Original Research Article

IMPACT OF HEALTH, SCHOOL AND HOME-RELATED FACTORS ON ACADEMIC PERFORMANCE IN SCHOOL-GOING CHILDREN: A CROSS-SECTIONAL STUDY

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A B S T R A C T

Background: Academic achievement holds significant importance in today's competitive world, shaping a child's capabilities and their future contributions to society. Educational institutions play a crucial role in shaping student outcomes, as academic success frequently mirrors the Caliber of instruction provided. This study examines the elements that affect academic performance, with a particular emphasis on scholastic backwardness in school-aged children. Focused on investigating the health, school, and home-related elements that influence academic achievement in children attending school.

Materials and Methods: This cross-sectional study was conducted over 18 months among 550 students aged 11-16 years in six schools in Sangareddy region. Data were collected through questionnaires and screenings for visual and hearing problems. Statistical analysis included chi-square tests and unpaired t-tests, with significance set at p<0.05.

Results: In school, 64.7% of students reported access to a library, while 65.1% indicated receiving encouragement from their teachers. In terms of technology usage, 45.5% of students reported engaging with electronic devices for 1-2 hours daily, while 4.9% exceeded 3 hours. In the home environment, 55.3% of students reported having a designated study area, whereas 40.5% indicated receiving academic support from family members. Health issues were notable, with 9% of students reporting vision impairments and 2.9% indicating hearing impairments. The findings indicated a correlation between improved academic performance and several factors: being female, having a higher socioeconomic status, maintaining a smaller family size, access to library resources, receiving encouragement from teachers, and benefiting from a supportive home environment. Conversely, low academic performance correlated with increased use of electronic devices, vision and hearing problems, parental illiteracy, and family disruptions.

Conclusion: Academic performance is influenced by a complex interplay of demographic, school, home, and health-related factors. Interventions should address these areas to improve educational outcomes for children.

Keywords: Academic Performance, Scholastic Backwardness, Socioeconomic Status, School Environment, Home Environment, Health Issues.

INTRODUCTION

Scholarly achievement has gained significant importance in today's intensely competitive landscape. Subpar academic performance profoundly affects the potential of children and adolescents within society.[1,2] Educational institutions have a significant impact on their learners. The caliber of performance has emerged as the crucial element for individual advancement. Parents desire their child to achieve the highest possible performance, which creates significant

pressure on students, teachers, schools, and the educational system as a whole.[3]

Comprehensive analyses of six longitudinal studies indicate that early academic ability, specifically skills at kindergarten entry, serves as the most reliable predictor of subsequent academic success.[4] In his influential work on the importance of societal investment in young children, Heckman posits that increased investments during one phase (such as preschool) can result in enhanced productivity in subsequent phases like kindergarten, primary school, and secondary school.[5] It seems that the entire educational framework is centered on the academic success of students, although there are several other anticipated outcomes from this system. This current study focuses primarily on scholastic backwardness, or learning disability, which is defined as: "In the presence of normal intelligence, intact sensory functions, and adequate opportunities to learn, an adolescent or child is performing below what is expected for their age." The characteristics of learning disabilities can present in one or multiple academic domains, including reading, writing, or a combination of both. Learning disabilities encompass a wide spectrum, ranging from minor spelling errors to severe challenges that prevent individuals from reading altogether.[6]

Success is the culmination of all academic pursuits. Academic achievements typically denote the scores attained in the yearly assessments. According to Melinger and Heggard (1959), academic achievement is described as "an expression of one way the individual learns to utilize his energies, given certain innate potentials and a particular pattern of socializing pressure".[7] There are different categories of underachievers. Instances include long-term underachievers, situational underachievers, and those categorized as general or specific underachievers. Recognizing issues related to academic performance is an essential phase in assessing each student. Research indicates that approximately 5 to 15% of school-aged children experience scholastic backwardness.

The existing literature concerning the Indian population reveals a scarcity of studies on the diverse factors that affect children's academic performance. This study was conducted to examine the health, school, and home-related factors that influence the academic performance of school-aged children.

MATERIALS AND METHODS

This cross-sectional study was conducted in the department of paediatrics at MNR Medical College and Hospital, Sangareddy during December 2022 to May 2024. A source of 550 children of age group between 11 to 16 years studying in 5th to 10th standard in six schools of Sangareddy, and parents who gave consent to participate in the study were included. Children who do not come under the study age group, chronic medical illness, with below average IQ, physically challenged and not willing to participate were excluded. Written informed consent was obtained from parents or guardians or teachers and study protocol was approved by the institutional ethics committee.

Six schools located at Sangareddy were selected by simple random method. The semi structured self-administered and validated questionnaire was used to collect the data by interviewing the children and parent with prior consent. Snellen chart was used to screen for visual problem and tuning fork tests was administered to screen for hearing problems. Parameters including education status of parents, parents income, family problems, attendance, library in school, laboratory in school, meals in school, influence of teachers on students, problems in school, visual problems, hearing problems, usage of electronics and social media, psychological problems and details of extracurricular activities were recorded.

The statistical analysis was performed using SPSS version 18.0 operating on windows 10. All the data were collected in pre-designed proforma and entered in excel sheet. The data were summarised as mean, standard deviation, frequency and percentage. The analysed data were represented using tables, figures, bar diagram and pie chart. The data were statistically analysed using chi-square test when data were categorical and for continuous data unpaired t-test was used. For all the statistical purpose, a p-value of <0.05 was considered statistically significant.
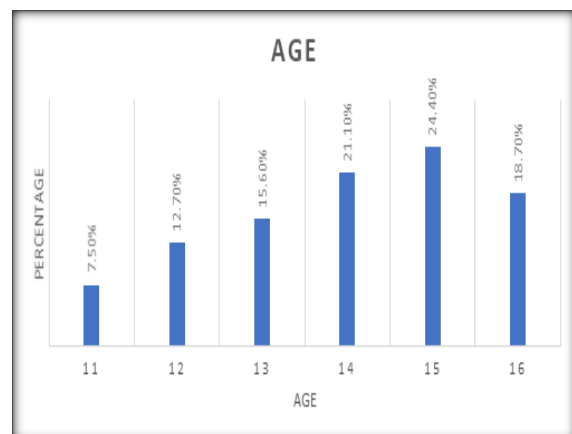
RESULTS

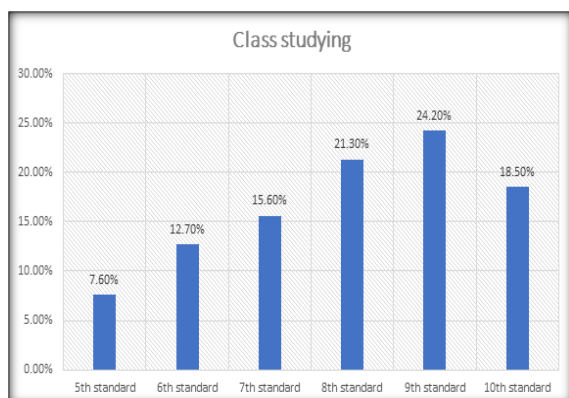

Figure 1: Age wise distribution of study participants

Figure 2: Distribution of study participants as per educational status
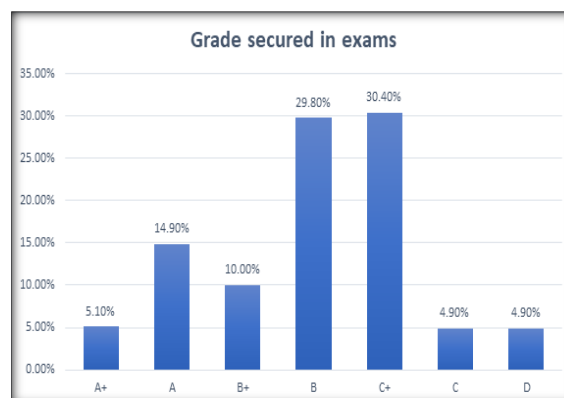

Figure 3: Distribution of participants as per grade secured in exams

Table 1: Comparison of grade in exams with demographic profile

Parameter	Grade secured in exams						Chi-square value	p-value
	Good		Average		Poor			
	Number	%	Number	%	Number	%		
Gender								
Female (n=249)	102	61.8%	181	54.7%	18	33.3%	13.32	0.05
Male (n=301)	63	38.2%	150	45.3%	36	66.7%		
Residence								
Rural (n=413)	110	66.7%	276	83.4%	27	50.0%	36.605	0.01
Urban (n=137)	55	33.3%	55	16.6%	27	50%		
Socioeconomic status								
Upper (n=128)	46	27.9%	81	24.5%	1	1.9%	155.59	0.01
Upper middle (n=157)	54	32.7%	84	25.4%	19	35.2%		
Lower middle (n=188)	44	26.7%	136	41.1%	8	14.8%		
Upper lower (n=44)	21	12.7%	0	0.0%	23	42.6%		
Lower (n=33)	0	0.0%	30	9.1%	3	5.6%		
Family size								
Up to 3 (n=331)	83	50.3%	248	74.9%	0	0.0%	118.25	0.01
Above 3 (n=219)	82	49.7%	83	25.1%	54	100%		
Hobbies								
Absent (n=276)	83	50.3%	166	50.2%	27	50%	0.01	0.99
Present (n=274)	82	49.7%	165	49.8%	27	50%		

Table 2 Table 2: Comparison of grade in exam with various school factors

Parameter	Grade secured in exams						Chi-square value	P-value
	Good		Average		Poor			
	Number	%	Number	%	Number	%		
Library at school								
Available (n=194)	82	49.7%	220	66.5%	4	4%	46.19	0.01
Not Available (n=356)	83	50.3%	111	33.5%	50	96%		
Teacher encourages in studies								
No (n=192)	54	32.7%	138	41.7%	27	50%	36.01	0.05
Yes (n=358)	111	67.3%	193	58.3%	27	50%		
Appreciation for extracurricular activities								
No (n=309)	110	66.7%	194	58.6%	5	9.3%	56.45	0.01
Yes (n=241)	55	33.3%	137	41.4%	49	90.7%		
Problem at school (partiality/bullying)								
No (n=440)	165	100%	248	74.9%	27	50%	79.96	0.01
Yes (n=110)	0	0%	83	25.1%	27	50%		
Problem attending school								
No (n=464)	160	97%	299	90.3%	5	9.3%	259.72	0.01
Yes (n=86)	5	3%	32	9.7%	49	90.7%		

Table 3: Comparison of grade in exam with various family factors

Parameter	Grade secured in exams						Chi-square value	p-value
	Good		Average		Poor			
	Number	%	Number	%	Number	%		
Use of electronic and social media								
<1hr (n=136)	55	33.3%	81	24.5%	0	0.0%	371.86	0.01

Parameter	Number	%	Number	%	Number	%	Chi-square value	p-value
1-2hr (n=250)	110	66.7%	140	42.3%	0	0.0%		
2-3hr (n=137)	0	0.0%	110	33.2%	27	50.0%		
>3hr (n=27)	0	0.0%	0	0.0%	27	50.0%		
Separate room/ table facility at home								
No (n=246)	55	33.3%	164	49.5%	27	50.0%	12.38	0.01
Yes (n=304)	110	66.7%	167	50.5%	27	50.0%		
Does anyone help at home for study								
No (n=223)	59	35.8%	132	39.9%	32	59.3%	9.47	0.05
Yes (n=327)	106	64.2%	199	60.1%	22	40.7%		
Problem with vision								
No (n=500)	155	93.6%	318	96.1%	27	50.0%	21.62	0.01
Yes (n=50)	10	6.4%	13	3.9%	27	50.0%		
Hearing problems								
No (n=534)	163	98.7%	327	98.7%	44	81.4%	29.74	0.01
Yes (n=16)	2	1.3%	4	1.3%	10	18.6%		

Table 4: Comparison of grade in exam with various parental status and child psychological issue

Parameter	Grade secured in exams						Chi-square value	p-value
	Good		Average		Poor			
	Number	%	Number	%	Number	%		
Mother education								
Illiterate (n=158)	0	0.0%	110	33.2%	48	88.9%	337.4	0.01
Primary school (n=90)	0	0.0%	84	25.4%	6	11.1%		
Secondary school (n=192)	137	83%	55	16.6%	0	0%		
Graduate (n=110)	28	17%	82	24.8%	0	0%		
Mother occupation								
Labourer (n=254)	5	3%	222	67.1%	27	50%	276	0.01
Business (n=140)	112	67.9%	28	8.5%	0	0%		
Office (n=156)	48	29.1%	81	24.5%	27	50%		
Father education								
Illiterate (n=81)	27	16.4%	54	16.3%	0	0%	92.34	0.01
Primary school (n=194)	55	33.3%	112	33.8%	27	50%		
Secondary school (n=191)	27	16.4%	137	41.4%	27	50%		
Graduate (n=84)	56	33.9%	28	8.5%	0	0%		
Father occupation								
Unemployed (n=138)	27	16.4%	111	33.5%	0	0%	135.7	0.01
Business (n=220)	82	49.7%	111	33.5%	27	50%		
Office (n=110)	56	33.9%	54	16.3%	0	0%		
Labourer (n=82)	0	0%	55	16.6%	27	50%		
Factors disturb child studies at home								
No (n=348)	110	66.7%	238	71.9%	0	0%	104.4	0.01
Yes (n=202)	55	33.3%	93	28.1%	54	100%		
If yes								
Alcoholism/substance abuse (n=116)	0	0%	53	63.9%	26	96.3%	102.4	0.01
Broken family (n=31)	28	50.9%	2	2.4%	1	3.7%		
Parental quarrels (n=55)	27	49.1%	28	33.7%	0	0%		
Child have any psychological problems								
Nil (n=341)	81	49.1%	243	73.4%	17	31.5%	225.6	0.01
Depression (n=15)	0	0%	5	1.5%	10	18.5%		
Aggression (n=83)	28	17%	55	16.6%	0	0%		
Anxiety (n=55)	28	17%	0	0%	27	50%		
Anger (n=56)	28	17%	28	8.5%	0	0%		

DISCUSSIONS

A complicated interaction of health, school, and home-related elements shapes academic performance in school-going children. Vision and hearing impairments can make learning and classroom participation difficult for children. Educational outcomes depend on school resources like libraries, teacher encouragement, and a positive, non-discriminatory environment. Social class, family size, parental education, and study space also affect a child's academic success. Understanding these complex influences is crucial to developing effective strategies to improve children's education and well-being.

Around 9% of students had vision problems and 2.9% had hearing problems. Female children have significantly higher exam grades than male children.

15.6% of children had school attendance issues, with 66.7% citing family issues and 33.3% financial issues. The longer duration of electronic and social media use is associated with poor student grades. Students with vision and hearing issues score lower than those without. Children with poor grades had higher rates of depression and anxiety than those with good and average grades. (p<0.05). A study by Waseka E et al. found that student-related factors affected learning and performance by 7.56%. Disruptions at school, in class, and in preparatory courses did not predict student performance.[8] Another study by Srinivas P et al. found that good attendance, health, and less electronic device use improved academic performance in children.[9]

Our study found several reasons for student performance differences. The visual and hearing impairments may make it harder for students to learn and understand classroom material, resulting in lower grades. Differences in study habits, classroom behaviour, or social expectations may explain this. The study found a strong link between social media and electronic device use and lower grades. This suggests that excessive screen time may reduce study time, attention, and sleep, hindering academic success. Vision and hearing-impaired students performed significantly worse. Accessing educational content, participating in class, and completing assignments can be difficult with these impairments. Finally, students with poor grades had more depression and anxiety than those with good or average grades. Mental health issues can impair concentration, motivation, and cognitive function, worsening academic struggles. These findings suggest that sensory impairments, gender differences, attendance issues, excessive screen time, and mental health issues affect students' academic performance.

According to Srinivas P et al., teachers are crucial to children's academic performance, and a healthy classroom environment affects exam grades.[9] Several studies have shown that school or classroom facilities directly affect students' academic performance. Students in modern, well-maintained schools score higher overall. Clean air, adequate lighting, a comfortable learning environment, and reduced classroom noise improve student performance.[10-12] Our study supports these findings, highlighting the importance of a good physical environment for children's education.

 Multiple factors affected student performance, Firstly, 64.7% of students reported having a school library, which improved grades. Libraries provide essential resources and a comfortable study environment, improving academic performance. Teacher support and motivation were also important, as 65.1% of students reported receiving it. Encouragement boosts students' confidence, engagement, and study dedication, improving grades. Student performance improved without school issues like partiality and bullying, which 20% of students reported. A positive and fair school environment helps students focus on their studies without distractions and stress. Furthermore, the study revealed a significant correlation between low grades and school attendance issues (p<0.05). Attendance issues, often caused by family or financial issues, can disrupt learning and lower academic performance. Library access, teacher encouragement, and a problem-free school environment improved grades, while attendance issues hurt them.

Compared to children with better home study environments, disturbances at home affect grades. Children with poor grades had higher rates of depression and anxiety compared to those with good or average grades (p<0.05). Another study by Rabgay T et al. found that family socioeconomic status, parents' education, income, and occupation affect children's academic performance.[13] Another study by Srinivas et al. found that parents' educational status, socioeconomic status, and home environment positively affected students' academic performance.[14]

Another study by Liu J et al. found a moderate SES-academic achievement relationship (r = 0.243). Moderation analyses show that SES has decreased its relationship with academic achievement over the past few decades. SES was more strongly correlated with language achievement (Chinese and English) than science/math and general achievement. Discussion of these results has focused on government education policies.[14] Habibullah S et al. found that public school students performed worse than private school students. Socio-economic, psychosocial, school, home, and student factors affected academic performance.[15]

A study by Johnson J et al. opined that child- and caregiver-level factors, as well as financial resources available in the environment, may account for the relationship between home environment and academic achievement. Priority in policies should be given to providing adequate training and support to caregivers of CPS-involved children in order to help mitigate negative outcomes in later life.[16]

Children from lower and upper-lower socioeconomic backgrounds performed worse on exams than upper-class children. Financial constraints can limit access to educational materials, extracurricular activities, and private tutoring, which can improve academic performance. Families with more than three members had lower grades. More children may receive less academic support in larger families due to limited time, attention, and money. Students with a separate room or study table and family help with homework had better grades. A good study environment and parental involvement can boost academic performance. Children of illiterate labourers had higher rates of poor grades than those of higher-educated and better-paid parents. Parents who value education and can help with homework create a more supportive learning environment. Students with home disturbances had much lower grades than those with a better study

environment. A quiet, supportive home is essential for learning and concentration. These findings show that economic, social, familial, and psychological factors affect academic achievement. Improving student performance requires holistically addressing these issues.

CONCLUSION

This study emphasizes the several elements affecting academic performance in students who are about to graduate from schools. Although grades were improved by access to instructional materials and encouraging surroundings, problems including socioeconomic inequalities, family dynamics, and health concerns presented major barriers. These results highlight the need of focused interventions meant to solve structural inequalities and advance general well-being to maximize learning results for every child. Teachers, legislators, and families can cooperatively seek environments fit for academic success and general development by spotting and resolving these powerful elements.

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