

Original Research Article

Parent and school modelling factors associated with physical activity practices among adolescents of Devchuli municipality

Aashish Acharya*

Central Department of Public Health, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal

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*Correspondence:

Aashish Acharya,

E-mail: aashish.acharya@iom.edu.np

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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. 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.

Methods: The cross sectional study was conducted to determine the factors associated with physical activity among adolescents of 15 to 19 years in Devchuli Municipality. Physical activity level of adolescents were measured along with parental and school/teacher modelling variables.

Results: The study shows that most of the participants (68.8%) had moderate level of physical activity while 28.8% of participants were doing high level of physical activity. Only 7% of females were doing high level of physical activities compared to 53% males doing the high level of physical activities. The result showed that male participants were more likely to do high level of physical activity (AOR=16, 95% CI=7.3-33.7) than female participants. Similarly, the participants from other than Hindu religion (which consists Buddhist and Christian) were more likely to do high level of physical activity (AOR=6.5, 95% CI=1.8-23.5) than the participants from Hindu religion.

Conclusions: The study showed that male participants and the participants from other than Hindu religion (which consists Buddhist and Christian) were more likely to do high level of physical than their counterparts.

Keywords: Adolescents, Nepal, Physical activity, Parent modelling variables, Teacher modelling variables

INTRODUCTION

Physical activities may be done as sports activity, or as occupational work, household work or others and includes play, games, sports, transportation, recreation, physical education, planned exercises done at school, at home, with family and community activities.¹⁻³ The children and adolescents of 5 to 17 years are recommended to do at least 60 minutes of physical activity daily. Additional amount of physical activity have additional health benefits. The daily recommendation of 60 minutes can be achieved through

multiple short periods of physical activity throughout the day also.² Regular physical activities promotes growth and development of children and adolescents and has physical, mental, psychosocial health benefits.^{4,5} Physical inactivity is the fourth leading risk factor for global mortality causing about 3.2 million deaths globally which accounts 6% of total global death.^{6,7} In 2010, 81% of adolescents of age 11-17 years were not meeting WHO recommendations of physical activity globally, among them 84% adolescents girls were not sufficiently active compared to 78% adolescents boys.⁶ 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.⁸ The physical inactivity is growing among adolescents.⁹ Around 60% of the world's population do not perform adequate physical activity. It is most likely that the habit of physical activity or sedentary behavior at childhood and adolescence remains throughout the life.^{3,10} The practice of adequate physical activity in childhood also helps to reduce morbidity in adulthood and old age.¹¹

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.^{9,11-13} 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.^{10,14,15} For the maximum benefits the promotion of physical activities and prevention strategies must start from childhood.^{5,9} 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.¹⁰ 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.¹⁶ The objective of this study was to determine the physical activity status and its associated factors (parent and school modeling) among adolescents of 15 to 19 years in Devchuli Municipality.

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 8 (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 17. The question for measuring parental and school modeling 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 18. 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. The participants were almost evenly distributed from grade 9 to 12. Total 118 (47.2%) participants were male and 132 (52.8%) participants were female. The 91.6% participants belong to Hindu religion, 80.4% participants lived together with both of the parents. The most common occupation of participants' father was job abroad (26%) whereas the most common occupation of participants' mother was household chores only (52%). Table 1 and 2 shows the distribution of socio-demographic characteristics of participants and distribution of educational and occupational characteristics of participants' parents respectively.

Parent modelling

The most common response for parents giving information about physical activity and its importance was often (36.4%). The highest proportion of participants said that their parents often (39.6 %) encouraged them to do physical activities. Almost half (49.2%) of participants said that their parents never scolded them for doing physical activities.

Total 39.6% participants said that their parents scolded them for their sedentary behavior sometimes. The 32.4% participants were sometimes provided practical support by their parents for doing physical activities and 34.4% said their parents would sometimes participate with them in physical activity. Table 3 shows the distribution of participants' perception towards the parent modeling characteristics.

Table 1: Distribution of socio-demographic characteristics of participants (n=250).

Characteristics	Number	Percentage
Age (in years)		
15	63	25.2
16	86	34.4
17	51	20.4
18	30	12
19	20	8
Mean age±SD (years)	16.43±1.21	
Grade		
Grade 9	62	24.8
Grade 10	62	24.8
Grade 11	52	20.8
Grade 12	74	29.6
Sex		
Male	118	47.2
Female	132	52.8
Ethnicity		
Dalit	34	13.6
Janajati	112	44.8
Brahmin/Chhettri	104	41.6
Religion		
Hindu	229	91.6
Buddhist	9	3.6
Christian	12	4.8
Living with		
With both parents	201	80.4
Only with mother	12	4.8
Only with father	1	0.4
Other than parents	36	14.4

Table 2: Distribution of educational and occupational characteristics of participants' parents (n=250).

Characteristics	Number	Percentage
Father's education		
Illiterate	18	7.2
Literate only	66	26.4
Some primary level	34	13.6
Primary level	35	14
Secondary level	60	24
Higher secondary level	27	10.8
Graduate	7	2.8
Post graduate	3	1.2
Mother's education		
Illiterate	21	8.4
Literate only	88	35.2
Some primary level	30	12
Primary level	27	10.8
Secondary level	66	26.4
Higher secondary level	13	5.2
Graduate	5	2
Post graduate	0	0
Father's occupation		
Household chores only	14	5.6
Business	58	23.2

Continued.

Characteristics	Number	Percentage
Labor works	32	12.8
Service	16	6.4
Agriculture	48	19.2
Job abroad	65	26
Others	17	6.8
Mother's occupation		
Household chores only	130	52
Business	39	15.6
Labor works	10	4
Service	3	1.2
Agriculture	60	24
Job abroad	2	0.8
Others	6	2.4

Table 3: Distribution of participants' perception about parental modelling (n=250).

Characteristics	Number	Percentage
Parent information		
Never	6	2.4
Rarely	13	5.2
Sometimes	62	24.8
Often	91	36.4
Always	78	31.2
Parent encouragement		
Never	9	3.6
Rarely	14	5.6
Sometimes	53	21.2
Often	99	39.6
Always	75	30
Parent scold		
Never	123	49.2
Rarely	47	18.8
Sometimes	65	26
Often	14	5.6
Always	1	0.4
Parent sedentary scold		
Never	5	2
Rarely	11	4.4
Sometimes	99	39.6
Often	92	36.8
Always	43	17.2
Parent practical support		
Never	7	2.8
Rarely	26	10.4
Sometimes	81	32.4
Often	97	38.8
Always	39	15.6
Parent involvement		
Never	42	16.8
Rarely	70	28
Sometimes	86	34.4
Often	37	14.8
Always	15	6

Table 4: Distribution of participants' perception about school modelling (n=250).

Characteristics	Number	Percentage
Teacher information		
Never	4	1.6
Rarely	9	3.6
Sometimes	27	10.8
Often	131	52.4
Always	79	31.6
Teacher encouragement		
Never	4	1.6
Rarely	14	5.6
Sometimes	54	21.6
Often	124	49.6
Always	54	21.6
Teacher scold		
Never	123	49.2
Rarely	48	19.2
Sometimes	64	25.6
Often	10	4
Always	5	2
Teacher sedentary scold		
Never	4	1.6
Rarely	22	8.8
Sometimes	56	22.4
Often	116	46.4
Always	52	20.8
Teacher practical support		
Never	20	8
Rarely	47	18.8
Sometimes	79	31.6
Often	79	31.6
Always	25	10
Teachers involvement		
Never	14	5.6
Rarely	47	18.8
Sometimes	108	43.2
Often	55	22
Always	26	10.4

School modelling

The most common response for teachers giving information about physical activity and its importance was often (52.4%). The highest proportion of participants said that their teachers often (49.6%) encouraged them to do physical activities. Almost half (49.2%) of participants said that their teachers never scolded them for doing physical activities. Total 46.4% participants said that their teachers scolded them for their sedentary behavior often. Total 31.6% were sometimes provided practical support by their teachers/school for doing physical activities and 43.2% said their teachers would sometimes participate with them in physical activity. Table 4 shows the distribution of participants' perception towards the school/teacher modeling characteristics.

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 performed between distribution of socio-demographic characteristics and educational and occupational characteristics, and physical activity category of high and not high of participants. The variables showing significant association with p value less than 0.05 were sex (p value 0.000) and religion (p value 0.043) while age, grade, ethnicity and living with were not found to be associated. Similarly Chi square test

was performed between distribution of participants' perception about parent and school modelling with physical activity level. The test has shown that only the teacher's practical support (0.017) variable was associated with the level of physical activity of the participants.

Logistic regression

All the associated 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. Confidence interval was set at 95 % to control the potential confounding variables.

Table 5: Logistic regression test between sex, religion, out space safe and teacher practical support variables with level of physical activity of respondents (n=250).

Characteristics	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Beta coeff (β)	S.E.
Sex				
Male	15.6 (7.3-33.7)	16 (6.9-37.2)*	2.8	0.4
Female	Ref	Ref		
Religion				
Other than Hindu	3 (1.3-7.5)	6.5 (1.8-23.5)*	1.9	0.7
Hindu	Ref	Ref.		
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		
Teacher practical support				
Never	0.6 (0.2-1.8)	0.6 (0.2-2)	-0.5	0.6
Rarely	0.6 (0.2-1.7)	0.5 (0.1-1.6)	-0.8	0.6
Sometimes	0.99 (0.4-2.9)	0.7 (0.2-2.6)	-0.4	0.7
Often	3.2 (0.9-10.9)	1.1 (0.3-4.7)	0.1	0.7
Always	Ref	Ref		
Constant	-2.835			

* - statistically significant

The regression model showed the association of sex and religion with the level of physical activity, while discards the association of teacher practical support variables. Table 5 shows details of logistic regression test between sex, religion and teacher practical support variables with level of physical activity of participants.

DISCUSSION

The study found out that boys were more likely to engage in physical activities which is supported by another study which concluded boys are likely to do physical activities 2.5 (OR: 2.49, 95% CI: 1.04-5.97) times than girls.¹⁹ The study showed living with single parents was not associated with level of physical activity similar to the systematic review done on 2012 to identify the correlates of physical activity.²⁰ The study did not show association between mother's education and occupation and PA level unlike the other study from Iran, the geographical difference of study site could have made the different results.²¹

The study did not associate parental modeling with the level of physical activity while the other studies had identified that the role of parents as the key factors in establishing the physical activity behavior in children.²² A review of articles had identified that family support has positive association with level of physical activity among

adolescents²⁰ A cross sectional study from Iran had stated that the informational family support was positively associated with level of physical activity (OR for low perceived informational family support=1.10, 95% CI=0.620-90, P=0.002) among boys.²¹ Study from Denmark showed that adolescents did not participate much in physical activity if their parents did not allow and approve their physical activity.²³ A cross sectional study of Iran had found out that for girls emotional family support was positively associated with level of physical activity (OR for low perceived emotional family support=1.02, 95% CI=0.67-0.99, P=0.043).²¹ Other studies also had shown association between encouragement, information and support shared by parents with level of PA which unlike the finding of this study.²⁰⁻²⁶ While a study showed similar result of no association.¹⁶ However, this study did not showed the similar association as those studies, the different societal context could be the reason for the difference. Also, those studies were either systematic review or the studies with large sample size in relatively urban areas, so the similar association may not have been possible to be established by this study.

The study showed no association between level of PA and school modelling variables supported by other study, one study had showed the positive relationship probably because that study was the systematic review for

American society with large sample size.^{26,27} The difference in study site and large sample size (systematic review) could be the reason for the difference in findings.

Most of the participants (68.8%) had moderate level of physical activity and very few (2.4%) low level of physical activity. While 28.8% of participants were doing high level of physical activity. From the initial chi square test the study shows association of physical activity with sex, religion and teacher practical support variables. For these variables, to control for spurious associations, multiple logistic regression test was done, the test shows the sex and religion were associated with physical activity. The resulted model showed that male participants were more likely to do high level of physical activity (AOR=16, 95% CI=7.3-33.7) than female participants. Similarly, the participants from other than Hindu religion (which consists Buddhist and Christian) were more likely to do high level of physical activity (AOR=6.5, 95% CI=1.8-23.5) than the participants from Hindu religion.

CONCLUSION

The study showed that male participants and the participants from other than Hindu religion (which consists Buddhist and Christian) were more likely to do high level of physical than their counterparts.

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