INDIVIDUAL AND ENVIRONMENTAL FACTORS ASSOCIATED WITH PHYSICAL ACTIVITY PRACTICES AMONG ADOLESCENTS OF DEVCHULI MUNICIPALITY

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ABSTRACT

Background: Regular physical activity helps children and adolescents to remain healthy and fit, improve muscular and cardiorespiratory fitness, have psycho-social benefits The Global School Based Student Health Survey of Nepal 2015 shows that only 15.1% of adolescents of age 13-17 years were physically active daily. The risk factor of chronic diseases are traced back up to childhood hence promoting physical activity should start from childhood. Identification of these factors that affects level of physical activity among adolescents of Nepal and its better understanding will aid in promoting physically active lifestyle and designing effective interventions.

Objective: The study aimed to determine the factors associated with physical activity among adolescents of 15 to 19 years in Devchuli Municipality.

Materials and Methods: Cross sectional study was done among 250 school going adolescents measuring their physical activity level along with individual and environmental variables. The level of physical activity was measured from the tool used in International Physical Activity Questionnaire – Long last 7 days format. Informed Consent was taken from the parents of each participant. The MET values were calculated and were then categorized into three levels which were re-categorized into two categories as high and not high, by merging moderate and low activity level group into “not high” group. The chi square test, binary logistic regression and multivariable logistic regression analysis was also done.

Results: The mean age of participants was 16.43 years with standard deviation of 1.21 years. Total 118 (47.2%) participants were male and 132 (52.8%) participants were male. The 84.8% of participants perceived that they had enough time available for doing physical activities and 95.6% participants responded that they enjoyed doing physical activities. Total 98.8% responded thought that they had space available for physical activities at their school, 82% responded they had space available for physical activities at their neighborhood and 64.8% participants responded they had space available at their home for physical activities. The mean distance in minutes to the nearest playground for participants was 10.79 minutes with SD of 11.38 minutes.

Conclusion: Perception towards physical activity, possession of gadgets, availability of space and materials, supportive settings were not found to be associated with level of physical activity among adolescents.

Keywords: Physical activity, adolescents, individual factors, environmental factors, supportive settings, perception, Nepal

INTRODUCTION

Physical activities may be done as sports activity, or as occupational work, household work or others [1] and includes play, games, sports, transportation, recreation, physical education, planned exercises done at school, at home, with family and community activities [2,3]. The children and adolescents of 5 to 17 years are recommended to do at least 60 minutes of physical activity daily [2,3]. Additional amount of physical activity have additional health benefits [2,3]. Regular physical activities promotes growth and development of children and adolescents and has physical, mental, psychosocial health benefits [4,5]. In 2010, 81% of adolescents of age 11-17 years were not meeting WHO recommendations of physical activity globally. The 2015 Global School Based Student Health Survey of Nepal shows that only 15.1% adolescents of age 13-17 years were physically active for recommended period i.e. at least 60 minutes in all days, for seven days prior to the survey day; whereas 20.4% of adolescents were active for recommended time at least for five days and about half of them (49.9%) were not physically active for 60 minutes in any of those days [6]. The physical inactivity is growing among adolescents [7]. It is most likely that the habit of physical activity or sedentary behavior at childhood and adolescence remains throughout the life [3,8]. It is being clearer that physical inactivity, the risk factor of chronic disease at adulthood are traced back up to childhood and adolescence; and physical activity done at childhood have long term effects at adult morbidity and mortality [7,9–11]. Promoting physical activity must be started from childhood which will help to persist the behavior of doing regular physical activity lifelong and will promote health and prevent from various health conditions [8,12,13]. For the maximum benefits the promotion of physical activities and prevention strategies must start from childhood [5,7]. If we can determine the factors that affects the level of physical activity among adolescents, it will help to plan and implement the interventions to increase the level of physical activity among them [8]. Better understanding of these correlates of physical activity and sedentary behaviors, will make the interventions effective and will aid in promoting physically active lifestyle and preventing the sedentary lifestyle [14]. The objective of this study was to determine the physical activity status and its associated factors (individual and environmental factors) among adolescents of 15 to 19 years in Devchuli Municipality.

MATERIALS AND METHODS

The cross sectional study was conducted in Devchuli Municipality of Gandaki Province among 15 to 19 years school going adolescents on 2018. For data collection purpose students studying from grade 9 to 12 were interviewed through structured questionnaire. The sample size of 250 was calculated based on the prevalence of physical activity among adolescents of Terai region from

GSHS 2015 [6] (prevalence=18%), with p=0.18, Z=1.96 (95% CI level), allowable error 5% (d=0.05) and 10 % non-response rate. The level of physical activity was measured from the tool used in International Physical Activity Questionnaire – Long last 7 days format [15]. The question for measuring individual and environmental variables was developed through review of previous studies. Informed Consent was taken from the parents of each participant. The informed consent form was distributed to take home and signed by parents prior to the study. As the data was collected for physical activity of last 7 days. The details of physical activity of the day of data collection was first discussed. Based on the details of that day, considering that as the baseline details, the previous 7 days' physical activity practices were discussed with study participant. Data checking and compilation of the collected data was performed manually. Coding, entry and cleaning of data was done in EpiData. Analysis was done through IBM SPSS. Physical activity was calculated using four domains i.e. Work domain, Active transportation domain, Yard work domain and Leisure time domain. The MET values were calculated as per the IPAQ data estimating the person's overall energy consumption [16]. MET values were then categorized into three levels which were re-categorized into two categories as high and not high, by merging moderate and low activity level group into "not high" group. The chi square test was done with each independent variable against the dependent variable. Binary logistic regression analysis were done to see the association between dependent and independent variables – which were found statistically significant from chi-square test with p-value less than 0.05. For the multivariate logistic regression analysis, all the independent variables that were found significant in the chi-square test with p-value less than 0.05 were included. It was used to identify the factors associated with physical activity.

RESULTS

The total number of study population was 250. The mean age of participants was 16.43 years with standard deviation of 1.21 years. Total 118 (47.2%) participants were male and 132 (52.8%) participants were male.

Individual Characteristics

The 84.8% of participants perceived that they had enough time available for doing physical activities and 95.6% participants responded that they enjoyed doing physical activities. The 99.2% of participants responded they know that they would have health benefits if they did physical activities. The 78% of participants had their own cycle at home and 40.4% could always use the cycle if they wanted to whereas 11.6% responded they could never use the cycle when they wanted to. The 66.4% participants responded that they had their own gadget (mobile or computer) for their personal use and 84% had television in their home. Table 1 shows the distribution of perception towards physical activity and possession of cycle and gadgets by participants.

Table 1: Distribution of perception towards physical activity and possession of cycle and gadgets by participants

n=250

Characteristics	Number	Percentage
Time available for physical activities		
No	36	14.4
Yes	212	84.8
Don't know	2	0.8
Enjoy doing physical activities		
No	8	3.2
Yes	239	95.6
Don't know	3	1.2
Benefit of physical activities		
No	1	0.4
Yes	248	99.2
Don't know	1	0.4
Cycle availability		
No	55	22.0
Yes	195	78.0
Cycle use		
Never	29	11.6
Rarely	12	4.8
Sometimes	52	20.8
Often	56	22.4
Always	101	40.4
Gadget availability		
No	84	33.6
Yes	166	66.4
TV availability		
No	40	16.0
Yes	210	84.0

Environmental Characteristics

Availability

Total 98.8% responded thought that they had space available for physical activities at their school, 82% responded they had space available for physical activities at their neighborhood and 64.8% participants responded they had space available at their home for physical activities. Total 52.4% participants responded the materials for physical activities were always available in their school, 18.4% responded the materials for physical activities were always available at home and 16.4%

responded the materials for physical activities were always available at neighborhood. Table 2 shows distribution of participants' perception of availability of space for physical activity and sports materials.

Table 2: Distribution of participants' perception of availability of space for physical activity and sports materials

n=250

Characteristics	Number	Percentage
Space in house		
No	88	35.2
Yes	162	64.8
Space in school		
No	3	1.2
Yes	247	98.8
Space in neighborhood		
No	45	18.0
Yes	205	82.0
Materials in house		
Never	26	10.4
Rarely	27	10.8
Sometimes	103	41.2
Often	48	19.2
Always	46	18.4
Materials in neighborhood		
Never	24	9.6
Rarely	33	13.2
Sometimes	76	30.4
Often	76	30.4
Always	41	16.4
Materials in school		
Never	6	2.4
Rarely	18	7.2
Sometimes	39	15.6
Often	56	22.4
Always	131	52.4

Supportive Settings

Total 96.8% participants responded that school was supportive for physical activities, 84.8% said their house was supportive for physical activities and 82.8% responded their neighborhood was

supportive for physical activities. The mean distance in minutes to the nearest playground for participants was 10.79 minutes with SD of 11.38 minutes. The 62.4% responded that they perceive outdoor was safe for doing physical activities and 73.2% responded that they can afford to buy sports materials. Total 42.8% responded that some sort of sport events were organized in their community every week and 35.2% responded such activities were organized once a year. Table 3 shows the distribution of participants' perception about supportive settings for physical activity.

Table 3: Distribution of participants' perception about supportive settings for physical activity

n=250

Characteristics	Number	Percentage
Neighborhood support		
No	43	17.2
Yes	207	82.8
School support		
No	8	3.2
Yes	242	96.8
House support		
No	38	15.2
Yes	212	84.8
Near ground distance in time		
Mean ± SD (minutes)	10.79 ± 11.38	
Safe outdoor (for physical activity)		
No	94	37.6
Yes	156	62.4
Sport materials affordability		
No	67	26.8
Yes	183	73.2
Sport programs		
Everyday	10	4.0
Every week	107	42.8
Every month	22	8.8
Every two months	3	1.2
Every four months	4	1.6
Every six months	9	3.6
Every year	88	35.2
Less than every year	7	2.8

Physical Activity

Most of participants (68.8%) were doing moderate level of physical activities with 28.8% doing high level of physical activity and 2.4% low level of physical activity.

Chi-square test

Chi square test was conducted between variables of perception towards physical activity and possession of cycle and gadgets, and physical activity level of participants. The test showed no association for any variable. Similarly, Chi square test was conducted between variables of perception of availability of space and materials for physical activities and level of physical activities of participants. The test also showed no association with any variable. Also, the chi square test was conducted between variables of participants' perception about supportive settings and physical activity level of participants. The test showed association of safe out space variable (p value 0.009) with level of physical activity.

Logistic regression test

The chi square test showed the association of physical activity level out space safety with the significance level of p value less than 0.05. All the independent variables were tested for logistic regression model to find out the true association, which might have been due to confounding or/and gross effect. The regression model discarded the association of out space safety. The details of the logistic regression are in Table 4.

Table 4: Logistic regression test between sex, religion, out space safe and teacher practical support variables with level of physical activity of participants

n=250

Characteristics	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Beta coeff. (β)	S.E.
Safe outdoor (for physical activity)				
Yes	2.2 (1.2-4.1)	1.9 (0.9-4.1)	0.7	0.4
No	Ref.	Ref.		
Constant	**-2.835**			

DISCUSSION

The study showed that the liking of sports and physical activity and valuing its benefit has no definite association with level of PA similar to the findings of other study [17,18]. The study showed that the perceived importance of physical activity was not significant in determining level of physical activity similar to the another study from rural settings of USA [17]. The study showed no association between having TV at home and owing the personal gadgets as personal computer, mobile is not associated with level of physical activity which was similar to the findings of the systematic review by Van et al. [14]. This study showed no association between owning the bicycle and personal gadgets with PA level but the systematic review [14,19] had shown the association between the variables. Since, the study was the systematic review, so the greater scope of the systematic review might have been able to capture the association between gadget and bicycle use with physical activity. The study showed availability of sports materials and facilities has no association with level of PA which is similar to the findings of other two studies [14,20]. The study showed that social support and neighborhood safety not associated with PA level, which is not supported by the findings of other two studies [21,22]. These studies were done in developed countries, hence the different study site may be the reason for different findings, as social factors

greatly differ between societies. This study did not show association between unsupportive and unsafe neighborhood with the level of physical activity. Other studies which had identified that the unsupportive and unsafe neighborhood acts as the barrier for physical activity for young people and the social support influences the level of physical activity among them. Those studies also had identified that some children were forced to adopt sedentary behavior of screen time activity because the neighborhood complained about the noises [21,22]. These studies were done in developed countries, hence the different study site may be the reason for different findings, as social factors greatly differ between societies. This study did not find any association between perceived access to recreational physical activities and physical activity which was not similar to the finding of other study which had found out that the perceived access to recreational physical activities were associated with level of physical activity among adolescents in a review study [18]. This may be because the Bauman et al study was the systematic review with broad scope and the site of the study reflected those associations. The study found out that out-space safety was not associated with level of physical activity in adolescents opposite to the finding of the study by Goodway and Smith which had identified that lack of safe and appropriate space affects the level of outdoor plays among children and adolescents [21].

CONCLUSION

Most of the participants had time available for physical activity, enjoyed doing physical activities and thought it have benefits, but none of these participants' perception were associated with the level of physical activity practice. Availability of cycle, gadgets or television had no association with level of physical activity. Availability of space, materials, supportive settings and outdoor safety were also not found to be associated with level of physical activity among adolescents. More than half of the participants were doing moderate level of physical activity with very few falling under low level.

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