2 hrs/day watching television. Physical activity was significantly associated with age and educational qualification of mother. Analysis was done using SPSS Version-16. *Conclusion:* Finding calls for an urgent need for population based strategies implemented at local and national level aimed at increasing levels of activity of adolescents to prevent escalation of non communicable diseases among young adults.

Keywords: Physical Activity; Determinants; Adolescents.

Introduction

According to World Economic Forum report 2011, more than 60% of deaths worldwide are due to Non Communicable Diseases (NCDs), killing 36 million people each year. Low and middle income countries are disproportionately affected and in 2010, 80% of NCD deaths occurred in those countries, many of them prematurely, at working age. The estimated cumulative output loss due to overall costs of NCDs to the global economy over the next 20 years represents approximately 4% of annual global gross domestic product and NCD to cost $47 trillion by

2030. In India, NCD account for 62% of the total burden of foregone disability adjusted life years and 53% of total deaths. This huge burden is going cause a multi-dimensional impact at individual, household, health system, and macro-economic level in our country.

The case-control interheart study reported sedentary lifestyle as one of the main contributing factor for acute coronary heart disease (CHD) events in South Asians. Physical activity, even at an older age, can significantly reduce the risk of coronary heart disease, diabetes, high blood pressure, and obesity, help reduce stress, anxiety and depression, and

improve lipid profile and skeletal health. Doing more than 150 minutes of moderate physical activity or 60 minutes of vigorous physical activity a week – whether at work, in the home, or elsewhere – can reduce the risk of coronary heart disease by approximately 30%. Despite documented evidence of the benefit of physical activity in preventing and treating cardiovascular and other chronic diseases, more than a quarter of a million individuals die each year in the United States because of a "lack of regular physical exercise". Industrialization, urbanization and mechanized transport have reduced physical activity, even in developing countries, so that currently more than 60% of the global population are not sufficiently active.

In India, physical inactivity is thought to account for 2.6% of coronary heart disease cases, 3.2% of type 2 diabetes cases, 4.8% of breast cancer cases, 4.6% of colon cancer cases, and 4.2% of all-cause mortality . It was found that Majority of 64.1% and 39% of urban and rural Indians resp. are sedentary and only 31.1% of urban and 37.3 % of rural do moderate physical activity related to job. 84.6 and 86% urban and rural respectively, never engage in any leisure time physical activity, While 12.8 and 9.5% of urban and rural Indian respectively engage in moderate Leisure time physical activity as revealed by non-communicable diseases survey conducted (STEPS 1 and 2) from 5 centers in India.

Kerala a southern state of India which is well known for its health indices and rapid growth has the highest prevalence of most of the NCD and risk factors [9]. National Family Health Survey 3 revealed that Kerala has the highest prevalence of overweight and obese women in the reproductive age group in India. It is the diabetic capital for India with a prevalence of 14.8 % in the age group of 15-64 yr and the age adjusted cardiovascular mortality is twice that of the United States [4,7]. Normal weight of children in Kerala were reported to have the highest mean systolic and diastolic blood pressure globally [7]. More than 50 per cent of children at 16 yr had high density lipoprotein cholesterol less than normal (45 mg/dl) [5]. A study conducted in Kerala among 2.3 million school children aged 10-15 yr, where only 11.5 % of girls could finish the recommended health related physical fitness test compared to 16.58 % in boys. There is compelling evidence to show that these adult metabolic diseases have their origin in early childhood[1] and later life morbidity or mortality. The health-related behaviors and conditions that underlie the major non-communicable diseases usually start or are reinforced during the second decade- tobacco and alcohol use, diet and exercise

patterns, overweight and obesity. New data presented in Health for the world's adolescents shows that fewer than one in every four adolescents meets recommended guidelines for physical activity; as many as one in every three is obese in some countries .In 2000, approximately 30 per cent of India's population was aged 10 to 24 yr, that increased to 53 per cent when children younger than 10 were included. There is clear scientific evidence that policy and environmental changes increase the physical activity levels of the entire population and have a tremendous impact on preventing CHD s. Even if there are small increases in daily physical activity in communities, it will translate to large national and population benefits in a state like Kerala due to high prevalence of risk. The present study was conducted to measure the physical activity patterns and its determinants, so that appropriate primary prevention programs can be initiated and executed at various levels.

Methods

The present cross- sectional survey was conducted at Thrissur district, Kerala. The target population was school going adolescents of Kerala in the age group 12-15 years (grade-7-9). Sampling frame consisted of all High schools (Government/Private, aided/unaided) of Thrissur district except special schools for disabled children. Out of three educational sub districts (clusters) of Thrissur, one sub district was randomly selected. One government, private aided and private unaided school were selected randomly using 2013 DPI/DDE census list. From each sample school one cluster of sub-divisions (7th, 8th, 9th) of the schools were randomly selected using class lists of the sample school obtained from the school authorities. The study was limited to 12-15 years age, as the authorities did not grant permission to include students above 15 years. The study protocol was approved by the ethics committee of Jubilee Mission medical college and research institute, Thrissur, Kerala and permission to conduct the research in schools was obtained from Directorate of Public Instructions, Thiruvananthapuram.

Study was conducted using a structured questionnaire having 2 parts a) Socio-demographic details and (b) Self reported behavior questionnaire on physical activity, screen time. Physical activity was measured by asking about mode of conveyance to school and tuition, involvement in moderate and vigorous exercises at home (how long and how often) during weekdays and weekends, and participation

in sports with regular practice. Total screen time was measured by asking to report time spend in watching TV/Video/DVD, computer use (Weekdays and weekends). Habit of watching television during meals was also measured.

A pilot study was carried out to know the feasibility and practicability before the main study. Following a brief presentation about the study, a written consent was sought from the school authorities to conduct the study in their school premises. Explanation about the study and questionnaire was given to participants and doubts were clarified. Questionnaires were administered and explained briefly to collect information. Collected data were coded, categorized and analyzed (SPSS -16) using univariate and bivariate analysis.

Results

Table 1 shows the characteristics of study participants. A total number of 96 adolescents were participated in the survey, with a mean age of 12.75±.92years, 61boys and 35 girls. More than half (52.1%) were studying in 7th standard, remaining 22.8 % & 25% in 8th and 9th respectively. More than half were residing in village (57%), and remaining (43%) were from corporation. One quarter (25%) of

Table 1: The characteristics of study participants   N=96

Variables		Frequency	Percentage(%)
	Graduate or post graduate	31	32.3
	Intermediate or post high school diploma	33	34.4
	High School certificate	30	31.2
Educational qualification of mother	Middle School certificate	2	2.1
	Primary School certificate	0	0
	Illiterate	0	0
	Graduate or post graduate	18	18.8
	Intermediate or post high school diploma	23	24
Educational qualification of father	High School certificate	45	46.9
	Middle School certificate	7	7.3
	Primary School certificate	3	3.1
	Illiterate	0	0
	Profession	4	4.2
	Semi profession	9	9.4
	Clerical, shop owner, farmer	8	8.3
Occupation of mother	Skilled worker	1	1
	Semi skilled worker	25	26
	Unemployed	49	51
	Profession	5	5.2
	Semi profession	14	14.6
	Clerical, shop owner, farmer	34	35.4
Occupation of father	Skilled worker	14	14.6
	Semi skilled worker	29	30.2
	Unemployed	0	0

the students had a family income in the range of Rs. 16020-32049. Only 35.4% of the children were aware of their bodyweight and none of them heard about Body Mass Index 48.9% and were attending tuition on a regular basis.

Table 2 shows that the pattern of moderate to vigorous physical activity/exercise. The mean duration of exercise during weekdays and weekends was 237.7±159.3 and 403.3±268.4 minutes respectively. which less than the recommend

Table 2: Pattern of moderate to vigorous exercise and screen time   N=96

Variables	Categories	Frequency	Percentage(%)
Physical activity/Exercise (weekdays)	≥1hr/day	19	19.8
	< hr/day	77	80.2
Physical activity/Exercise (weekends)	≥1hr/day	72	75
	< 1hr/day	24	25
Total physical activity in a week	≥1hr/day	41	42.7
	< 1hr/day	55	57.3
Screen time during (weekdays)	≥2hrs/day	92	95.8
	< 2hrs/day	4	4.2
Screen time during (weekends)	≥2hrs/day	25	26
	<2hrs/day	71	74
Total screen time in a week	≥2hrs/day	51	53.1
	<2hrs/day	45	46.9

duration of exercise. It was also found that 80.2 % and 25 % don't engage in one hour daily physical activity and exercise during weekdays and weekends respectively and 57.3% don't meet the requirements for 6 hrsof physical activity in a week.

Table 3: Patterns of Physical activity   N=96

Variables	Frequency	Percentage
Mode of conveyance to school		
a) Physical mode (Not using vehicles)	30	31.2
b) Using motor vehicles	66	67.7
Participation in school Sports		
a) Member of sports team	42	43.8
b) Not a member	54	56.2
Participation in school physical education		
a) Always	16	16.7
b) Sometimes	66	68.8
c) Often	14	14.6
d) Very often	0	0
e) Never	0	0

As shown in table 3 , although 54.2% of children stay within 5 km radius of school, 67.7% were using motor vehicles for transportation. Only 43.8% were involved in any sports, while 68.8% participate in school physical education sometimes and 14.6% only often.

Table 4 shows the high prevalence of unhealthy habits associated with television viewing. In the present study physical activity/exercise was not found to be associated with gender, educational status of father, occupation of mother /father, area

Table 4: Unhealthy habits associated with television viewing   N=96

Variables	Frequency	Percentage
Habit of watching TV during breakfast		
a. Yes	74	77.1
b. No	22	22.9
Habit of watching TV during lunch		
a. Yes	79	82.3
b. No	17	17.7
Habit of watching TV during dinner		
a. Yes	81	84.4
b. No	15	15.6
Snacking while watching TV		
a. Yes	58	60.4
b. No	38	39.6

of living, family income, total number of children at home, presence of playground near home/school. Physical activity was found to be significantly high (p=.016) with higher educational qualification of mother and there is a significant decrease (p=.0001) in physical activity with increasing age.

Discussion

The study reveals high prevalence of physical inactivity and other sedentary behaviors among adolescents residing in Kerala. The beneficial role of physical activity in the prevention of NCD in adults has long been recognized. Compared to active subjects, inactive subjects had a relative risk of 1.5 to 2.4 of developing cardiovascular diseases; these effects were independent of other risk factors[6]. There is evidence that adolescents are not enough physically active and unable to sustain their activity levels into adulthood[2]. Sudhain (2007) found that an active lifestyles imply not only increasing physical activity levels, but also decreasing sedentary behavior. Body weight, in between meals snacking, parental Television (TV) watching habits and having a TV in the bedroom are positively associated with youth's TV/video viewing habits [3]. More than half of television viewers in India today are children below 15 years [8].

Data from this study provide the first estimate of the prevalence of insufficient physical activity among adolescents in Thrissur, district of Kerala. However, one should consider that our data arise from a single city. In spite of this limitation, we believe our prevalence estimates are likely to be valid for several parts of Kerala, particularly for cities and states with similar socio-economic and environmental aspects. In conclusion this call for an urgent action initiated and implemented at the local and national level, to prevent escalation of non-communicable diseases in young adults.

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