CHAPTER V

MAIN FINDINGS AND
EDUCATIONAL IMPLICATIONS

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MAIN FINDINGS AND EDUCATIONAL IMPLICATIONS

This chapter presents the main findings, discussion of results and educational implications of the study which are based on the strength of analysis and interpretations of results in the preceding chapter.

5.1 MAIN FINDINGS

Main findings of the study are enlisted below:

1. Out of total 449 students, a total of 48 students (10.69%) were found to be suffering from ADHD of various sub-types. The study identified 36 students to be suffering from ADHD predominantly inattentive type (ADHD-IT), 5 students with ADHD predominantly hyperactive/impulsive type (ADHD-HI) and 7 with ADHD combined type (ADHD-CT). The prevalence rate of ADHD-IT, ADHD-HI and ADHD-CT among adolescent students thus came out to be 8.02%, 1.11% and 1.56% respectively.

2. Out of total 178 adolescent girls involved in the study, 9 were diagnosed with ADHD-IT and 1 each with ADHD-HI and ADHD-CT showing prevalence rate of 5.06%, for ADHD-IT and 0.56% each for ADHD-HI and ADHD-CT.

3. A total of 271 adolescent boys were included in the study. 27 out of them were diagnosed with ADHD-IT, 4 with ADHD-HI and 6 with ADHD-CT giving rise to the prevalence rates of 9.96%, 1.48%, and 2.21% respectively.

4. Prevalence rates for all the three sub-types of ADHD seem to be higher among adolescent boys than adolescent girls but after
testing the corresponding hypotheses it was concluded that the adolescent boys and girls do not differ significantly in terms of occurrence of ADHD-IT, ADHD-HI and ADHD-CT.

5. The results of the hypotheses testing the relationship between intelligence and occurrence of various sub-types of ADHD revealed that the probability of occurrence of ADHD-IT increases with decrease in intelligence in adolescent students, while the probability of occurrence of ADHD-HI as well as that of ADHD-CT is not significantly correlated with intelligence in adolescent students.

6. The hypotheses were also tested to know the effects of independent variables on the occurrence of various sub-types of ADHD in controlled conditions. It was found that controlling for gender, the probability of occurrence of ADHD-IT decreases with increase in intelligence while controlling for intelligence, gender has no significant correlation with the occurrence of ADHD-IT. It also followed that controlling for each other, gender and intelligence have no statistically significant relationship with occurrence of ADHD-HI as well as that of ADHD-CT. The results are similar to the previous hypotheses tested in uncontrolled conditions.

7. The hypotheses testing the interactional effects of both the independent variables i.e. Intelligence and Gender proved that these variables do not have any interactional effect on the occurrence of any sub-type of ADHD be it ADHD-IT, ADHD-HI or ADHD-CT.
Remedial and Supporting Measures for Adolescents with ADHD

Summary of the various remedial and supporting insights about the disorder, arrived on the basis of personal interactions with parents and teachers of ADHD students along with qualitative analysis of the relevant research studies and guidelines, is given below; the awareness of which would be of great significance for the educationists in India in general and special-educators in particular:

- Stimulants are mainly used for pharmacological treatment of ADHD in children despite a number of side effects but now their use (along with the possible abuse) seems to be on rise among adolescents too over the last few years.

- Stimulant medications may improve core ADHD symptoms like excessive physical activity, inattention, impulsivity and poor self-control, physical and verbal aggression, and low academic productivity but these may not improve antisocial behaviour, reading skills or academic achievement.

- Drug treatment is recommended for children and young people with severe ADHD and also for adults with ADHD. However, it should form part of a comprehensive care package that includes psychological and educational components. Drug treatment is not recommended for pre-school children with suspected ADHD, nor for older children and adolescents with moderate ADHD.

- The most effective treatment approach for ADHD is multimodal approach which encompasses medical, educational, behavioural and psychological interventions involving parental and school supports.
- Psychosocial interventions like encouraging ADHD students to participate in sports or other recreational activities may promote social skills, self-esteem, and improve positive relationships with peers and family members.

- The group training programme based on the principles of social learning theory for the parents of ADHD children or adolescents can prove beneficial. Group psychological treatment or social skills training also seem to be working for the young students with ADHD while individual psychological therapy can be considered for older adolescents.

- Important behaviour interventions include being consistent, using positive reinforcement, teaching problem-solving, communication and self-advocacy skills, and involving teenagers actively in school planning and treatment teams. These interventions happen to show better results if adopted in cohesion by family and school support system. Teachers with necessary training should provide behavioural interventions in the classroom.

- ADHD students can be taught in the regular classroom with minor adjustments but some may require specialized education services depending upon the students’ unique learning needs.

- School interventions may also include alterations to the curriculum and work load to better deal with the limited attention, persistence, and disorganization of the ADHD students; increase in sources of positive reinforcement for work productivity; occasional use of immediate and systematic negative consequences for disruptive or inappropriate
behaviour; peer-tutoring or peer-influencing approaches for achieving classroom goals; and more frequent communication with parents.

5.2 DISCUSSION OF RESULTS

1. **Prevalence of various sub-types of ADHD among adolescent students**

   The study revealed that the around 8% of adolescent students are prone to ADHD-IT. This prevalence rate is around 8 times more than the prevalence rate of other two sub-types viz. ADHD-HI and ADHD-CT. The education planners and teachers involved in the education of the adolescents thus, should have better understanding of ADHD-IT including its symptomology and remedial-cum supporting techniques.

   The finding gets support from the work of Wolraich, Hannah, Pinnock, Baumgaertel, and Brown (1996) who reported that the Inattentive Type of ADHD constitutes the majority of ADHD diagnoses, while the Hyperactive/Impulsive Type constitutes the least. It is further reinforced by the studies of Bever (2005), Goldstein & Goldstein (1998) and Resnick (2000) which implied that children with predominately hyperactive/impulsive or combined Sub-type of ADHD often display more of the inattentive symptoms as they become adolescents.

2. **Prevalence of various sub-types of ADHD in adolescent Boys & Girls**

   Around 5% of adolescent girls are diagnosed with ADHD-IT as against 10% of adolescent boys. The prevalence rate of ADHD-HI and ADHD-CT is also more than double in adolescent boys than adolescent girls but the prevalence rate for later two sub-types is quite low in both the sexes ranging between 0.5 to 2.5%. The difference in the prevalence rate among adolescent girls and boys, when tested
statistically, is not turned out to be significant for any of the ADHD sub-types indicating that adolescent boys and girls do not require differential treatment by the educationalists involved in the planning of educational strategies for ADHD students.

3. **Intelligence and Prevalence of various sub-types of ADHD**

The result of the study showed that the ADHD-IT is more prevalent in adolescent students with low intelligence while the prevalence of ADHD-HI and ADHD-CT is not correlated with intelligence in adolescent students. The result holds well even if we control or keep constant the gender variable. The adolescent students with below average intelligence level should be more carefully observed for the symptoms of inattention and the susceptible cases should be taken up further for proper diagnosis and remediation.

The finding is supported by the works of Barkley et al. (1990), Halperin (1991), Marshall et al. (1997), Marshall et al. (1999), McBurnett et al. (1999) and Willcutt et al. (1999), which suggest that the inattentive Sub-type has presented with lower scores on tests of intelligence than the other Sub-types.

4. **Interactional Effect of Gender and Intelligence on Prevalence of various sub-types of ADHD**

The study also suggested that the gender and intelligence do not have any interactional effect on any of the sub-types of ADHD among adolescent students suggesting that the two variables do not have any additive effect on the occurrence or non-occurrence of the various sub-types of ADHD.
5. Remedial and Supporting Techniques for Adolescent Students with ADHD

The analysis of relevant studies and guidelines about the disorder across the globe and of suggestions given by parents and teachers of ADHD students during personal interactions with them provided some insights about the remedial and supporting techniques for the adolescent students with ADHD, which are discussed below:

- Stimulants based medications can be tried with caution for their possible abuse and side effects among adolescents with severe ADHD which may improve the core symptoms of ADHD. However, the medication should be the part of a comprehensive care package including psychological and educational components. In fact the most effective treatment approach for ADHD is multimodal approach consisting of medical, educational, behaviourial and psychological interventions involving parental and school supports.

- ADHD students should be encouraged to participate in sports or other recreational activities as a part of psychosocial interventions to promote their social skills and self-esteem and to improve their positive relationships with peers and family members.

- The group training programme based on the principles of social learning theory should be organised for the parents of ADHD children/adolescents. This will not only help them in dealing with their wards effectively but also in transcribing to their wards the important principles of social learning. Group psychological treatment or social skills training programmes
should also be organised for young adolescents with ADHD. In fact peer-tutoring or peer-influencing approaches should be used for achieving classroom goals. For older adolescents, individual psychological therapy should be considered.

- One should be consistent in dealing with ADHD adolescents making generous use of positive reinforcement to enhance their work productivity. There should be occasional use of immediate and systematic negative consequences for disruptive or inappropriate behaviour.

- Efforts should be made to inculcate problem-solving, communication and self-advocacy skills among ADHD adolescents. They should also be actively involved in school planning and management teams as student representatives.

- Parents and school officials should work in coordination with each other to ensure the consistent, simultaneous, and quick adoption of behavioural interventions for better results. There should be better and more frequent communication between parents and school authorities.

- There should be trained teachers for providing proper behavioural interventions in the classroom. They may teach ADHD students in the regular classroom with minor adjustments. However, the intensity of the disorder sometimes may require specialized education services which can be explored with the involvement of experts of the relevant fields.

- Some of the core symptoms of ADHD like limited attention, persistence, and disorganization may require changes in the curriculum and student work load.
In addition to the parents’ and teachers’ suggestions, the above findings are culled from the studies and guidelines by Antshel et al. (2009), Harvard Medical School (2008), Meijer et al. (2009), National Resource Centre on AD/HD (2010), NICE guidelines (2008), Setlik et al. (2009), and Smucker and Hedayat (2001).

5.3 EDUCATIONAL IMPLICATIONS

As the prevalence rate of ADHD-IT is more than other two sub-types of ADHD (viz. ADHD-HI and ADHD-CT) among adolescent students, the educationalists should put more efforts in getting better insight about ADHD-IT symptomology and remedial-cum-supporting techniques for adolescent students.

As the adolescent boys and girls do not differ significantly from each other in terms of prevalence of any of the ADHD sub-types, they do not require adoption of differential educational strategies. A carefully drafted common educational strategic plan would serve ADHD students of both the genders equally well.

The adolescent students with low intelligence level (which can be reflected as academic underachievement), in general are more prone to ADHD-IT while other two ADHD sub-types are not correlated to intelligence level of the students. This clearly underlines the need to gauge the adolescent students with below average intelligence level for the symptoms of inattention. The teacher should report the susceptible cases to the concerned authorities including health practitioners for proper diagnosis and remediation.

Education planners, school authorities and teachers involved in the education of the adolescents in general and of ADHD diagnosed students in particular should be suitably aware of the most effective multimodal
treatment approach for ADHD comprising of medical, educational, behavioural and psychological interventions which requires their active involvement.

Curriculum planners should be considerate towards the special needs of ADHD adolescents while designing the curriculum. A customised curriculum for ADHD students taking into account their limited attention, persistence, and disorganization can be devised by reorganising the existing curriculum and student work load. The relevant research in this area is the need of the hour.

School authorities should provide sufficient opportunities to ADHD adolescent students to participate in co-curricular activities like sports and cultural events requiring group participation to develop healthy peer relationships and to improve their social skills and self-esteem. Schools should also organise from time to time the specifically designed social skills training programmes for the ADHD adolescents as well as for their parents. Along with these group psychological treatment programmes, the individual psychological therapy sessions with experts should be organised for older adolescents requiring more intense treatment. The school authorities should actively involve the ADHD adolescents in school planning and management work by nominating them to various constituent teams and committees of students. They should also try to devise a suitable and strong communication channel with the parents of the concerned students which could be in the form of a daily journal of student’s general conduct to be shared with and signed by the stakeholders on daily basis.

Teachers should be properly trained for dealing with ADHD adolescent students. The teacher should first give a chance to teach ADHD students in the regular classroom with minor adjustments. But in case of intense
form of the disorder, the specialized education services can also be organised with the involvement of experts of the relevant fields. Teachers should be always consistent in dealing with ADHD adolescents making generous use of positive reinforcement to enhance their work productivity along with occasional use of immediate and systematic negative consequences for disruptive or inappropriate behaviour. They should also exploit peer-tutoring or peer-influencing approaches for achieving classroom goals. Special emphasis should be given to train the students in problem-solving, communication and self-advocacy skills.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

The present study was a descriptive correlational study meant to get better insight about the ADHD disorder. Future studies involving devising and testing suitable intervention techniques for the educational betterment of adolescent students would prove to be of great significance for these students.

As only two independent variables viz. intelligence and gender were involved in the present study, the future research studies could aim at studying relationship of other variables with ADHD like socio-economic status and family environment of students.

ADHD can be viewed in positive light too as from presidents and inventors to artists and musicians, many famous people with adult ADHD succeeded beyond their wildest dreams (Jacobs & Wendel, 2010). Hence, Instead of considering the ADHD behavioural features as deficits, teachers should perceive the same as different learning styles and should try to use the same for pedagogical purposes. This could be a vital focus for further research.