

Factors Affecting Academic Performance of Primary School Children

Sultana Habibullah, Junaid Ashraf
PMRC Research Centre, Dow Medical College, Karachi.

Abstract

Objectives: To determine the socio-economic, psychosocial, environmental and student related factors affecting academic performance of public and private primary school children.

Study type, settings and duration: Descriptive cross-sectional survey of 600 students (300 each from public and private primary schools) using randomly selected children from Saddar town, Karachi.

Subjects and Methods: Using selected schools and children, information was collected on a questionnaire. The factors studied included socio-economic, psychosocial, school and home environment and student related factors. SPSS version 15 was used for data analysis and chi-sq at 0.05 alpha level for significance test. Univariate and multi variate analysis were used to find out the association of the variables.

Results: A total of 600 students filled the questionnaire of whom 300 were from private and 300 from public sector schools. The mean age of children was 11.37 ± 1.52 with male to female ratio of 1:1.8 in public schools and 1:0.9 in private schools. Socio-economic status was classified as good, fair and poor using the parent's job and number of family members working. Almost 34% children belonging to public and 65% to private schools were categorized as good. Among the public school children 65% fathers and 58% mothers were literate while, these figures were 62% and 67% among private school children. Overall 25% school children did not regularly take breakfast. Almost 50% public and 20% private school children remained absent once a week. Overall 35% children did not have adequate sleep and 22% children of public and 14% of private schools were suffering from some kind of illness. Based on BMI overall 24% children were underweight while, obesity was seen in 3% public and 11% private school students. Parent's help in completing school homework was twice more in those studying in private school (11% public and 22% private) thus showing a better academic performance of students in private school (poor performance seen in 40% public and 16% private). Cognitive behavior evaluated from learning habits and overall psychosocial condition was good in both types of school children and school environment of 43% public and 54% private school was also good. Majority of the schools had no sports or physical training facilities. Using univariate and multivariate analysis it was found that younger age, female gender, better socio-economic condition, habit of taking breakfast, better condition of school, and regular attendance were significantly associated with better academic performance.

Conclusion: Academic performance of public school children was poor as compared to private schools. Socio-economic, psychosocial, school and home environment and student's own factors, affected their academic performance.

Policy message: School and out of school factors both need to be improved for achieving good school achievement of primary school children.

Key words: School achievement, socio-economic condition of families, sib size, psychological condition, school and home environment, health, diet, sports, leisure time activities, learning habits.

Introduction

Globally children are pressurized to learn more in schools and improve their abilities to read write and apply solution of problems in order to pass a successful and comfortable life¹. Attempts to improve academic performance in school include high

expectations, task on time, safe climate and challenging curriculum. Schools are often blamed for student's poor academic performance despite the fact that teachers and principal work hard to provide strong curricula, high expectations and safe climate². Academic performance is affected by many factors which included prenatal, natal and postnatal issues of the mother apart from nutritional, socio-economic and environmental factors^{3,4}. Children who do poorly at school may be under a lot of stress and cope with it either by externalizing their feeling as behavior problem while, others might internalize it and present with daily headache or stomachache⁵. It is generally perceived that there are two groups of students, one who can improve and another who do not improve⁶.

Corresponding Author:

Sultana Habibullah
PMRC Research Centre
Dow Medical College
Karachi.
Email: s.habib@duhs.edu.pk

Trend towards education in Pakistan is growing but the effect of socio-demographic profile of the family, eating habits, recreation and school environment on the academic output of these children has not been studied. Identification of these factors and their solution is likely to improve the yield of these youths. The present study was done to compare the socio-economic, psychosocial, environmental (school and home) and student's related factors affecting academic performance between public and private primary school children.

Subjects and Methods

This was a cross-sectional descriptive study. Total sample size of the study was 600 primary school children, calculated by taking anticipated population proportion of 50% at confidence interval of 95% and relative precision of 4%⁷.

Out of a total of 600 children, 300 were selected from 14 public schools and 300 from 11 private schools. These schools were selected randomly from 10 Union Councils of Saddar town, Karachi.

All students of class five who were present at the day of interview and were fit for interview were included in the study.

Variables included socio-economic status which, was assessed by number of parents employed and their job type. Psychosocial factors were evaluated by the interest in attending school, mood type, any feeling of loneliness, confidence, anxiety or anger. Environmental factors included both school and home environment. School environment variables included condition of school building, class room size, availability of ventilation and sunlight or electricity and fans, school furniture, surrounding noise and teacher student ratio. Home environment variables included number of brothers/sisters living with them, parental education, involvement of parents in student's homework. Student's factors included physical health/illness, physical training/sports activities, leisure time activities, school attendance, diet/nutrition, learning skills, sleep/rest hours, healthy habits like hand washing, brushing teeth. Health indicator used was calculation of Body Mass Index (BMI). Dependent variable included students grade/score obtained in last year annual examination.

Information was collected using a questionnaire and an assent form was developed for students in Urdu/English where they were asked to write their name if they agreed to participate in the study. Ethical clearance was obtained from Institutional Review Board of Dow University of Health Sciences, Karachi. Permission was obtained from Assistant District Officer Education, Saddar town and also from Principals of selected schools.

Data was analyzed on computer package version 15 and chi-sq at alpha level 0.05 was used for statistical significance. Univariate and multivariate analysis were used to find out association of the variables.

Excluding the background variables, scores were given to each variable, maximum score for socio-economic and psychosocial condition was 5 and 18. Minimum score was 0, maximum score for school and home environment was 17 and 13 and minimum 1 and 2 respectively. Maximum score for overall student level factors was 57 and minimum 6, maximum score for dietary habits and learning skills were 16 and 12 and minimum was 4. BMI was calculated from weight and height of children. BMI of less than 5th percentile was graded as underweight child, 5th to 85th percentile as healthy child, 85th to 95th percentile as overweight and equal to or more than 95th percentile as obese⁸. Score of 60% and above was graded as good, 59-40% as fair and 39% and below was graded as poor.

Results

Data collection was started in October 2010 and completed in February 2011 during which information on 600 primary (grade five) school children i.e.300 from 14 public and 300 from 11 private schools was collected. Majority of children i.e.132 (44%) from public and 156(52%) from private schools were 11-12 years old (mean age 11.37±1.52) with male to female ratio was 35:65 in public schools and 52:48 in private schools. Habit of chewing nuts/chalia was significantly more (42%) in public as compared to private schools (29%)(<0.000) (Table-1).

Table 1: Age and gender distribution of children.

Age in Years	Public School n=300			Private School n=300		
	M	F	T(%)	M	F	T(%)
9-10	15	49	64(21)	61	56	117(39)
11-12	53	79	132(44)	75	81	156(52)
13-14	35	59	94(31)	18	6	24(8)
15-16	1	9	10(4)	2	1	3(1)
Total	104	196	300(100)	156	144	300(100)

Both parents of only 6% public and 11% private school children were working and thus earning, parents were mostly skilled laborers. Socio-economic condition of the families was evaluated using number of dependants, ownership of house and other assets and using these criteria 34% public and 65% private school children were categorized as good.

Overall psychosocial condition of public and private school children was good with no difference found in public and private school children. Almost 66% public and 70% private school children never felt disinterested in going to schools, slightly over 50% cases (54% public and 52% private) never felt sad and similarly over 75% (77% public and 79% private) never felt lonely. It was also found that 34% public and 54% private children were confident about themselves. Almost similar percent of children (54% public and 55%) confessed that they get uneasy

during examinations/tests and similarly 47% public and 52 % private school children said that they become angry on very small things.

Among the public school, girl students felt less confident got uneasy and angry very quickly as compared to boys. ($p<0.000$).

Out of 14 public schools, 3 schools had poor/old building, one school had small class rooms and surroundings of 9 schools were noisy due to traffic and being located in commercial areas. Sufficient light, windows, ventilation, electricity and furniture were available in all 14 schools. Out of 11 private schools 2 had very poor/old building, 3 had small classrooms, ventilation/windows were not present in 2 schools and 7 schools were noisy due to traffic and commercial activity. Electricity and furniture were available in all 11 schools. Environment of 43% public and 54% private schools was good.

Parents of both public and private school children were mostly educated and this frequency was 65% and 58% for fathers and mothers in public and 62% and 67% in private school children. Mean number of brothers/sisters in public school children was 6 and it was 3 in private school children. Only 11% public and 22% private school children were helped out by their parents in completing their school homework. (Table-2). Home environment of 26% public and 59% private schools children was good.

Table 2: Distribution of assistance in completing school homework of primary school children.

Assistance in Completing School Homework	Public School n=300			Private School n=300		
	M	F	T (%)	M	F	T (%)
Mother/father	14	18	32 (11)	32	33	65 (22)
Tuition/coaching	31	86	117 (39)	97	85	182 (61)
Himself/herself	42	59	101 (34)	19	17	36 (12)
Others	17	33	50 (16)	8	9	17 (5)
Total	104	196	300 (100)	156	144	300 (100)

The study found disease or some health related issue was more (22%) in that public as compared to private school children (14%). Health of private school children was better especially in boys ($p<0.052$).

Almost 75% children of both public and private schools usually took breakfast before going to school. Meat in take in these two groups also did not show a major difference. The ratio of consuming meat three times per week in public vs. private primary school children was 38:41 and for daily milk was 37:64. Almost 38% public school children took eggs occasionally as compared to 30% private school children who took eggs daily. Fruit

consumption was occasional in 49% public school children as against 52 % private school children who eat fruits daily. Overall dietary score was good in 60% private school children and 37% public school children.

Dietary habits were poor, number of siblings more and education of mother less in public schools children as compared to private schools ($p<0.013$ & $p<0.029$).

Almost 50% public and only 20% private school children remained absent once a week and this absenteeism was more in girls ($p<0.009$) and where mothers were less educated as compared to private school children ($p<0.000$). Absenteeism was more in both schools where school environment was noisy ($p<0.029$ and $p<0.000$ respectively).

No sports facilities/physical training (PT) classes were found in 50% public and 57% private schools and only 30% public and 40% private school students under took sports activities once per week /holidays at home. Among both groups of children sports activities were significantly more in boys ($p<0.010$ and $p<0.046$).

About 40% public and 57% private school children took part in extra curricular activities. These activities were more in boys who were more confident than girls and who had literate mothers and took breakfast regularly. ($p<0.000$, $p<0.000$, $p<0.001$, $p<0.030$).

Watching TV for an hour daily was 7% in public and 11% in private school children while, 16% public and 51% private school children used computer either in school or at their homes. Personal cellular phones were available to only 7% public and 16% private school children.

Cognitive behavior of primary school children were evaluated from learning habits for four main subjects i.e. mother tongue (Urdu/Sindhi), English language, Science and Mathematics. It was found that maximum number of children completed their homework in all four subject in less than half hour. It was also found that learning of one subject was strongly linked with learning of other subject and so on ($p<0.000$)

Almost 65% children from both groups slept for 8-10 hour per night and all (100 %) children washed their hands before taking meals and after going to washrooms. Brushing of teeth twice daily was reported by 43% public and 55% private school children.

Mean Body Mass Index (BMI) in both groups was 16.5. BMI of 73% public and 65% private school children was normal (5th-85th percentile), 24% public and private school children were under weight (less than 5th percentile), 3% public and 11% private school children were obese (more than 90th percentile).

It was found that 20% public and 21% private school children obtained A1 (very good) score in their last examination, 21% and 38% respectively obtained A (good) score, 19% and 25% obtained B (satisfactory) score and 40% and 16% obtained C/D (poor/failure) score.

Table 3: Distribution of academic performance and gender of primary school children.

Academic Performance	Public School n=300				Private School n=300			
	M	F	T(%)	95% C.I	M	F	T(%)	95% C.I
A1(very good)	18	41	59(20)	1.6-1.8	35	27	62(21)	1.3-1.6
A (good)	15	48	63(21)	1.6-1.9	55	59	114(38)	1.4-1.6
B(satisfactory)	8	50	58(19)	1.8-1.9	35	40	75(25)	1.4-1.6
C/D(Poor/failure)	63	57	120(40)	1.4-1.6	31	18	49(16)	1.2-1.5
Total			300				300	

Table 4: Estimated odds ratio, 95% confidence interval from univariate logistic regression for academic performance and selected indicators.

Indicator	Odds ratio	95% C Interval	Sign
<i>Age group</i>			
15-16 years(reference)			
9-10 years	1.16	3.68-1.36	0.791
11-12 years	1.83	2.93-1.14	0.011
13-14 years	1.23	1.90-0.80	0.341
<i>Gender</i>			
Female(reference)			
Male	1.06	1.15-0.06	0.588
<i>Status of school</i>			
Public school(reference)			
Private school	1.4	1.6-0.35	0.004
<i>Socio-economic condition</i>			
Poor socio-economic condition (reference)			
Good socio-economic condition	1.04	2.61-0.42	0.918
Fair socio-economic condition	1.58	2.19-1.13	0.006
<i>School environment</i>			
Poor school environment (reference)			
Good school environment	1.86	3.36-1.03	0.037
<i>Home environment</i>			
Poor home environment (reference)			
Good home environment	1.55	2.49-0.96	0.069
Fair home environment	1.86	2.66-1.31	0.001
<i>Attendance in school</i>			
Almost absent(reference)			
Absent never	0.65	0.96-0.43	0.033
Absent sometimes	2.19	3.29-1.45	0.000
<i>Breakfast</i>			
No breakfast(reference)			
Breakfast daily	1.49	0.95-0.25	0.037
Breakfast sometimes	1.79	1.29-0.48	0.353

Among both groups of children, the academic performance correlated with the confidence of children ($p < 0.024$ & $p < 0.038$), overall school environment ($p < 0.005$ & $p < 0.054$), noisy school environment ($p < 0.000$) and taking parts in sports ($p < 0.000$ & $p < 0.001$). In addition to this, among public school children academic performance was statistically significant with gender of the children, those who take breakfast ($p < 0.000$ & $p < 0.000$) whereas, among private school children with the type of their parents jobs ($p < 0.011$) (Table-3).

Using univariate analysis it was found that age, gender, socio-economic condition of the family, status of school (public/private), overall good school and home environment, attendance in school and habit of taking breakfast were found significantly associated with academic performance of school children (Table-4).

Using multivariate analysis age, gender, socioeconomic condition of the family, status of school, good school and home environment, attendance in school, taking breakfast, good learning habits never feeling sad, never feeling lonely and disinterested in attending school showed significant association with academic performance of school children (Table-5).

Discussion

This cross-sectional survey on grade five school children from public and private school revealed that academic performance of public school children was poor as compared to private school children.

In the present study performance of all children especially, the private school children was strongly

Table-5: Estimated odds ratio, 95% confidence interval from multivariate logistic regression for academic performance and selected indicators.

Indicator	Odd ratio	95% CI	Sign
<i>Age group</i>			
15-16 years(reference)			
9-10 years	1.22	3.5-0.35	0.845
11-12 years	1.83	2.92-1.14	0.012
13-14 years	1.23	1.90-0.80	0.342
<i>Gender</i>			
Female(reference)			
Male	1.83	1.16-0.60	0.288
<i>Soico-economic condition</i>			
Poor socio-economic condition (reference)			
Good socio-economic condition			
Fair socio-economic condition	1.80	2.73-0.43	0.859
<i>Status of school</i>			
Public school(reference)			
Private school	1.53	1.7-0.37	0.000
<i>School environment</i>			
Poor school environment (reference)			
Good school environment	1.86	3.37-1.02	0.041
<i>Home environment</i>			
Poor home environment (reference)			
Good home environment	1.57	2.53-0.98	0.060
Fair home environment	1.86	2.65-1.30	0.001
<i>Attendance in school</i>			
Almost absent(reference)			
Absent never	0.65	0.97-0.44	0.038
Absent sometimes	2.23	3.37-1.48	0.000
<i>Breakfast</i>			
No breakfast(reference)			
Breakfast daily	1.61	2.71-0.96	0.069
Breakfast sometimes	2.02	3.91-1.04	0.036
<i>Learning habits</i>			
Poor Learning habits(reference)			
Good Learning habits	1.4	1.8-0.11	0.280
Fair Learning habits	1.9	1.48-0.56	0.711
<i>No interest in attending school</i>			
No interest in attending school many times(reference)			
No interest in attending school never	0.61	1.6-0.22	0.348
No interest in attending school sometimes	1.73	2.51-1.19	0.004
<i>Feeling sad</i>			
Feeling sad many times(reference)			
Feeling sad never			
Feeling sad sometimes	0.65	1.64-0.25	0.364
<i>Feeling lonely</i>			
Feeling lonely many times(reference)			
Feeling lonely never	0.55	1.68-0.17	0.296
Feeling lonely sometimes	1.15	1.77-0.75	0.053

related to parent's jobs, their socio-economic conditions and family size. Other workers have shown that the children belonging to lower socio-economic background also perform good in schools due to more facilities available in their homes rather than dilution of recourses in larger and poor families⁹⁻¹². In many studies a strong and direct correlation was seen between the condition of a school or classroom and student's achievement. In general, student's attendance in school with newer facilities scored more points than those attending in substandard building. Clean air, good light, comfortable school environment and less classroom noise also have a positive effect on children's achievement¹³⁻¹⁵ and these findings were consistent with our study.

Cognitive behavior of the school children was also studied by other worker who as well reported that learning of one subject was significantly associated with the learning of other subject and so on¹⁶. Similar findings were also seen in our study where four main subjects were evaluated and learning of each subject was associated with the learning of other. According to Chansakar gender was not associated with school achievement which is contrary to our study where boys did less well than girls. Some workers have attributed lesser achievement by boys to their involvement in higher levels of activities of different types as well as having different approaches to academic achievement^{17,18}. Many studies have found association of school achievement

with nutritional status, habit of taking breakfast and education of the mother and parental involvement in school homework¹⁹⁻²². However, our study did not show any such association among public school children. In the present study relationship of sports and physical activity with school achievement was found and same has been reported by others²³.

The current study gives a food for thought for the education department and the school administration that, both within school and outside school factors need to be improved to attain good school achievement by our growing young generation.

Acknowledgement

The fund of this study was given by Pakistan Medical Research Council, Islamabad. Principal investigator acknowledges school authorities for their co-operation and school children who gave their assent and staff of this centre who contributed in this study.

References

1. Redding S. Parents and learning. Geneva: International Academy of Education; 2000. Educational Practices Series-2.
2. Berliner DC. Poverty and potential: out of school factors and school success. Colorado: National Education Policy Center, University of Colorado; 2009. Available form: URL: <http://nepc.colorado.edu/publication/poverty-and-potential>
3. Anuar Zaini MZ, Lime CT, Low WY, Harun F. Effects of nutritional status on academic performance of Malaysian primary school children. *Asia Pac J Public Health* 2005; 17:81-7.
4. Hansen JB. Student performance and student growth as measure of success: a evaluator's perspective paper presented at annual meeting of the American Educational Research Association. Louisiana, New Orleans: AERA; 2000.
5. School performance problem at keep kids healthy. Available from: URL: www.keepkidshealthy.com/schoolage/schoolperformance.html. 10/9/2011 at 12.20pm
6. Hijazi ST, Rana Naqvi SMM. Factors affecting students performance. A case of private college, Bangladesh. *J Sociol* 2006;3:1.
7. Lwanga SK, Lemeshow S. Sample size determination in health studies. [Geneva]:WHO;1995.
8. Mei Z, Grummer-Strawn LM, Pietrobelli A, Goulding A, Goran MI, Dietz WH. Validity of body mass index compared with other body composition screening indexes for the assessment of body fatness in children and adolescents. *Am J Clin Nutr* 2002; 75:97-9.
9. Gracia Bacete FJ, Rosel Ramirez J. Family and personal correlates of academic achievement. *Psychol Rep* 2001; 88:533-47.
10. Marjoribanks K. Sibling dilution hypothesis: a regression surface analysis. *Psychol Rep* 2000;89:33-40.
11. Downey DB. When bigger is not better: family size, parental resources and children's educational performance. *Am Sociol Rev* 1995; 60:746-61.
12. Sirin Selcuk R. Socioeconomic status and academic achievement: A meta-analysis review of research. *Rev Educ Res* 2005; 75:417-53.
13. Hanushek EA. Some findings from an independent investigation of the Tennessee STAR experiment and from other investigations of class size effects. *Educ Eval Policy Anal* 1999; 21:143-63.
14. Young Ed, Green HA, Roehrich-Patrick L. Do K-12 school facilities affect education outcome? Tennessee Advisory Commission on Intergovernmental Relations 2003:1-20.
15. Shield B, Dockrell J. The effect of classroom and environmental noise on children's academic performance: 9th International Congress on Noise as Public Health Problem (ICBEN) 2008.
16. Spinath B, Spinath FM, Harlaar N, Plomin R. Predicting school achievement from general cognitive ability, self-perceived ability and intrinsic value. *Intelligence* 2006; 34:363-74.
17. Chansarkar BA, Michaeloudis A. Student profiles and factors affecting performance. *Int J Math Educ Sci Tech* 2001;32:103-4.
18. Ong LC, Chandran V, Lim YY, Chen AH, Poh BK. Factors associated with poor academic achievement among urban primary school children in Malaysia. *Singapore Med J* 2010; 51:247-52.
19. Birkenshaw P. School breakfast: a healthy start for better learning. *Pennsylvania School Boards Assoc Bull* 1991;29-30.
20. Vereecken C, Maes L. Young children dietary habits and association with the mothers' nutritional knowledge and attitudes. Electronic table of contents. (ETOC). Available from: URL: [www://worldwidescience.org/topicpages/d/dietary+habits+education.html](http://www.worldwidescience.org/topicpages/d/dietary+habits+education.html) 9/13/2011
21. Domina T. Leveling the home and advantage: Assessing the effectiveness of parental involvement in elementary school. *Sociol Educ* 2005;78:233-49.
22. Vicky C, Tam, Raymond M C. Parental involvement in primary children's homework in Hong Kong. *School Community J* 2009; 19:81-100.
23. Linder KJ. Sports participation and perceived academic performance of school children and Youth. *Pediatr Exerc Sci*; 1999; 11:129-44.