CORRELATES OF ACADEMICS AMONG MYOPIC CHILDREN

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ABSTRACT:

Myopia is a refractive error of the eye where the light is focused in front of the retina. This affects the near vision. The present study investigates the influence of myopia on the academic performance of 251 children, aged 6 to 18 years in 5 schools of Trichy district which was analyzed using a questionnaire. Their self-esteem was evaluated using Rosenberg’s self-esteem scale.\(^5\) Their curricular and co-curricular activities were analyzed using a checklist. It was found that myopia has a negative effect on the educational performance of children which subsequently perturb their self esteem. The study also revealed that there is significant relationship between academic performances and classroom activities.

Key Words: Myopia, academic performance, self esteem, curricular and co-curricular activities

Introduction:

“Of all the senses, sight must be the most delightful.” - Helen Keller.

Vision has a major role to play in many functions. It is important for language, and affects developmental learning, communication, working, health and quality of life. Therefore, it is very important to take care of eyesight.

Without a healthy vision, we are forced to rely on others to do daily chores such as cooking, crossing the street or go shopping, becoming many times very inconvenient. Most people probably would agree that sight is the sense they would value more than the rest. Hence, when problems occur in sight, it should not be ignored or neglected.

Problems in vision may occur even in the early stage of development of an infant. Some of the problems can be permanent, leading to blindness. Some of them are preventable and some are curable. Regular general eye health checkups can identify vision problems and initiate treatment processes in the early stage itself.
World Health Organization estimates that 153 million people worldwide excluding people living with uncorrected presbyopia live with vision problems due to uncorrected refractive errors. Refractive error is a commonly known eye disorder occurring as a result of variation in the refraction of images on the retina. The four most common refractive errors are myopia or near sightedness, hyperopia or farsightedness, astigmatism and presbyopia. Refractive errors can be diagnosed and treated with corrective glasses, contact lenses or refractive surgery.

Uncorrected refractive error is a public health problem in developing countries. This study presents the impact of myopia on the academic performance of children so that effective measures could be taken to improve the vision related quality of life of children.

Need of the Study:

Refractive error is the major cause for avoidable vision impairment after cataract. Global estimates specify that more than 2.3 billion people have problems with vision due to refractive error. Out of this estimate, 670 million are considered to be visually impaired as they do not have access to corrective treatment though intervention for refractive error is simple and cost effective. This is due to the lack of awareness among the parents, teachers and other care takers. The impairment in vision cannot be identified if the symptoms are not given a consideration.

The impact of refractive error is many and it is difficult for a common man to relate the symptoms of refractive error with its effect. Hence, refractive error becomes unnoticed unless early detection is done. Refractive errors have to be given importance because they account for half the cases of avoidable vision impairment globally (153 million people) and undetected refractive errors in childhood may lead to behavioural problems and adversely affect social interaction and curricular and co-curricular activities at school. It has been found that a minor reduction in vision has been associated with an increased risk of death and physical, social and emotional problems in people aged over 50 years. Under-corrected refractive error may account for up to 75% of all vision impairment in high-income countries. Early intervention is a significant measure to identify the existence of refractive error and take corrective measures. It could be done by screening, awareness programmes, education and
therapeutic measures in the community itself. Though school environment is an appropriate environment for early detection, no such intervention programmes are conducted to identify impairment in the present scenario and early detection becomes a nonentity phenomenon in real life.

Early intervention can remedy the existing problem and prevent the occurrence of the problem. Early interventional programmes during the early school years are considered as vital for growing children. It also creates awareness among the school authorities and parents about the treatable visual disability. It could prevent impairments or visual loss due to refractive error in school children and enhance the abilities of the child by providing assistive devices to the child. Finally, the significance of periodic vision checkup and screening programmes in every school need to be strengthened.

Review of Literature:

Research studies have been done on refractive error and mainly on the prevalence of refractive error at different places. In a study undertaken in Haryana it was found that 13.6% of children of age group 6-15 years were affected by refractive error. In another study on the prevalence rates of refractive errors among children, adolescents, and adults in Germany it was found that the prevalence of myopia seems to be lower than in Asia and Europe. The study on the prevalence of refractive error in an urban population in New Delhi found that Hyperopia was associated with female gender. Another study provided evidence for a link between hyperopia and impaired literacy standards in children. According to some researchers children with hypermetropia had slightly reduced verbal and performance IQ, in comparison with the children without refractive errors.

Scope of the Study:

According to WHO 12 million children of school going age (5-15 years) are visually impaired due to refractive errors. Population based surveys undertaken using standard methods and techniques suggest that 90-95% visual impairment in this age group is due to myopia. Uncorrected myopia is, therefore, a major public health problem among children. There are many issues arising due to refractive error. It is a leading cause of failure in educational activities. If a child sees incorrectly always, he may not realize that the problem is in his vision. Parents also do not realize it, unless the child
shows any symptoms like keeping the book close to his face while reading or complain of frequent headaches.

The impact of refractive error is not only in academic progress, but also in their self-esteem. A child will assume that he is incompetent to learn or perform like his peers and develop a low self esteem about himself. This in consequence, brings about further predicaments such as behaviour problems, problems in curricular and co-curricular activities leading to low quality of life. Another to consider is that individuals who are myopic, particularly those with more than 6D of myopia high or degenerative myopia are at an increased risk of cataract, retinal detachment, macular degeneration and open angle glaucoma later in life.

According to a study, refractive error, if uncorrected, result in an impaired or decreased quality of life for millions of people worldwide, irrespective of their age, sex, and cultural background. Smith et al., indicated in their article on the global burden of uncorrected refractive error, that the global economy loses $269 billion annually as a result of lost productivity due to uncorrected refractive error. A study at the University of California in San Diego has recently pointed toward a link between Attention Deficit Hyperactivity Disorder (ADHD) and vision problems. One of the concerns raised by this study is that the vision problem causes symptoms that could easily be mistaken for ADHD. A recent study on refractive errors found that total incidence of refractive error in the screened population of school going children to be 21.80% and concluded that there is a need for awareness among the community about the ocular health. Studies on the prevalence of refractive error had been conducted by many researchers. But the impact of refractive error on school going children in the areas such as self esteem, curricular and co-curricular areas, behavior problems and quality of life has not been done. If the impact or consequence of refractive error is not understood undoubtedly, there is no scope for necessary acts to identify or prevent refractive error or blindness in future. Vision testing must be added in the schedule of child health programme that are implemented by the government. School health check-ups annually must focus their attention towards vision impairment due to refractive errors and affected children should get visual aids. Therefore, the researcher has selected this research topic in view of these needs and to guide the parents, teachers, and other health care workers on the importance of eye care and their role in eye care delivery.
Objective of the Study

To study the impact of myopia on the academic performance of myopic children.

Hypotheses

1. There is a significant relationship between visual acuity and academic performance of myopic children.
2. There is a significant relationship between academic performance and self esteem of myopic children.
3. There is no significant relationship between academic performance of the respondents and the dimensions of curricular and co-curricular activities of myopic children.

Variables

1. Near vision acuity
2. Self esteem
3. Dimensions of curricular and co-curricular activities

Materials and Method

The population for the study is school children in Trichy district. Five schools were selected randomly in Trichy district for the study. Two-way sampling method was used in the study. In the five schools selected, vision screening was done by optometrists using Snellen chart to identify children with refractive error in the age group 6 to 18 years. 251 children were identified with refractive error in five schools. A questionnaire was used to get the personal details of the students from the teachers to study their academic performance. To analyze the level of self esteem of these children with myopia, Rosenberg’s self-esteem scale (1965) was administered to them. To analyse curricular and co-curricular activities an indigenously developed checklist- “Checklist for curricular and co-curricular activities” was used. A descriptive research design has been chosen for this study.

Analysis of the Data

Collected information was subjected to statistical analysis.
TABLE 1
Association between the Distant Vision Acuity and Academic Performance of the Respondents

<table>
<thead>
<tr>
<th>S. No</th>
<th>Visual Acuity</th>
<th>Academic Performance</th>
<th>Statistical Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6/9</td>
<td>61% &amp; above (n=91)</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>6/12</td>
<td>19</td>
<td>29</td>
</tr>
<tr>
<td>2.</td>
<td>6/18</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>3.</td>
<td>6/24</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>6/24</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>5.</td>
<td>6/36</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>6/60</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Chi Square value = 37.753
df=10
P<0.05 Significant

It is inferred from the above table that there is a significant association between academic performance of students and visual acuity. Average achievers in academic performance are the highest with visual acuity of 6/9 and distant vision acuity of 6/9 is the most common among the average achievers. In a study the researchers found large negative impacts of poor vision on primary school children in Northeast Brazil. In particular, they found that children with compromised vision (less than 90 on the Snellen chart) had a 10 percentage point higher probability of dropping out of school, an 18 percentage point higher probability of repeating a grade, and scored about 0.2 to 0.3 standard deviations lower on achievement tests.

Table 1
Association between the Academic Performance of the Respondents and their Self Esteem

<table>
<thead>
<tr>
<th>S. No</th>
<th>Academic</th>
<th>Self Esteem Scale</th>
<th>Statistical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
No Performance of the respondents Low Self esteem (n=173) Percentage Normal Self Esteem (n=78) Percentage Inference
1. 0 - 35% 52 96.3 2 3.7 Chi Square value =24.409 df=2 P<0.05 Significant
2. 36% - 60% 74 70 32 30
3. 61% and above 60 66 31 34

It is evident from the table that there is a significant association between academic performance of the respondents and their self esteem. It is statistically proved that 96.3 percent of children whose academic performance is below 35 percent having low self esteem.

Table 2

Karl Pearson’s Co-Efficient of Correlation between Academic Performance and Dimensions of Curricular and Co-Curricular Activities of the Respondents

<table>
<thead>
<tr>
<th>S.No:</th>
<th>Dimensions of Curricular and Co-Curricular Activities</th>
<th>Correlation Value</th>
<th>Statistical inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Physical Problems</td>
<td>-0.052</td>
<td>P&gt;0.05 Not Significant</td>
</tr>
<tr>
<td>2.</td>
<td>Classroom Activities</td>
<td>-0.132</td>
<td>P&lt;0.05 Significant</td>
</tr>
<tr>
<td>3.</td>
<td>Social Activities</td>
<td>0.094</td>
<td>P&gt;0.05 Not Significant</td>
</tr>
<tr>
<td>4.</td>
<td>Mobility</td>
<td>0.044</td>
<td>P&gt;0.05 Not Significant</td>
</tr>
<tr>
<td>5.</td>
<td>Overall Curricular and Co-Curricular Activities</td>
<td>-0.053</td>
<td>P&gt;0.05 Not Significant</td>
</tr>
</tbody>
</table>

It is statistically inferred that there is no significant relationship between academic performance of the respondents and the dimensions physical problems, social activities and mobility in curricular and co-curricular activities. But there is significant relationship between academic performances and classroom activities. This shows that when there is problem in classroom activities, their academic performance is affected.
Physical problems, social activities and mobility do not affect the academic performance of respondents.

Discussion:

Children are generally not aware that they have vision problems and think that what they see is natural. They will have problems in following and comprehending lessons in class. It can also affect the eye-hand co-ordination, self esteem and social activities in school. The study has found that myopia has negative influence on the academic performance of children. Therefore, parents, teachers and other health professionals should be on the guard to identify myopia through its symptoms in the initial stage itself.

A study stated that large negative impacts of poor vision was found among primary school children in Northeast Brazil\(^1\). They also found that children with less than 90 on the Snellen chart had a 10 percentage point higher probability of dropping out of school, an 18 percentage point higher probability of repeating a grade, and scored about 0.2 to 0.3 standard deviations lower on achievement tests.

The present study also confirmed that the low academic performance of myopic students has negative impact on their self esteem. It is statistically proved that 96.3 percent of children whose academic performance is below 35 percent are having low self esteem. This confirms that the self esteem of children whose educational performance is below average is low. This coincides with the fact that vision, like hearing, not only impacts academic progress, but can also impact self-esteem. A child, not realizing there is a problem will often wrongly assume that they are incapable of learning – reading – listening or behaving.

Recommendations

1. Early intervention measures at school level should be encouraged to identify uncorrected visual acuity to improve the academic performance of children.
2. Awareness programmes to impart knowledge on the impact of uncorrected vision problems should be organized by community workers.
3. Schemes to provide subsidized spectacles to correct visual acuity should be initiated by government and private entities.
Conclusion

Refractive error is found to be prevalent in one tenth of the population of school-going children. It affects their self-esteem, precipitates problem in curricular and co-curricular activities, behavior and affects their quality of life. A child needs many abilities to succeed in a school environment. Good vision is one of the main possibilities to perform well in academic activities. As children progress in their academic level, the demand to do more work increases which in turn increases the amount of time spent in visual work. If the visual skills are not developed to meet this demand, children tend to avoid such work, as a consequence of which their performance in academic activities will be affected. They may also get fatigued easily. The present study proves that myopia has a negative effect on the academic performance of children leading to low self-esteem of children. Hence, it is crucial to screen vision problems of children at the primary school level and take corrective measures immediately to prevent their behavior, psychological and social problems.

The present study recommends integrating vision testing programmes in school health activities. It proposes to the government to implement measures to provide free spectacles to children identified with refractive error. Proper follow up course of action is also advocated to establish that the refractive error is addressed for each child identified with refractive error.

Ethical clearance:
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Conflict of Interest – NIL

REFERENCES


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