ORIGINAL ARTICLE

PARENTAL AND SCHOOL INFLUENCES ON PHYSICAL ACTIVITY LEVELS OF HIGH SCHOOL STUDENTS IN HYDERABAD, PAKISTAN

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Background: Childhood physical activity (PA) is an important determinant of health in adults which is influenced by the environment in and outside of home. We aimed to determine the contribution of parental and school factors on student's PA in this study. **Methods:** This cross sectional study was conducted on students attending public and private schools in Hyderabad, Pakistan. A random sample of 246 girls and 255 boys in grade six to ten were selected from ten schools. The PA was assessed through face to face interviews by using the adapted School Health Action Planning and Evaluation System (SHAPES) questionnaire. **Results:** 40% of the students either walked to or rode on a cycle to travel to their school and 62% students performed individual exercises after school. They spent 6.2 and 5.3 hours on moderate and hard PA per week. About 57% of the mothers and 47% fathers of the students did some mild to moderate exercise 4 times in the week prior to the interview. Students were physically active if they lived in a nuclear family, had believed they had better athletic ability, participated in sports in and out of school and performed moderate exercises (p<0.05). **Conclusions:** In conclusion parental support to PA was significantly associated with students' being physically active both within and outside schools.

Keywords: Physical activity, exercise, children, school, parent

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INTRODUCTION

Regular physical activity (PA) with moderate intensity has significant benefits for health and can reduce the risk of cardiovascular diseases, diabetes, cancer and depression. It involves skeletal muscles to cause body movement by consuming energy and is performed by activities such as walking, cycling, or participating in sports. An estimated 3.2 million deaths globally are attributed to physical inactivity making it the fourth leading risk factor for deaths worldwide.[1]

Children's PA practices determine various health related outcomes in adulthood. The risk factors for adult non-communicable diseases particularly diabetes mellitus, ischemic heart disease and hypertension begin early in childhood.[2] In a large cohort study done on 7–13 year old children; it was found that overweight children had greater chances of developing coronary health disease in adulthood.[3] Results from the Italian IDEFICS cohort study showed that environmental factors influenced patterns of PA and body fat in children.[4] These studies highlighted the need of focusing the interventions and research on children and their immediate environments to prevent the occurrence of cardiovascular diseases in later ages. Regular PA habits established during childhood may provide the greatest impact on overall health and longevity.[5] For children to participate in PA, parental influence and involvement are underlining determinants. Physically active parents inspire their children to be physically active at home and outside.[6] In contrast, overweight and physically inactive parents are less likely to support and help their children to be physically active and maintain a healthy weight. In addition to this, parental behaviour towards PA determines obesity in children. Low levels of parental PA is associated with low PA and unhealthy weight in children.[7–9] Schools, neighbourhoods and homes are important for all children to have access and availability of PA including space for sports, equipment and staff training on carrying out or instructing exercises and sports.[10] Although it is recommended that school students should spend at least one hour of their curriculum time on moderate PA; schools generally ignore the importance of incorporating PA as a regular and mandatory part of their curriculum.[11] Pakistan has one of the lowest prevalence rates (22%) of physically active adult population globally.[12] This is because the civic amenities for PA and play have to keep pace with rapid urbanization of the country.

With lack of development in the rural areas more of the population is settling in the cities. According to the 1998 census, 32.5% of the population lived in urban areas and it is projected that over half will be living in cities by the year 2030.[13] Other factors such as time spent on social media, watching television, playing video games and watching movies affects children's PA which leads to weight gain. Further, television is the also the medium used for food advertisements targeting children.[14] The study objectives were to determine the PA levels of high

school students and how school and home environments contributed to their PA practices.

MATERIAL AND METHODS

This school based cross sectional study was conducted over a period of six months in an urban sub-district (locally called *Taluka*) in Hyderabad, Pakistan. Hyderabad city is the third largest city in Pakistan with a current estimated population of 2 million inhabitants.[15]

The target population for the study was grade six to ten high school male and female students, in private and government schools of the selected administrative unit (*Taluka)*. Details on sample size calculation and study population along with the determinants of obesity were reported previously.[16] Briefly, 504 students were randomly selected from two government and eight private schools (Figure-1). Face to face interviews were conducted with the students by using structured questionnaire adapted from the School Health Action Planning and Evaluation System (SHAPES).[17] The questionnaire was used to inquire about PA related behaviours of students and influences on them in school and at home. Complete information was available for the 501 students as 3 questionnaires were incomplete and were excluded from data analysis. Data was analysed through SPSS version 17.0 by using appropriate descriptive and inferential statistics such as chi square and t-test at 5% level of significance. Moderate PA was defined as walking, brisk walking, yoga, dancing and skipping. Hard PA included sports like body building, racket games, swimming and running. Active commuting to school was by walking or cycling and inactive by car, bus or other transport. Prior consent of the parents and assent of the students was obtained. The study was approved by the ethical review committee of the Aga Khan University, Pakistan.

RESULTS

The study participants were 13.8±1.6 years old, 255 boys (50.9%) and 246 girls (49.1%) with a male to female ratio of 1.04 representing an almost equal gender distribution. The majority of the students were above 13 years of age (67.1%), belonged to middle socioeconomic class (35.3%) and were enrolled in private schools (79.8%). There was approximately equal representation of students by study grade ranging from 20.2% in grade 6 to 17.6% in grade 10 (Figure-2).

The PA profile of the students showed that about 40% students used an active way to commute to their schools and on an average; it took them 9.66±6.7 minutes to reach school. More than half of the students (61.9%) did some type of exercise or sports activity when at home and participated in games in their neighbourhood. The information on weekly duration of media time and exercises was obtained through adding the details for each day of last week. Hence the students spent about 20±13 hours on media; such as, TV, computer or video games. They spent, on an average, 6.2±5.9 and 5.3±5.2 hours on moderate and hard PA. Half of the parents were involved in some kind of PA 4 times in the week preceding the interview and half of the students received encouragement from their parents; however 71.7% said that their parents were supportive in PA by accompanying them to playgrounds and even playing with them (Table-1).

Table-2 shows that about 78% of students agreed that physically active students performed better in their studies at school, 73% responded that 1-3 of their 5 best friends were physically active and 37.9% of the participants wanted to lose weight. About half of the schools did not have indoor (table tennis, badminton, squash, throw ball and basketball) while 59% did not have outdoor (cricket, football, hockey, volley ball, etc) sports facilities. The majority of the schools (44.7%) did not offer physical education (PE) classes as part of their curriculum and 77% did not offer opportunities for students to participate in sports competitions with other schools. More than half of the participants (50.9%) said that the number of the games organized for students was not enough at school and 43.3% believed that they had "just right" number of games. Only 68% and 32.5% of schools gave any awards to winners in competitive and non-competitive sports, respectively.

Table-3 shows the results from the Likert scale variables about emphasis given to PA and sports in schools. Almost half of the schools gave none or little emphasis on competitive and non-competitive sports, respectively. Schools did not involve, in 39% of cases, their students in planning of sports events and 69% of students perceived that the school staff was physically inactive. Parental support in students being physically active was significantly related to belonging to a nuclear family, having a perception of better athletic ability, participation in games and exercise in and out of school and performing moderate exercises (p<0.05) (Table-4).

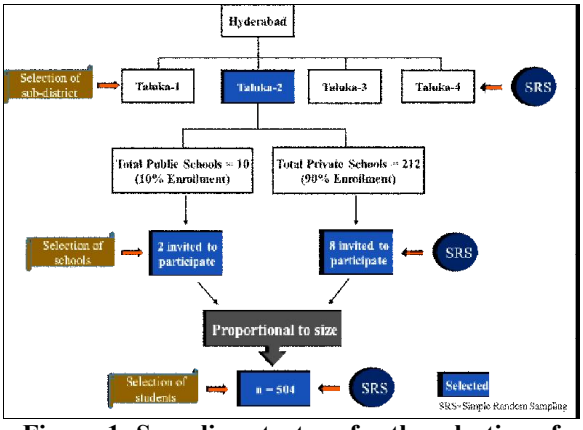

Figure-1: Sampling strategy for the selection of grade 6–10 students of Hyderabad, Pakistan

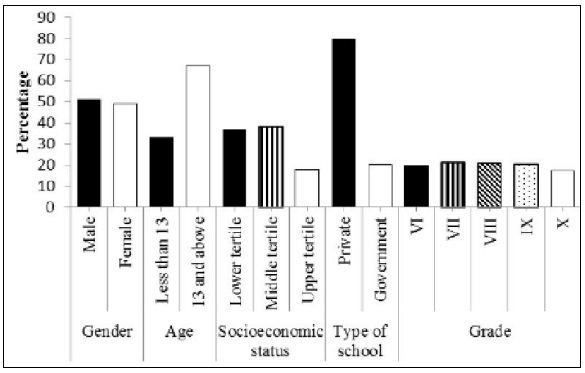

Figure-2: Descriptive characteristics of grade 6-10 students of Hyderabad, Pakistan (n=501)*

*Information on socio-economic status was available for 370 participants.

Table-1: Characteristics of PA in grade 6-10 tudents and parents of Hyderabad, Pakistan (n=501)

Student Characteristics	Frequency	Percent
Mode of travel to school		
Actively	197	39.3
Inactively	304	60.7
Typical week of Moderate exercise		
Yes	374	74.7
No (less active in last week)	127	25.3
Typical week of hard exercise		
Yes	338	67.5
No (less active in last week)	163	32.5
Anything prevented exercise last week*		
Yes	150	30.0
No	350	70.0
Exercise for flexibility of muscles†		
≤4 days in a week	423	84.8
>4 Days a week	76	15.2
Exercise for strength of the muscles*		
≤4 days a week	436	87.2
>4 days a week	64	12.8
Individual exercises after school		
Yes	310	61.9
No	191	38.1
Participate in games outside school*		
Yes	296	59.2
No	204	40.8
Individual exercises after school		
Yes	296	59.2
No	204	40.8
Parental characteristics		
Fathers Physically Active in last week*	**Frequency**	**Percent**
≤4 days a week	247	49.4
>4 days a week	253	50.6
Mothers Physically Active in last week		
≤4 days a week	286	57.1
>4 days a week	215	42.9
Parental encouragement in PA		
Strongly Encourage	246	49.1
Encourage	174	33.7
Do Not Encourage or Discourage	81	16.2
Parental help and support in PA		
Supportive	359	71.7
Unsupportive	142	28.3

Missing Information: *1 participant, †2 participants

Table-2: Characteristics related to perceptions about PA and school PA environment of grade 6–10 students of Hyderabad (n=501)

	Frequency	Percent
Physically active students do better in school		
Agree	392	78.2
Disagree	109	21.8
No. of friends physically active*		
1–3	365	73.0
4–5	135	27.0
Trying to do about your weight		
Lose Weight	190	37.9
Gain Weight	78	15.6
Stay with the same Weight	147	29.3
Not doing anything about Weight	86	17.2
Indoor facilities for sports in school		
Yes	254	50.7
No	247	49.3
Outdoor facilities for sports in school		
Yes	205	40.9
No	296	59.1
PE classes in last week		
0 Classes per week	224	44.7
1 Classes per week	157	31.3
2 Classes per week	60	12.0
More than 3 Classes per week	60	12.0
No. of games in school		
Too few	255	50.9
Just Right	217	43.3
Too Many	29	5.8
Awards in sports competitions		
Yes	343	68.5
No	158	31.5
Awards in Non-competitive sports		
Yes	163	32.5
No	338	67.5

*Missing Information: 1 participant

Table-3: Descriptive characteristics related to "Emphasis given in school"; of grade 6-10 students of private and government schools of Hyderabad (n=501)

	None N (%)	A little N (%)	Some N (%)	A Lot N (%)
Participation in competitive sports	119 (23.8)	108 (21.6)	159 (31.7)	115 (22.9)
Participation in non-competitive sports	161 (32.1)	109 (21.8)	145 (28.9)	86 (17.2)
Positive attitudes about PA	117 (23.4)	71 (14.2)	166 (33.1)	147 (29.3)
Informing opportunities for PA*	156 (31.2)	77 (15.4)	149 (29.8)	118 (23.6)
Involving students in planning of sports events	195 (38.9)	88 (17.6)	128 (25.5)	90 (18.0)
School staff physically active*	344 (68.8)	50 (10.0)	72 (14.4)	34 (6.8)

*Missing Information: 1 participant

Table-4: Parental and school support/help in PA among grade 6–10 students of Hyderabad (n=501)

	Very Supportive n (%)	Supportive n (%)	Unsupportive n (%)	Very unsupportive n (%)	*p*
Type of Family					
Nuclear	113 (36.2)	118 (37.8)	59 (18.9)	22 (7.1)	0.048*
Joint	79 (41.8)	49 (25.9)	42 (22.2)	19 (10.1)	
Athletic ability					
Excellent	73 (57.0)	31 (24.3)	14 (10.9)	10 (7.8)	
Good	84 (39.4)	77 (36.2)	38 (17.8)	14 (6.6)	<0.001†
Fair	28 (24.8)	45 (39.8)	29 (25.7)	11 (9.7)	
Poor	7 (14.9)	14 (29.8)	20 (42.6)	6 (12.8)	
Participate in games outside school*					
Yes	136 (45.9)	94 (31.8)	47 (15.9)	19 (6.4)	<0.001†
No	56 (27.5)	73 (35.8)	53 (26.0)	22 (10.8)	
Individual Exercises after school*					
Yes	147 (47.6)	96 (31.1)	46 (14.9)	20 (6.5)	<0.001†
No	45 (23.6)	71 (37.2)	54 (28.3)	21 (11.0)	
Participation in school games					
Yes	129 (51.4)	79 (31.5)	34 (13.5)	9 (3.6)	<0.001†
No	25 (24.8)	34 (33.7)	29 (28.7)	13 (12.9)	
None Offered	38 (25.5)	54 (36.2)	38 (25.5)	19 (12.8)	
Participation in games with other schools					
Yes	64 (55.2)	35 (30.2)	11 (9.5)	6 (5.2)	<0.001†
No	68 (38.0)	61 (34.1)	37 (20.7)	13 (7.3)	
None Offered	60 (29.1)	71 (34.5)	53 (25.7)	22 (10.7)	
Chances to play outside classes					
Yes	101 (45.5)	58 (26.1)	45 (20.3)	18 (8.1)	0.009†
No	91 (32.6)	109 (39.1)	56 (20.1)	23 (8.2)	
Moderate exercise /week					
≤ 2.3 hours	45 (26.8)	70 (41.7)	36 (21.4)	17 (10.1)	0.001†
2.4-6.9 hours	62 (45.6)	47 (34.6)	19 (14.0)	8 (5.9)	
≥ 7 hours	85 (43.1)	50 (25.4)	46 (23.4)	16 (8.1)	

Percentages are row wise, * Missing Information: 1 participant; †$p<0.05$

DISCUSSION

Although a high proportion of the parents was encouraging and supporting their children in PA still only about half of them were physically active. The parents who were not physically active were not encouraging and helpful of their children's participation in sports and outdoor games.

We found that the participants did not have enough opportunities, motivation and influence to stay healthy in or after school time. Though the majority of the students (78%) believed that the physically active students can outperform in studies those not active but the majority also said that schools had limited facilities for indoor and outdoor sports, almost half of students did not have PE classes or any games in their schools. Though a significant percentage (68%) of schools distributed prizes for competitive sports, only 33% gave prizes for non-competitive sports. Similarly, the majority of the schools did not emphasize upon the activities that could lead to adoption of behaviours that improve PA in students; such as, motivating them to participate in sports or informing them about PA opportunities. A significant part of our sample was spending a great amount of their time in sedentary activities instead on PA. Such activities included watching television, playing video games on computers and watching movies at homes and in neighbourhoods; perhaps, as a result of limited outdoor sports opportunities in their vicinity. Parents nevertheless recognized that their children spent more than an expected time on the media.[18] Therefore a family focused program is vital and effective to reduce media time and encouraging spending time on sports.[19]

Parental role modelling in PA behaviours and translation into their children being physically active has been proven by researchers elsewhere.[20,21] Interventions directed at both parents and children have given promising results and children can effectively adopt PA practices better while their parents are involved in behaviour change.[22,23] Parental and family encouragement of exercise and healthy behaviours has significant positive improvement in PA levels in children.[24] The finding that about 78% of the students believed that physically active students performed better in academics is consistent with existing literature showing strong relation of PA level with academic grades.[25]

We also found that PE classes were insufficiently offered in the schools included in the study. Our results are consistent with other studies that showed that PE is associated with a proportionate increase in PA levels of school

children.[26] Studies show that PA opportunities in school either during formal PE classes, other classes and in recess help increase health, well-being and self-esteem of children.[27] Teachers can play an important role through these classes in motivating children to adopt physically active behaviours such as commuting to school by walking or by bicycle.[28] Additionally, if the motivation for PA is directed by a senior school staff and a dedicated PE or fitness educator, the children's attitudes towards PA change more effectively.[29] In addition, this motivation affects children's PA outside school.[30] As schools gave insufficient information to students about PA opportunities and the students had limited involvement in planning of sports events, hence this could have negatively affected the PA behaviours of the students in this study.

CONCLUSION

Parental support and supervision can bring positive changes in children's PA behaviours. Parents also need to ensure that their children's schools offer sufficient opportunities, education and facilities for their children's PA needs. Evidence-based PA guidelines are needed for children of all ages. The government can legislate that schools and residential areas offer spaces and opportunities for sports for students and that schools follow strict guidelines to incorporate PE in the students' curriculum. Further interventional studies are necessary to modify the factors associated with PA for improving the health of school students.

Conflict of interest: Authors declare no conflict of interest.

AUTHOR'S CONTRIBUTION

JA conceived and designed the study, VM and GK analysed the data, SUR and SMS contributed in the development of the manuscript and RH critically revised the manuscript.

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