Impact of Parenting Practices and Family Functioning on Psychological Adjustment of Adolescents with ADHD: Role of Early Maladaptive Schemas

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Abstract

Aim: The main objective of this study was to measure the impact of early maladaptive schemas (EMSs) in parenting practices, family functioning and psychological adjustment of adolescents with attention deficit hyperactivity disorder (ADHD). The study also explored gender differences on study variables and differences based on age group.

Methods: A cross-sectional research design, including a sample of 100 adolescents (Male=50, Female=50) was selected from different special education institutions, schools and colleges of government and private sector in Islamabad and Rawalpindi. The age of the sample ranged from 12 to 20 years (M=14.73, SD=1.82). The data was collected using Alabama Parenting Questionnaire, Family Assessment Device, Young's Schema Questionnaire, and Personality Assessment Questionnaire. Data analysis was performed using Pearson Product Moment, t-test, One-Way ANOVA, and Hayes process macro for mediation analysis.

Results: A simple mediation analysis confirmed the significant partial mediation. The indirect effect of healthy family functioning was found to be significant. The direct and indirect effect of positive dimensions of parenting practices was significant. The negative dimensions of parenting practices were also found to have significant direct and indirect effect on psychological adjustment. EMSs significantly partially mediated the relationship between parenting practices, family functioning and psychological adjustment.

Conclusion: According to the results, it was concluded that parenting practices and family functioning significantly influence the psychological adjustment of adolescents with ADHD. In addition, the EMSs play a significant role in the psychological adjustment of adolescents with ADHD. Gender differences were found on subscale of inconsistent discipline in parenting practices and subscale of emotional instability in psychological adjustment. Similarly, on EMSs these differences were found on six subscales including emotional deprivation, emotional inhibition, defectiveness/shame, social inhibition, vulnerability to harm, and self-sacrifice of EMSs.

Recommendations: The results suggest broader treatment strategies, considering the parents and family of adolescents with ADHD. The finding can also be incorporated with interactive session for children, parents and family members to develop understanding of the nature of problem, related complexities within families and sorting strategies for adolescents with ADHD. Furthermore, in educational set up these finding may help in training workshops for the teachers to improve the understanding of the needs of adolescents with ADHD.

Keywords: ADHD; EMSs, parenting practices, family functioning, psychological adjustment
INTRODUCTION

Adolescents, while undergoing rapid cognitive, hormonal, and physical changes, deal with several academic and social challenges (Richter, 2006; Blum et al., 2017). In addition, specific disorders may complicate the ability to deal with these challenges and might lead to violence, depression, and anxiety in adolescents. Adolescents diagnosed with ADHD might also face greater challenges due to cognitive and emotional difficulties (Krueger & Kendall, 2001). The Diagnostic Statistical Manual (DSM-5) defines Attention-Deficit/Hyperactivity Disorder (ADHD) as a neurodevelopmental disorder characterized by impairing levels of inattention, disorganization, or hyperactivity-impulsivity (Willcutt, 2012; Berger, 2011). Previous research indicates that teenagers with ADHD struggle to control their emotions, are more aggressive, and face adjustment issues, including persistent behavioral, academic, and emotional issues (Arora et al., 2016; Palaniappan, 2013; Wüstner et al., 2019).

Psychological adjustment is defined as an individual's affective, cognitive, perceptual, and motivational dispositions to respond to various life situations. An adolescent’s perception of the quality of emotional security and attachment significantly influences their personality and psychological adjustment (Rohner, 1991; Yahya et al., 2021; Tian et al., 2020). Parental influence is also linked to negative cognitive patterns and emotional issues like rejection, isolation, and disrupted boundaries in growing children (Pellerone et al., 2017). In adolescents with ADHD, these problems also prevail in academic performance, social adaptive skills, and limitations in general functioning resulting in various psychosocial issues (Baumgaertel, 1995, Hansen et al., 1999; Garg & Arun, 2013; Jusyte et al., 2017; Fruchter et al., 2019).

Previous researches have indicated the significance of parenting styles in predicting psychological adjustment among children and adolescents with ADHD (Khaleque, 2013; Carrasco et al., 2019; Guzel, 2018). Parenting styles have also been suggested as strong predictors for EMSs in non-clinical samples (Esmali Kooraneh & Amirsardari, 2015). Family functioning has been suggested to have a strong association with psychological distress among parents of children with ADHD, influencing a child’s well-being (Moen et al., 2016). Research also highlighted the role of EMSs in poor psychological adjustment in adults with ADHD and non-clinical adult population (Philipsen et al., 2016; Miklosi et al., 2016). Nevertheless, there are limitations in the generalizability across cultures due to a lack of child’s perspective in this area (Qiu, 2021; León, 2015; Muñoz-Silva et al., 2017; Theule, 2013; Jin et al., 2017; Yazdani & Daryei, 2016).

In Pakistan, studies have been conducted on EMSs including non-ADHD samples (Seyed et al., 2020; Zaman et al., 2021). However, there is insufficient work on interactive effects of such variables (Bibi et al., 2022; Batool et al., 2017; Jabeen et al., 2013; Zahra & Saleem, 2022; Batool & Najam, 2009). Nevertheless, the limitation of generalizability and insufficient work on this area in Pakistan, the current study focuses on understanding the impact of parenting practices, family function on the psychological adjustment of adolescents with ADHD and evaluating the mediating role of EMSs. This study bridged the gap to highlight problems related to ADHD adolescents within Pakistan.

Research Objectives

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The objectives of the present study were:

1. To examine the impact of parenting practices and family functioning on psychological adjustment among adolescents with ADHD.

2. To investigate the mediating role of EMSs on the relationship between parenting practices, family functioning and psychological adjustment, among adolescents with ADHD.

3. To explore gender differences concerning family functioning, parenting practices, psychological adjustment, and EMSs among adolescents with ADHD.

The study was underpinned by the McMaster family functioning model ((Epstein et al., 1983), dimensions of parenting practices (Frick, 1991), personality sub theory of interpersonal acceptance-rejection theory (Rohner, 1980), and schemas theory (Young et al, 2003) as its theoretical framework. Two dimensions of parenting practices (positive and negative) and two dimensions of family functioning (healthy and unhealthy family functioning) were included for this study. In parenting practices positive dimensions includes parental involvement and positive reinforcement, while negative dimension includes poor monitoring, corporal punishment and inconsistent discipline. The schematic representation of the effect of family functioning and parenting practices on psychological adjustment through early maladaptive schemas in adolescents with ADHD is provided below (see figure 1)

**Figure 1: Conceptual framework**

**METHOD**

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Research Design
The present study adopted a cross-sectional research design.

Instruments

*Personality Assessment Questionnaire (PAQ)*

The study used the short form of PAQ questionnaire's child version (Rohner, 1978) to measure child’s self-reports about their psychological adjustment. It composed of seven scales: 1) Hostility/aggression; 2) dependency; 3) negative self-esteem; 4) negative self-adequacy; 5) emotional unresponsiveness; 6) emotional instability; and 7) negative view of the world. Scores spread from 42 through 168. The higher the score, the more psychologically maladjusted individuals report themselves to be. Test-retest reliability across periods ranging from 1 to 18 months for the Child PAQ was .61 (Rohner & Chaki-Sircar, 1988; Rohner & Khaleque, 2005b). The Urdu version translated and adapted by Naz and Kausar (2012), with reported alpha reliability of .82 for total scores on the scale, was used in the present study.

*Family Assessment Device (FAD)*

In this self-report measure FAD (Epstein et al., 1983) there are 60 items, further subdivided into seven subscales; including Problem-solving, Communication, Roles, Affective Responsiveness, Affective Involvement, Behavior control, and a unique General Functioning scale to assess the overall family health. The FAD is scored on a Likert scale from 1 (strongly agree) to 4 (strongly disagree). Higher scores indicate more incredible difficulty, with General Functioning scale scores greater than 2.0 indicating clinical impairment. The FAD is well-validated and reliable with internal consistency for the subscales between .72 and .92 (Miller et al., 1985). Internal consistencies for all respondent subscale scores were high with .87 for fathers, .90 for mothers, and .90 for adolescents. The FAD was translated for the current study with an alpha reliability of .89.

*Alabama Parenting Questionnaire (APQ)*

The APQ child form (Frick, 1991) is a self-report questionnaire with 42-item and assesses different domains of parental behavior (Frick, 1991; Shelton, 1996). The measure consists of five subscales, including Poor Monitoring/Supervision, Inconsistent Discipline, Corporal Punishment, Positive Parenting, and Involvement. Children use a 5-Point scale to report their parent’s behavior on each item of the questionnaire. The options range from 1 (Never) to 5 (Always). Internal consistency and construct validity of the measure is adequately established that ranges from .54 to .83 for its subscales (Essau, et al., 2006). The Urdu version translated and adapted by Mushtaque (2015) was used with reported alpha reliability from .70 to .89 for subscales.

*Swanson Nolan and Pelham (SNAP-IV)*

The SNAP-IV (Swanson et al., 1992) is a four-point scale scored as 3 (very much), 2 (quite a bit), 1 (just a little), 0 (not at all). The sub-domains included in the scale are inattention (items 1–9), hyperactivity/impulsivity (items 10–18). The sum of all item-level scores makes the total score on the scale. Subdomain scores within each domain of SNAP-IV, are indicated by summing up all item-level scores, and indicated by "items x-x." If the scores are higher on the scale, it indicates the worst symptoms of ADHD on SNAP-IV. The scale was translated in Urdu for the present study with an alpha reliability of .91 for the present sample.
Young Schema Questionnaire (YSQ-S3)

YSQ is the latest 6-point Likert scale (Young, 2006), measuring 18 EMSs (EMSs). The score ranges from 1 to 6. The YSQ-S3 was validated (Kriston et al., 2013) using clinical and community samples. Internal consistency of the EMSs was > .70 for 17, except for the EMS of Entitlement (.67). The reliability values for 17 EMSs were satisfactory, while only Entitlement has a Cronbach's alpha >.70. Another validation study (Bach et al., 2017) reported a Cronbach's alpha reliability value of > .70 for 18 EMSs of the YSQ-S3. The scale was translated in Urdu for the current study with an alpha reliability of .94.

Population

The present study included only pre-diagnosed ADHD cases from Islamabad and Rawalpindi for the main study. A sample of 100 adolescents (50% boys, 50% girls) with age ranges from 12 to 20 years (M=14.73, SD=1.82) participated in the study.

Inclusion criteria

Participants who were diagnosed with ADHD and met the criteria for ADHD Inattention, Hyperactivity/Impulsivity, or Combined Type on SNAP-IV were included in the study.

Exclusion criteria

Participants who did not score or have borderline scores without a clear diagnosis were excluded from the sample. In addition, participants with any comorbid mental illness were also excluded.

Sampling Technique

The sample for the present study was selected using purposive sampling technique.

Data Collection

The study was conducted in three phases. Firstly, Phase-I scales including FAD, YSQ-3, and SNAP-IV were translated in Urdu language, using back-translation method (Vijver & Hambleton, 1996), as these scales were not available in Urdu language. The first section of the questionnaire booklet consists of informed consent and a demographic sheet. Secondly, in Phase-II the translated scales were administered to a sample of fifty-six participants for the evaluation of psychometric properties and appropriateness of translated version for the main study. Thirdly in Phase-III for the main study, data collection was completed using FAD (Epstein et al., 1983), PAQ (Frick, P. J., 1991), YSQ-3 (Young, 2006) and PAQ (Rohner, 1978). The participants were also screened at the time of selection using SNAP-IV (Swanson et al., 1992) to find out the type of ADHD and a confirmation for the presented diagnoses. However, in each phase, before approaching the participants, permission to visit institutions were formally requested, later granted by concerned authorities, including the Federal Directorate of Education, Director Special Education, and Outdoor Patients Departments of the hospitals. The researcher strictly followed all standard operating procedures (SOPs) while visiting institutions or homes for data collection. Most of the data collection was possible using various sources due to the lockdowns and closure of institutions during Covid-19, throughout the country. In this context, the researcher also generated electronic forms on Google forms for the convenience of participants where participants requested electronic access, ensuring their safety. The participants received a briefing about the study's purpose and ensured confidentiality before filling the questionnaires. The participants were instructed on how
to complete the questionnaire booklet. As it was difficult for ADHD patients to concentrate and stay focused on tasks, therefore, collecting data from adolescents was based on distributed activities (e.g., breaks to walk around or stretch). The participants were given on average 2-3 sessions to complete the questionnaires (Parents/guardians were instructed to follow the same procedure). Moreover, after participation, the adolescents received an incentive according to their age group with gratitude.

Data Analysis

After the pilot phase and main data collection, the data was analyzed using SPSS Version 26. A reliability test on the scales was performed to find the alpha reliability, descriptive, and correlation to further establish the appropriateness of the translated versions of scales. To determine the construct validity item-total correlation was also performed for these scales. Furthermore, descriptive and frequency distribution was also calculated to determine the sample characteristics. After determining the normality and appropriateness of data for the study variables, further analysis was performed using Pearson Product Moment for Correlation, t-test for independent sample to find gender differences and One-Way ANOVA to find differences based on demographics variables. Lastly, in the present study, Hayes Process macro (2018) was used for mediation analysis. In addition, Cohen's d effect size and Tukey's HSD were also calculated where significant differences in the sample were found.

RESULTS

Table 1 shows the frequencies of the demographic information of the study sample (50% boys and 50% girls). The age of participants ranged from 12-20 (M=14.43, SD=1.81). Moreover, 50% of the sample lay in the category of combined type of ADHD.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Boys</td>
<td>50</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>50</td>
<td>50%</td>
</tr>
<tr>
<td>Age</td>
<td>Below 15</td>
<td>73</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>15-17 Years</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>18-20 Years</td>
<td>7</td>
<td>7%</td>
</tr>
<tr>
<td>Grade</td>
<td>Middle</td>
<td>55</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Higher</td>
<td>37</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>Higher Secondary</td>
<td>8</td>
<td>8%</td>
</tr>
<tr>
<td>Family System</td>
<td>Joint</td>
<td>39</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>Nuclear</td>
<td>61</td>
<td>61%</td>
</tr>
<tr>
<td>ADHD Type</td>
<td>Inattention Type</td>
<td>23</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Hyperactive/Impulsive Type</td>
<td>26</td>
<td>26%</td>
</tr>
</tbody>
</table>
Combined Type

Father’s Education
- Educated: 81 (81%)
- Uneducated: 18 (18%)

Mother’s Education
- Educated: 51 (51%)
- Uneducated: 49 (49%)

Fathers Occupation
- Employed: 86 (86%)
- Unemployed: 14 (14%)

Mother’s Occupation
- Working: 18 (18%)
- House wife: 82 (82%)

Family’s Monthly Income
- Below 25000: 20 (20%)
- 25000-50000: 41 (41%)
- 50000-100000: 16 (16%)
- Above 100000: 17 (17%)

Note: n = number of participants in each category.

The overall main scale’s alpha reliability was also within acceptable and good ranges i.e. .73 to .95 (see Table 2). Likewise, the alpha reliability of the subscales also was from .89 to 63, with lower reliability of one subscale that was inconsistent discipline. Similarly, skewness and kurtosis values were also under the ranges of ±1 and ±3, respectively, for the main scales and the subscales.

Table 2: Descriptive statistics and alpha reliability coefficients for study instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>No of Items</th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>Actual</th>
<th>Potential</th>
<th>S</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNAP</td>
<td>18</td>
<td>26.26</td>
<td>7.06</td>
<td>.73</td>
<td>13</td>
<td>46</td>
<td>0</td>
<td>.59</td>
</tr>
<tr>
<td>INN</td>
<td>9</td>
<td>12.3</td>
<td>4.41</td>
<td>.71</td>
<td>2</td>
<td>23</td>
<td>0</td>
<td>.08</td>
</tr>
<tr>
<td>HY/IM</td>
<td>9</td>
<td>13.97</td>
<td>4.85</td>
<td>.72</td>
<td>2</td>
<td>24</td>
<td>0</td>
<td>.26</td>
</tr>
<tr>
<td>APQ</td>
<td>42</td>
<td>127.85</td>
<td>23.01</td>
<td>.77</td>
<td>67</td>
<td>177</td>
<td>42</td>
<td>210</td>
</tr>
<tr>
<td>PMON</td>
<td>10</td>
<td>21.75</td>
<td>7.10</td>
<td>.70</td>
<td>10</td>
<td>31</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>IDIS</td>
<td>6</td>
<td>16.98</td>
<td>3.58</td>
<td>.18</td>
<td>10</td>
<td>26</td>
<td>6</td>
<td>.38</td>
</tr>
<tr>
<td>CPUN</td>
<td>3</td>
<td>7.66</td>
<td>3.08</td>
<td>.63</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>PORI</td>
<td>6</td>
<td>22.98</td>
<td>6.35</td>
<td>.89</td>
<td>7</td>
<td>30</td>
<td>6</td>
<td>.84</td>
</tr>
<tr>
<td>FINV</td>
<td>9</td>
<td>26.97</td>
<td>8.15</td>
<td>.84</td>
<td>9</td>
<td>43</td>
<td>9</td>
<td>.45</td>
</tr>
<tr>
<td>MINV</td>
<td>10</td>
<td>31.51</td>
<td>9.76</td>
<td>.87</td>
<td>10</td>
<td>47</td>
<td>10</td>
<td>.25</td>
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<tr>
<td>FAD</td>
<td>60</td>
<td>142.24</td>
<td>15.15</td>
<td>.82</td>
<td>108</td>
<td>199</td>
<td>60</td>
<td>240</td>
</tr>
<tr>
<td>HFF</td>
<td>25</td>
<td>53.14</td>
<td>10.46</td>
<td>.84</td>
<td>34</td>
<td>86</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>UHFF</td>
<td>35</td>
<td>89.10</td>
<td>12.09</td>
<td>.80</td>
<td>70</td>
<td>126</td>
<td>35</td>
<td>230</td>
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</table>

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The correlation analysis (as shown in Table 3) suggests that the main study variables and subdomains were all highly correlated to each other. The correlation for the main variables ranges from -.17* to .94**. Likewise, the subdomains of parenting practices were also found to be significantly correlated with psychological adjustment with correlation range from .25** to .41**. Then significant negative correlation was also observed for Positive dimensions of parenting with psychological adjustment (-.40**) and EMSs (.33**), that suggested improved psychological adjustment due to positive parenting practices. Moreover, negative dimensions of positive parenting were also found to be significantly positively correlated with the EMSs (.31*) and psychological adjustment (.36**) suggesting that the more negative parenting practices, the increased maladjustment among adolescents with ADHD. However, unhealthy family functioning was non-significant positive correlation, as the sample size was not large enough to achieve the significance.

Table 3: Correlations between study variables and their subdomains (N=100).

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
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<tbody>
<tr>
<td>HFF</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>UHFF</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>PMON</td>
<td>.29**</td>
<td>-.12</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>IDIS</td>
<td>.04</td>
<td>-.21*</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPUN</td>
<td>.29**</td>
<td>.02</td>
<td>.10</td>
<td>.21*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PORI</td>
<td>-.17*</td>
<td>-.24**</td>
<td>-.38**</td>
<td>.13</td>
<td>.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FINV</td>
<td>-.33**</td>
<td>-.19*</td>
<td>-.18*</td>
<td>.25**</td>
<td>.01</td>
<td>.68**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MINV</td>
<td>-.37**</td>
<td>-.22*</td>
<td>-.11</td>
<td>.13</td>
<td>.03</td>
<td>.63**</td>
<td>.85**</td>
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<td>PDIM^a</td>
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<td>.94**</td>
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<tr>
<td>NDIM^b</td>
<td>.35**</td>
<td>-.17*</td>
<td>.82**</td>
<td>.45**</td>
<td>.51**</td>
<td>-.24**</td>
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<td>-.02</td>
<td>-.10</td>
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<tr>
<td>PYAD</td>
<td>.35**</td>
<td>.09</td>
<td>.25**</td>
<td>.05</td>
<td>.41**</td>
<td>-.25**</td>
<td>-.41**</td>
<td>-.40**</td>
<td>.36**</td>
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<tr>
<td>EMS</td>
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<td>.02</td>
<td>.21**</td>
<td>-.09</td>
<td>.54**</td>
<td>-.17*</td>
<td>-.35**</td>
<td>-.33**</td>
<td>-.33**</td>
<td>.31**</td>
<td>.61**</td>
<td></td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01

Note: HFF= Healthy family functioning, UHFF= Unhealthy family functioning, PMON= Poor monitoring, IDIS= Inconsistent discipline, CPUN= Corporal punishment, PORI= Positive reinforcement, FINV= Father Involvement, MINV= Mother involvement, PDIM^a= Positive dimensions of parenting, NDIM^b= Negative dimensions of parenting.
dimensions (sum of Positive Reinforcement and Parental involvement) NDIM\(^b\)=Negative dimensions (sum of Poor Monitoring, Inconsistent, Discipline, and Corporal Punishment), PYAD=Psychological adjustment, EMS= Early maladaptive schemas.

Table 4 shows that EMSs mediate the relationship between healthy family Functioning and psychological adjustment among adolescents with ADHD. In model 1 of the mediation analysis, healthy family functioning accounts for 18% variance in predicting psychological adjustment. The variance is increased to 38% in Model 2 when EMSs is introduced, indicating that EMSs explained an additional 20% of variance in predicting psychological adjustment among adolescents with ADHD. Hence, confirming the partial mediation effect of EMSs. The mediation analysis results imply that a healthy family provides a framework to reduce the emergence of EMSs and improve psychological adjustment among ADHD adolescents.

**Table 4: Mediating role of early maladaptive schemas in relationship between healthy family functioning and psychological adjustment among adolescents with ADHD (N=100)**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>B</th>
<th>UL</th>
<th>LL</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>147.48**</td>
<td>44.76**</td>
<td>90.99</td>
<td>203.98</td>
<td></td>
</tr>
<tr>
<td>HFF</td>
<td>2.40**</td>
<td>.19</td>
<td>1.36</td>
<td>3.44</td>
<td></td>
</tr>
<tr>
<td>EMS</td>
<td>.15**</td>
<td>.38</td>
<td>29.73</td>
<td>59.78</td>
<td></td>
</tr>
<tr>
<td>(R^2)</td>
<td>.18</td>
<td>.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(F)</td>
<td>20.85**</td>
<td>29.68**</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\Delta R^2)</td>
<td></td>
<td></td>
<td></td>
<td>8.83</td>
<td></td>
</tr>
<tr>
<td>(\Delta F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p<.01, * p<.05,

*Note. HFF=Healthy family functioning, EMS=Early maladaptive schemas. \(R^2\) = Explained variance.*

Table 5 shows mediating role of EMSs on unhealthy family functioning and psychological adjustment among adolescents with ADHD. In model 1 of the mediation analysis is indicted that there is a non-significant positive association between unhealthy family functioning and EMSs, explaining only 0.03% variance in predicting psychological adjustment. It was observed that there was a significant positive relationship between EMSs and psychological adjustment. After adding unhealthy family functioning and EMSs to predict psychological adjustment the relationship became non-significant. However, the explained variance increased to 37% in Model 2 when EMSs is introduced, indicating that EMSs explained an additional 37% of variance in predicting psychological adjustment among adolescents with ADHD.

**Table 5: Mediating role of early maladaptive schemas in relationship between unhealthy family functioning, and psychological adjustment among adolescents with ADHD (N=100)**

<table>
<thead>
<tr>
<th>Psychological Adjustment</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% CI</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>147.48**</td>
</tr>
<tr>
<td>HFF</td>
<td>2.40**</td>
</tr>
<tr>
<td>EMS</td>
<td>.15**</td>
</tr>
<tr>
<td>(R^2)</td>
<td>.18</td>
</tr>
<tr>
<td>(F)</td>
<td>20.85**</td>
</tr>
<tr>
<td>(\Delta R^2)</td>
<td>.20</td>
</tr>
<tr>
<td>(\Delta F)</td>
<td>8.83</td>
</tr>
</tbody>
</table>

** p<.01, * p<.05,
Table 6 shows the mediating role of EMSs between the relationship of Positive dimensions of parenting practices and psychological adjustment among adolescents with ADHD. In Model 1 of the mediation analysis, Positive dimensions of parenting practices account for 11% variance in predicting psychological adjustment. The variance is increased to 41% in Model 2 when EMSs is introduced, indicating that EMSs explained an additional 30% of variance in predicting psychological adjustment among adolescents with ADHD. Hence, confirming the partial mediation effect of EMSs. The results imply that a Positive dimension of parenting practices provides a framework to reduce the emergence of EMSs and improve psychological adjustment among ADHD adolescents.

**Model 2**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>B</th>
<th>UL</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>267.14**</td>
<td>42.02**</td>
<td></td>
</tr>
<tr>
<td>UHFF</td>
<td>.09</td>
<td>.10</td>
<td>-.90</td>
<td>1.08</td>
</tr>
<tr>
<td>EMS</td>
<td>.16**</td>
<td></td>
<td>-.11</td>
<td>.32</td>
</tr>
<tr>
<td>R²</td>
<td>.00</td>
<td>.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.31</td>
<td>28.89**</td>
<td></td>
<td>.37</td>
</tr>
</tbody>
</table>

ΔR²         |        | .37   |        |        |
ΔF          |        | .29   |        |        |

** p<.01, * p<.05,

Note. R² = Explained variance, UHFF=Unhealthy family functioning, EMS=Early maladaptive schemas.

Table 6: Mediating role of early maladaptive schemas in relation between positive dimensions of parenting practices and psychological adjustment among adolescents with ADHD (N=100).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>B</th>
<th>UL</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>347.59**</td>
<td>69.98**</td>
<td>51.90</td>
<td>88.06</td>
</tr>
<tr>
<td>PDIM</td>
<td>-.89**</td>
<td>-.17*</td>
<td>-.29</td>
<td>-.05</td>
</tr>
<tr>
<td>EMS</td>
<td>.14**</td>
<td></td>
<td>.10</td>
<td>.19</td>
</tr>
<tr>
<td>R²</td>
<td>.11</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>11.78**</td>
<td>34.18**</td>
<td>.2</td>
<td>.29</td>
</tr>
</tbody>
</table>

ΔR²         |        | .2    |        |        |
ΔF          |        | 22.4  |        |        |

** p<.01, * p<.05,

Note. R² = Explained variance, PDIM= Positive dimensions of Parenting Practices, EMS= Early maladaptive schemas.
Table 7 shows the mediating role of EMSs between the relationship of negative dimensions of parenting practices and psychological adjustment among adolescents with ADHD. In model 1 of the mediation analysis, negative dimensions of parenting practices account for 9% variance in predicting psychological adjustment. The variance is increased to 40% in Model 2 when EMSs is introduced, indicating that EMSs explained an additional 31% of variance in predicting psychological adjustment among adolescents with ADHD. Hence, confirming the partial mediation effect of EMSs. The results imply that negative dimensions of parenting practices provide a framework to increase the emergence of EMSs and contribute to psychological maladjustment among ADHD adolescents.

Table 7: Mediating role of early maladaptive schemas in relation between negative dimensions of parenting practices and psychological adjustment among adolescents with ADHD (N=100).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>B</th>
<th>UL</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Constant</td>
<td>178.36**</td>
<td>39.41**</td>
<td>23.94</td>
<td>54.87</td>
</tr>
<tr>
<td>NDIM</td>
<td>2.08**</td>
<td>.34*</td>
<td>.05</td>
<td>.64</td>
</tr>
<tr>
<td>EMS</td>
<td>.15**</td>
<td></td>
<td>.10</td>
<td>.19</td>
</tr>
<tr>
<td>R²</td>
<td>.09</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>10.61**</td>
<td>32.40**</td>
<td>.31</td>
<td>21.8</td>
</tr>
</tbody>
</table>

** p<.01,  * p<.05,  
Note. R² = Explained variance, NDIM= Negative Dimensions of Parenting Practices, EMS=Early maladaptive schemas.

Table 8 shows the differences between boys’ (n=50) and girls’ sample (n=50) on the present study variables and their subscales. The results of the analysis suggest that no significant difference exist between ADHD adolescents based on gender other than on few subscales such as on Problem solving, (t=3.74, p=.027, d=0.13), Self-sacrifice (t=1.50, p=.015, d=0.30), and Emotional Instability ( t=1.46, p=.03, d=0.29), where girls scored higher. Moreover, the result indicates the effect size for both the variables were of small to medium effect size (d=.13—.30). Additionally, on EMSs which had some significant subscales in relation to gender where boys score significantly higher such as Inconsistent discipline (t=1.93, p=.001), Emotional deprivation (t=.21, p=.047), Emotional Inhibition (t=.708, p=.004), Defectiveness (t=4.12, p=004), Vulnerability to harm (t=1.67, p=.014), Entitlement (t=1.95, p=.036). The effect size on these subdomains indicates a small to large effect size (d= 0.006—0.84).

Table 8: Gender wise differences on study variables (N=100).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Boys</th>
<th>Girls</th>
<th>t(98)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
</table>

DOI: [https://doi.org/10.58425/iijpce.v2i2.221](https://doi.org/10.58425/iijpce.v2i2.221)
The findings of One-way ANOVA (as shown in Table 9) demonstrated a statistically significant difference between the three levels of age groups on two of the positive subdomains of the main variable of parenting practices. The results indicate Adolescents with ADHD in at least one of the age groups significantly differ on Father Involvement, $F(2, 97) = 2.99, p = .04, \eta^2=0.06$ and Mother involvement, $F(2, 97) = 5.59, p = .02, \eta^2=0.07$. Similarly, the table also highlights a significant difference between age groups on negative domains of parenting practice, including Inconsistent discipline, $F(2, 97) = 2.16, p = .01, \eta^2= 0.08$. The table also depicts a significant difference in scores on EMSs between the level of age, $F(2, 97= 12.61, p =.00, \eta^2=0.21)$. Similarly, the ANOVA table shows a significant difference between age groups and scores on psychological adjustment, $F (2, 97= 7.11, p =.00, \eta^2=0.13)$. However, the Post hoc comparisons using the Tukey's HSD test indicated that the mean score on EMSs for the second level age group ($M = 306.71, SD = 57.98$) and third-level age group ($M=311.43, SD=16.10$) was significantly different from the first level age group ($M = 252.47, SD= 54.12$).

Table 9: One-way analysis of variance between study variables and age groups of the ADHD sample (N=100)

<table>
<thead>
<tr>
<th>Variable</th>
<th>12-14 Years</th>
<th>15-17 Years</th>
<th>18-20 Years</th>
<th>$F(2, 97)$</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($n=59$)</td>
<td>($n=34$)</td>
<td>($n=7$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDIS</td>
<td>17.66</td>
<td>16.30</td>
<td>16.30</td>
<td>4.21</td>
<td>0.08</td>
</tr>
<tr>
<td>PSOL</td>
<td>21.40</td>
<td>21.80</td>
<td>21.80</td>
<td>3.74</td>
<td>0.13</td>
</tr>
<tr>
<td>EMD</td>
<td>14.14</td>
<td>13.90</td>
<td>13.90</td>
<td>3.71</td>
<td>0.14</td>
</tr>
<tr>
<td>EIN</td>
<td>17.20</td>
<td>16.46</td>
<td>16.46</td>
<td>4.12</td>
<td>0.13</td>
</tr>
<tr>
<td>DFS</td>
<td>14.36</td>
<td>10.50</td>
<td>10.50</td>
<td>4.12</td>
<td>0.04</td>
</tr>
<tr>
<td>VLIH</td>
<td>13.22</td>
<td>11.54</td>
<td>11.54</td>
<td>4.12</td>
<td>0.04</td>
</tr>
<tr>
<td>ETI</td>
<td>16.76</td>
<td>15.24</td>
<td>15.24</td>
<td>4.12</td>
<td>0.04</td>
</tr>
<tr>
<td>SES</td>
<td>15.88</td>
<td>17.50</td>
<td>17.50</td>
<td>4.12</td>
<td>0.04</td>
</tr>
<tr>
<td>EIN</td>
<td>15.00</td>
<td>16.04</td>
<td>16.04</td>
<td>4.12</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. $p<.05^*$, $p<.005^{**}$, $p= significance$, IDIS=Inconsistent discipline, PSOL=Problem solving, EMD=Emotional deprivation, EIN=Emotional inhibition, DFS=Defectiveness/Shame, VLIH= Vulnerability to harm, ETI=Entitlement, SES=Self-sacrifice, EIN=Emotional instability.

The findings of One-way ANOVA (as shown in Table 9) demonstrated a statistically significant difference between the three levels of age groups on two of the positive subdomains of the main variable of parenting practices. The results indicate Adolescents with ADHD in at least one of the age groups significantly differ on Father Involvement, $F(2, 97) = 2.99, p = .04, \eta^2=0.06$ and Mother involvement, $F(2, 97) = 5.59, p = .02, \eta^2=0.07$. Similarly, the table also highlights a significant difference between age groups on negative domains of parenting practice, including Inconsistent discipline, $F(2, 97) = 2.16, p = .01, \eta^2= 0.08$. The table also depicts a significant difference in scores on EMSs between the level of age, $F(2, 97= 12.61, p =.00, \eta^2=0.21)$. Similarly, the ANOVA table shows a significant difference between age groups and scores on psychological adjustment, $F (2, 97= 7.11, p =.00, \eta^2=0.13)$. However, the Post hoc comparisons using the Tukey's HSD test indicated that the mean score on EMSs for the second level age group ($M = 306.71, SD = 57.98$) and third-level age group ($M=311.43, SD=16.10$) was significantly different from the first level age group ($M = 252.47, SD= 54.12$).
**Psychological adjustment.**

**DISCUSSION**

The purpose of this research was to investigate the direct and indirect relationship of family functioning, parenting practices, and psychological adjustment, and mediating role of early maladaptive among adolescents with ADHD. The findings suggested a significant indirect relationship between healthy family functioning and psychological adjustment, while the direct relationship was non-significant. The direct relationship of positive dimension of parenting (direct and indirect) was significantly inversely related to psychological adjustment. Furthermore, negative dimensions of parenting (direct and indirect) were significantly positively related to psychological adjustment. The simple mediation analysis confirmed the significant partial mediating role of EMSs. In the first hypothesis it was assumed that “healthy family functioning will have a positive correlation with psychological adjustment among adolescents with ADHD.” The findings of the present study confirmed and in line with previous conducted research that shows significant positive effect of healthy family functioning in terms of communication, cohesion and problem solving and support (Dai & Wang, 2015; Procentese et al., 2019) on cognitive well-being, social and psychosocial adjustment of children and adolescents (Qiu et al., 2021; Lang, 2018).

These findings provide an insight into the importance of family-based interventions to improve psychological adjustment of adolescents with ADHD (Power et al., 2012; Wieg & Grefe et al., 2019; Paclikova et al., 2019). However, unhealthy family functioning also showed positive relation with psychological adjustment. The response trend in a positive direction is informative to show increased scores on unhealthy family functioning domain and psychological adjustment that explains high scores as maladjustment in ADHD sample. Furthermore, it is important to note that malfunctioning and low connectedness in family members and parents affect the psychological health of children and adolescents (Montejo et al., 2019). Inconsistent findings on this domain can be explained by length of questionnaire, sample size, time span to complete the task, and most importantly, the recent impact of confinements and related problems might have shadowed the results (Sheen et al., 2021).

The results also revealed a significant positive relationship between corporal punishment and psychological adjustment for the ADHD sample. In other words, the participants experiencing a harsh form of punishment have poor psychological adjustment in terms of high scores on the PAQ scale indicating maladjustment. This finding is in line with the previously conducted research that indicated a significant increase in children’s externalizing behaviors in response to corporal punishment (Hecker et al., 2014). Corporal punishment also increases the complexity of symptoms and leads to poor social, psychological adjustment and aggression in young children with ADHD (Li et al., 2018b; Tung, 2012). This finding provides future direction towards exploring this area to improve monitoring of adolescents with ADHD in effective ways and tailoring preventive measures via skill training programs for parents and teachers. Furthermore, the findings showed a non-significant positive correlation between inconsistent discipline and psychological adjustment. This trend of relationship is indicative of maladjustment among ADHD adolescents. The importance of supervision and discipline are very crucial elements during development in acquiring good social and academic skills in general (i.e., accomplishing daily tasks and homework) (Zhu et al., 2021; Loe et al., 2007; Aduen et al., 2018). It is also evident that lack of

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discipline may further complicate the behavioral and social difficulties of children and adolescents with ADHD (Teixeira et al., 2015; Tung, 2012). The current study also found a significant positive correlation between poor monitoring and psychological adjustment.

Parental monitoring is crucial in leading growing children towards developing life skills and monitoring daily routines effectively. Similarly, poor control leads to increased maladjustment in children and adolescents (Jaureguizar et al., 2018; Costa et al., 2019; Aghebati et al., 2014; Kousha & Abbasi, 2019). Parents and teachers need to be trained in best ways to supervise and monitor their children and adolescents with ADHD and improve their psychological adjustment and learn skills to function independently (Bikic et al., 2021; Syed & Hussein, 2010; Malik et al., 2014; van der Oord & Tripp, 2020).

Furthermore, the research findings showed a significant inverse relationship between parental involvement and psychological adjustment. Therefore, in line with the results of previously research it suggests parental involvement as a significantly stronger contributor in increased motivation, social and academic adjustment as well as internalizing, and externalizing behaviors in children (Yan & Ansari, 2016; Bhide et al., 2019). Therefore, it is inevitable to explore the unique parent-child relationship that is fundamental to the psychological adjustment of adolescents with ADHD. Similarly, the results also showed a significant inverse relationship between positive reinforcement and psychological adjustment. Besides, lack of positive reinforcement and use of frequent corporal punishment increases behavioral dysregulation in children with ADHD (Friedrich et al., 2017; Joseph et al., 2019). Hence, it is important to practice positive reinforcement in domestic and academic setups. Furthermore, research could explore and develop training programs to use positive reinforcement for parents of adolescents with ADHD (Li, 2018b; Alsop et al., 2016; Ryan et al., 2017; Cappe et al., 2017).

The research findings also indicated significant partial mediation that parenting practices (Positive and Negative dimensions) and family functioning (Healthy family functioning) are indirectly related to psychological adjustment in adolescents through its relationship with EMSs. This finding is in line with previous research that indicated the mediating role of maladaptive schemas in parenting practices and psychological maladjustment in early to young adolescents (Tutal & Yalcin, 2021). Furthermore, previous research also reveals the partial mediating role of early maladaptive schemas concerning family functioning and subjective well-being (Haugh et al., 2017; Gong & Chan, 2018; Farazmand et al., 2015; Rafi et al., 2017; Stanescu & Romer, 2011; Demby et al., 2017). In addition, the presence of maladaptive schemas complicates ADHD symptoms and increase social, educational, performance and learning difficulties (Philipsen et al., 2016). The findings of the present study also show a significant positive relationship between the EMSs and psychological adjustment for the adolescents with ADHD. These adolescents may face greater difficulties while coping with their cognitive and emotional functioning and may adopt unhealthy modes to cope with difficulties and external challenges (Schilder et al., 2021; Van Wijk-Herbrink et al., 2018). Furthermore, malparenting and family dysfunction might contribute to these challenges and hinder the psychological adjustment in adolescents with ADHD.

Furthermore, the research showed significant difference in only one subdomain of parenting practices, which is inconsistent discipline where boys scored higher than their girls’ counterparts. The findings point out the presence of inconsistent discipline practice in adolescents with ADHD like previous research (Alperin et al., 2019; Mokrova et al., 2010; Ellis & Nigg, 2009). However,
parenting practices may vary depending on child’s gender, age, and type of ADHD (Muñoz-Suazo et al., 2020). Another explanation of this finding can be related to sociocultural factors that prevail in our society to deal with children based on their gender. However, on EMSs, boys scored higher than girls on five of the eighteen schemas including, Emotional deprivation, Emotional Inhibition, Defectiveness/Shame, Social Inhibition, and Vulnerability to Harm. In contrast, girls were observed to score higher on subscale of self-sacrifice in line with the previous findings (Shorey et al., 2012; El-Gilany et al., 2013, Janson et al., 2019; Alimoradi et al. 2022;). The results are counter-intuitive to research that report all maladaptive schemas, mostly in girls, except for schema of vulnerability to harm (Wijk-Herbrink et al., 2020; Shorey et al., 2012).

In fact, previous studies demonstrated varied results for the presentation of maladaptive schemas regarding gender and sociodemographic characteristics. EMSs need to be studied from a sociocultural perspective as the findings of present study showed counter intuitive results regarding gender differences (Dattilio, 2002). There is a need for timely interventions to treat EMSs that develop in response to external demands, changing social responsibilities (Girard et al. 2019; Pauwels et al. 2018). In addition, on psychological adjustment, the gender difference was observed on only one subscale, Emotional instability, where girls scored higher than their boys’ counterparts. Since emotional stability refers to one’s composure of emotions in response to external difficulties and challenges, however, the findings of this research suggested higher emotional instability in girls with ADHD. It can also be inferred that girls have greater difficulties in coping with emotions while dealing with challenges in the environment. The finding also reveals that children in different age groups have differentiated scores on study variables. The adolescence in peak transition has more maladaptive schemas than the younger group. Previous studies confirm the role of parental disciplining practices across the age of children and their low, medium to higher social and physical aggression (Ehrenreich et al., 2014). Other studies also point out the importance of parenting in the developmental trajectories of children’s maladaptive behaviors (Luyckx et al., 2011).

CONCLUSION

The study findings revealed the significant effect of parenting practices and family functioning on the psychological adjustment of adolescents with ADHD. Similarly, it also shows EMSs to be a significant factor that mediate between parenting practices, family functioning and psychological adjustment of adolescents with ADHD. Lastly, the study revealed gender differences only on six of the subscales of EMSs (emotional deprivation, emotional inhibition, defectiveness/shame, social inhibition, vulnerability to harm, and self-sacrifice), one subscale of parenting practices (inconsistent discipline) and one subscale of psychological adjustment (emotional instability).

RECOMMENDATIONS

The finds of the study suggest the suitability of McMaster family function, parenting practices, Young’s schema theory and interpersonal acceptance rejection theory to understand the complicated interplay of manifold factors underlying ADHD population. It is also important to consider the early maladaptive schemas to understand the underlying cognitions of adolescents with ADHD. Patient-focused treatments ignore the importance of the patient's family environment and the nature of interaction with the caregiver, which significantly affects the elevation of symptoms and adjustment problems. The findings of this study can be used to evaluate and design the treatment plans for adolescents with ADHD by clinicians. It may help the practitioners to
pinpoint the complexity of the illness, accurate diagnosis, evaluate poor response to medication, finding suitable interventions for treatment by considering all stakeholder including parents, caregivers, children and family members, and designing group therapy sessions.

In educational set up these finding may help in training workshops for the teachers to improve the understanding of the needs of adolescents with ADHD, classroom monitoring and facilitate learning process. The finding can also be incorporated with interactive session for children, parents and family members to develop understanding of the nature of problem, related complexities within families and sorting strategies for the monitoring and betterment of growing children. The finding may also be disseminated through handouts, awareness seminars for parents and teachers, or using social media forums. Future researches are recommended to integrate larger samples from various socio-economic and cultural backgrounds. There is also a need for extensive research to determine gender differences in this population. The results of this study also highlight a need for future researches to explore possibilities to provide parents and teachers with suitable training to improve psychological adjustment of this population. As the findings of this current study contribute to the EMSs among adolescents with ADHD in Pakistan it can hence be referenced for future research.

Acknowledgment

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Funding Declaration

The authors received no financial support for the research, authorship and publication of this article.

Conflict of Interest

The authors declare no conflict of interest.

Research Ethics

Permission from the original authors of assessment tools was obtained to use and translate the assessment measures for the present research. For data collection, permission was gained from the respective heads including, Director Special Education Islamabad, Federal Directorate of Education General, Outdoor Patients Departments of the hospitals. Participants and their parents/guardian’s informed consent were also obtained to take part in the study. Participants were assured of the confidentiality of the information provided by them. The anonymity of the participants was ensured while collection of data, analysis and reporting to eliminate the danger of harm and labeling of the participants.

Delimitations

The researcher limited the study to 100 (50 Boys and 50 Girls) adolescents diagnosed with ADHD. The selected participants were from different institutions including hospitals, special education institutes located in Islamabad and Rawalpindi area to prevent bias and gather objective responses. The age of participants of this study was limited to 20 years, as only this age group comes under
the criteria of adolescents. The formal diagnosis of ADHD by clinician or psychiatrist was also confirmed at the time of screening and selection for all participants. The data was gathered after taking formal permissions from concerned authorities and informed consent by the parents/guardians. Due to COVID-19 lockdown the participants were accessed through various sources including personal visits, Google forms, WhatsApp, and institutional visits during intermittent lifting of lockdowns by the government.

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