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INVESTIGATING ATTENTION DEFICIT AND HYPERACTIVITY DISORDER (ADHD) IN STUDENTS ATTENDING SPECIAL TALENT DEPARTMENTS ACCORDING TO DIFFERENT VARIABLES¹

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ABSTRACT

This study examines Attention Deficit and Hyperactivity Disorder (ADHD) in university students attending special talent departments according to different variables. It was conducted in 2020-2021 academic year by employing the survey method. A total of 452 university students (223 female and 229 male) participated in the study. *Attention Disorder and Hyperactivity Disorder Self-Report Scale (ASRS)* was administered to collect data for the purposes of the study. The collected data was analyzed by using SPSS statistical software. The results of Kolmogorov-Smirnov test showed that the variables did not follow normal distribution. Mann Whitney U test was performed to compare two variables and Kruskal-Wallis test to compare more than two variables. The degree of significance was taken as $p < 0.005$ for all the analyses. As for the gender variable, the study did not find a significant difference between male and female students for ADHD total and its subdimensions while there was a significant difference in terms of the variable "the department attended" ($p < 0,05$). The university students attending Coaching Department were found to display higher levels of ADHD symptoms than those attending other departments. The university students who regularly read books displayed lower levels of ADHD symptom levels ($p < 0,05$). The findings of the study did not reveal a significant difference between the variable "educational background of mother" and ADHD and its subdimensions ($p > 0,05$) while there was a significant difference for the variable "educational background of father" ($p < 0,05$). The participants having a high school graduate father displayed higher levels of ADHD symptoms. In conclusion, ADHD cases of university students attending special talent departments are considerably affected by a lot of sociodemographic factors. The educational programs aiming to minimize number of ADHD cases among university students are believed to make positive contributions both to their private lives and educational experiences.

Keywords: Hyperactivity, impulsivity, attention deficit, special talent department, university students

¹ This study was adapted from master's degree dissertation written by Hamdi YAKAMOZ and supervised by Zekiye ÖZKAN at Van Yuzuncu Yil University Institute of Educational Sciences.

INTRODUCTION

Attention Deficit and Hyperactivity Disorder (ADHD) negatively affects individuals' daily life practices and social lives in every phase of life cycle. University students also encounter various problems triggered by ADHD during their education. According to Durak Batıgün & Atay Kayış (2014), university education is quite a critical transitional phase for students due to new expectations on their side and presence of some unprecedented difficulties. University students often face adaptation problems in the initial phases of this education (Durak Batıgün & Atay Kayış, 2014). ADHD is a concept involving academic, mental and learning problems as well as behavioral and emotional ones (Şimşek, 2014). As a neurodevelopmental disorder, ADHD has certain symptoms such as hyperactivity/impulsivity, inattention, disorganization. Inattention and disorganization involve failure to focus on task, pretending to listen while not really listening, and frequently losing one's own belongings, which are not normally associated with the characteristics of a specific age or developmental level (American Psychiatric Association, 2013).

Attention Deficit and Hyperactivity Disorder (ADHD) is a common neuropsychiatric disorder disturbing academic, social and professional functionality in children, teenagers and adults. Hyperactivity is characterized with restlessness and nervousness. It is common especially among children younger than seven years old and often quite difficult to diagnose (Vlad & Lungu, 2017). In addition, ADHD is a neurodevelopmental disorder accompanied with impulsivity, hyperactivity and attention deficit. ADHD is prevalent among children and teenagers with a ratio of 5% (Polanczyk et al., 2007., cited by Öster et al., 2020). In other words, 5% of teenagers and adults - or probably at least one student per classroom – suffer from ADHD. Boys are prone to this disease three to six times more than girls. Some studies report that the prevalence ratio of the disease among 5 to 12-year-old students is estimated to be 10% or even 20% (Millichap, 2010).

ADHD is also characterized with hyperactivity and failure to sit still for long and sustain attention in certain situations (Abalı, 2015). Although ADHD is considered a disease that is especially prevalent among children, there are considerable number of teenagers and adults suffering from this illness (Kessler et al., 2006; .cited by Salla et al., 2019). Cross-sectional and longitudinal studies show that ADHD symptoms and disorders continue to exist until adulthood in many cases (Asherson, 2013). Also, similar studies report that teenagers develop behavioral problems and negative attitude towards their parents and the cases of hyperactivity are often replaced by attention deficit and getting bored easily (Özkaynak, 2018). When children with ADHD become adults, they encounter problems while making friends and sustaining existing friendships, finding a spouse, finding a job and working (Rapoport, 2009). Unfortunately, individuals are diagnosed with ADHD only when its symptoms cause serious problems in their daily lives in different situations (Sürücü, 2003). The severity of ADHD can be grouped under three categories: mild, moderate and severe. The research shows that 10-15% of children with ADHD got recovered at mild and medium levels, 70-80 % stayed the same in terms of symptoms without any recovery or deterioration and 5-10% suffered from more serious problems and psychiatric problems when they became teenagers (Sürücü, 2018). Attention and memory problems are common

cognitive deficiencies among adults with ADHD. These people often have difficulties in solving problems due to various reasons. Problem-solving skills of individuals with ADHD are especially affected by executive functional disorders, and they can react without considering the underlying reasons and possible consequences (Young & Bramham, 2006). Concentration, motivation as well as focusing and sustaining attention are known to be essential skills for students attending special talent departments. The literature review did not reveal many studies dealing with ADHD in university students. The present study aims to explore attention deficit and hyperactivity disorder (ADHD) in students attending special talent departments according to different variables.

METHOD

This quantitative study was designed according to the principles of survey model. General survey models are a type of survey model administered to whole population consisting of multiple elements or a group of sampling selected from this particular population in order to make objective judgments (Karasar, 2011).

Population and Sampling of the Study

The population of the study consists of university students attending special talent departments. The sampling of the study is 452 male/female university students attending special talent departments at Van Yuzuncu Yil University.

Data Collection Tools

Adult Attention Deficit and Hyperactivity Disorder Self-report Scale (ASRS)

The scale was developed by World Health Organization (WHO) in order to diagnose mental disorders (Kessler, 2004; et al., cited by Doğan et al., 2009). The reliability and validity studies of the scale were conducted by Doğan et al., (2009). It has two subdimensions: "attention deficit" and "hyperactivity / impulsivity". The scale is scored between 0 and 4. In addition, personal information form was developed by the researcher in order to collect demographic data about the participants. The form included question aiming to collect data about the following information about the participants: educational background of parents; the departments attended; the high schools graduated; free time activities; weights and heights; academic achievements and book reading habits etc. ASRS was not used for diagnosis purposes in this study. It was primarily used to collect data so as to examine attention deficit and hyperactivity disorder symptom levels of university students attending special talent departments according to different variables.

Data Analysis

The data collected within the scope of the study were analyzed by using SPSS statistical software and interpreted accordingly. Kolmogorov-Smirnov Test was performed in order to determine whether the data had a normal distribution or not. The comparison of two-level variables was made by using Mann Whitney U Test

while Kruskal-Wallis H Test was done to compare more than two groups. Finally, descriptive statistics were used for further interpretations.

FINDINGS

Table 1. Mann-Whitney U Test Results For “Gender” Variable According to ADHD Total and Dimension Scores

Variables		n	Mean Rank	Rank Sum	U	P
Hyperactivity Impulsivity	Female	223	228,99	51065,00	24978,00	0,689
	Male	229	224,07	51313,00		
Attention Deficit	Female	223	236,66	52775,00	23268,00	0,102
	Male	229	216,61	49603,00		
ADHD total	Female	223	234,17	52221,00	23822,00	0,217
	Male	229	219,03	50157,00		

According to Table 1, there is not a significant difference between ADHD total and subdimension scores according to gender variable.

Table 2. Kruskal-Wallis Test Results For “Department Attended” Variable According to ADHD Total and Subdimension Scores

Variables		n	Mean Rank	X ²	p	Difference
Hyperactivity Impulsivity	Physical Education and Sports Teaching	129	211,94	21,27	0,000	a-b c-d d-e b-d
	Painting Teaching	109	248,65			
	Music Teaching	138	204,73			
	Coaching	50	289,42			
	Turkish Folk Dances	26	200,42			
Attention deficit	Physical Education and Sports Teaching	129	218,88	23,55	0,000	e-d b-e d-e b-d
	Painting Teaching	109	247,61			
	Music Teaching	138	200,21			
	Coaching	50	291,89			
	Turkish Folk Dances	26	189,62			
ADHD Total	Physical Education and Sports Teaching	129	216,38	22,43	0,000	a-b b-e d-e b-d
	Painting Teaching	109	248,96			
	Music Teaching	138	201,96			
	Coaching	50	289,62			
	Turkish Folk Dances	26	191,40			

(a= Physical Education and Sports Teaching, b= Painting Teaching, c= Music Teaching, d= Coaching, e= Turkish Folk Dances)

Table 2 reveals a significant difference between the department attended and ADHD total and subdimension scores (p<0.05). Those attending “Coaching” department displayed higher levels of ADHD symptoms.

Table 3. Mann-Whitney U Test Results For “Book Reading Habits of University Students Attending A Special Talent Department” Variable According to ADHD Total and Subdimension Scores

Variables		n	Mean Rank	Rank Sum	U	P
Hyperactivity Impulsivity	Yes	250	211,39	52847,00	21472,00	0,006
	No	202	245,20	49531,00		
Attention Deficit	Yes	250	212,17	53043,50	21668,50	0,009
	No	202	244,23	49334,50		
ADHD Total	Yes	250	211,73	52933,50	21558,50	0,007
	No	202	244,77	49444,50		

According to Table 3, there is a significant difference for ADHD total and its subdimensions in terms of book reading habits in favor of those who regularly read books ($p < 0.05$). ADHD symptom levels of book readers were found to be lower.

Table 4. Kruskal Wallis Test Result For “Accommodation” Variable According to Scores of ADHD Total and Its Subdimensions

Variables		n	Mean Rank	X ²	P	Difference
Hyperactivity Impulsivity	With the family	291	217,02	11,56	0,009	a-c b-c
	In a dormitory	69	219,48			
	In a flat with other students	65	277,21			
	Alone	27	224,50			
Attention Deficit	With the family	291	217,82	9,51	0,023	a-c b-c
	In a dormitory	69	224,27			
	In a flat with other students	65	272,28			
	Alone	27	215,57			
ADHD total	With the family	291	217,36	11,03	0,012	a-c b-c
	In a dormitory	69	221,19			
	In a flat with other students	65	276,18			
	Alone	27	218,98			

(a=with the family, b=in a dormitory, c= In a flat with other students, d= alone)

When the findings regarding “accommodation” variable presented in Table 4 are examined, we can see that there is a significant difference in ADHD total and subdimension scores ($p < 0.05$). The university students living in a flat with other students have higher levels of ADHD symptom levels.

Table 5. Kruskal Wallis Test Result For “High School Graduated” Variable According to ADHD Total and Dimension Scores

Variables		n	Mean rank	X ²	P	Difference
Hyperactivity / Impulsivity	Anatolian high school	248	217,89	14,60	0,006	c-e a-e b-e
	Vocational high school	116	219,49			
	Science High School	12	163,33			
	Teacher Training High School	27	212,20			

Attention Deficit	Sports High School	49	286,37	15,92	0,003	c-e a-e b-e
	Anatolian high school	248	216,65			
	Vocational high school	116	230,63			
	Science High School	12	160,58			
	Teacher Training High School	27	212,39			
ADHD Total	Sport High School	49	288,14	15,97	0,003	c-e a-e b-e
	Anatolian high school	248	217,46			
	Vocational high school	116	230,61			
	Science High School	12	157,50			
	Teacher Training High School	27	210,72			
	Sport High School	49	288,14			

(a: Anatolian High School, b= Vocational High School, c= Science High School, d= Teacher Training High School, e= Sports High School)

Table 5 shows a significant difference in ADHD total and subdimension scores for “high school graduated” variable” ($p < 0.05$); sports high school graduates displaying higher levels of ADHD symptoms.

Table 6. Kruskal Wallis Test Result For “Free Time Activities” Variable According to ADHD Total and Subdimension Scores

Variables	n	Mean rank	X ²	P	Difference	
Hyperactivity Impulsivity	I read books	74	216,13	9,08	0,059	
	I listen to music	139	203,09			
	I do sports	133	241,86			
	I spend time watching TV and surfing on the internet	49	250,08			
	Other	57	240,94			
Attention Deficit	I read books	74	222,20	13,91	0,008	b-d
	I listen to music	139	196,28			
	I do sports	133	252,99			
	I spend time watching TV and surfing on the internet	49	243,69			
	Other	57	229,18			
ADHD total	I read books	74	220,64	11,10	0,025	b-d
	I listen to music	139	198,96			
	I do sports	133	246,98			
	I spend time watching TV and surfing on the internet	49	247,01			
	Other	57	235,85			

(a= I read books, b=I listen to music, c= I do sports, d= I spend time watching TV and surfing on the internet e=Other)

Table 6 reveals a significant difference in ADHD total and attention deficit scores ($p < 0.05$) but not a significant one in hyperactivity / impulsivity scores according to “free time activity” variable. Students who provided “I do sports” reply had higher levels of hyperactivity symptom levels for attention deficit subdimension, and those reporting “I spend time watching Tv and surfing on the internet” for ADHD total subdimension.

Table 7. Kruskal Wallis Test Result For “Father’s Educational Background” Variable According To ADHD Total and Subdimension Scores

Variables		n	Mean Rank	X ²	P	Difference
Hyperactivity/ Impulsivity	Illiterate	104	213,29	16,61	0,002	e-d a-d c-d c-e
	Literate	76	214,01			
	Primary school	110	243,71			
	High school	96	259,63			
	University	66	184,82			
Attention Deficit	Illiterate	104	213,03	12,38	0,015	e-d a-d c-e c-d
	Literate	76	212,10			
	Primary school	110	240,54			
	High school	96	257,48			
	University	66	195,77			
ADHD total	Illiterate	104	214,62	15,50	0,004	e-d a-d c-e c-d
	Literate	76	213,11			
	Primary school	110	243,15			
	High school	96	258,56			
	University	66	186,27			

(a=illiterate, b= literate, c= primary school, d= high school, e= university)

According to Table 7, there is a significant difference in ADHD total and subdimension scores for “father’s educational background” variable ($p < 0.05$). Students with a high school graduate father displayed higher levels of ADHD symptoms.

Table 8. Kruskal Wallis Test Result For “Parental Marital Status” Variable According To ADHD Total and Dimension Scores

Variables		n	Mean Rank	X ²	P	Difference
Hyperactivity/ Impulsivity	Married	367	220,61	10,34	0,006	a-b c-b
	Divorced	21	314,24			
	Deceased spouse	64	231,51			
Attention Deficit	Married	367	220,07	10,48	0,005	a-b c-b
	Divorced	21	313,40			
	Deceased spouse	64	234,84			
ADHD total	Married	367	219,96	10,88	0,004	a-b c-b
	Divorced	21	315,21			
	Deceased spouse	64	234,90			

(a= married, b= Divorced, c= deceased spouse)

When the parental marital status data presented in Table 8 are examined, it can be seen that there is a significant difference in ADHD total and subdimension scores ($p < 0.05$). The students with divorced parents displayed higher levels of ADHD symptoms.

Table 9. Kruskal Wallis Test Result For “Academic Achievement” Variable According To ADHD Total and Subdimension Scores

Variables		n	Mean Rank	X ²	P	Difference
Hyperactivity/ Impulsivity	Bad	29	324,91	29,67	0,000	b-c
	Normal	206	239,88			a-c
	Good	170	207,96			a-d
	Very Good	47	174,20			b-d
Attention Deficit	Bad	29	317,05	24,08	0,000	b-c
	Normal	206	237,22			a-c
	Good	170	211,40			a-d
	Very Good	47	178,27			b-d
ADHD total	Bad	29	323,88	28,18	0,000	b-c
	Normal	206	238,26			a-c
	Good	170	210,32			a-d
	Very Good	47	173,39			b-d

(a= bad, b= normal, c=good, d= very good)

According to Table 9, there is a significant difference in ADHD total and subdimension scores academic achievement ($p < 0.05$). The students reporting “bad” academic achievement had higher levels of ADHD symptom levels

Table 10. Kruskal Wallis Test Result For “BMI (Body Mass Index)” Variable According To ADHD Total and Subdimension Scores

Variables		n	Mean Rank	X ²	p	Difference
Hyperactivity/ Impulsivity	Thin	21	207,52	19,27	0,000	b-c
	Normal	306	210,01			a-c
	Fat	125	270,05			
Attention Deficit	Thin	21	199,98	16,04	0,000	a-c
	Normal	306	212,17			b-c
	Fat	125	266,02			
ADHD Total	Thin	21	201,24	18,37	0,000	b-c
	Normal	306	210,89			a-c
	Fat	125	268,95			

(a= Thin, b=Normal, c= fat)

Table 10 shows a significant difference in ADHD total and subdimension scores for BMI variable ($p < 0.05$). Fat university students displayed higher levels of ADHD symptoms.

CONCLUSION and DISCUSSION

The findings of the study did not show a significant difference between Attention Deficiency and Hyperactivity Disorder (ADHD) levels of students attending special talent departments in terms of gender variable. ADHD

levels of male and female students were almost similar. There are some studies with similar findings in the literature. Kısacık & Kalaycıoğlu (2019), Yeşil Örnek & Durmuş (2017), Taneri et al. (2016), Özkan & Arslan (2019), Doğan et al. (2008), reported the lack of a significant difference between males and females in their attention deficit and hyperactivity disorder levels. However, Yılmaz et al. (2012), found that males received higher scores than females in the following variables: attention deficiency; hyperactivity; and features and problems related to ADHD. Similarly, Kılıçoğlu et al. (2009), also reported higher scores for males in hyperactivity and total score subdimension. On the other hand, Erdem & Pak (2012), emphasized type of attention deficit for females and impulsivity for males in ADHD cases. The study conducted by Uyan et al. (2014), revealed higher cases of ADHD for males than females as reported both by families and teachers. Doğan et al. (2009), in the reliability and validity studies, found that females received higher ASRS score than males. Similarly, Zorlu (2012) calculated ADHD prevalence as 5% for women and 10.9% for men, which means a statistically significant difference for males in terms of ADHD prevalence. In short, the studies reported different findings for ADHD prevalence according to gender – more cases in females in some studies and more cases in males in other studies. In contrast, the present study did not reveal a significant difference in ADHD prevalence in terms of gender. The limited number of participants might be due to the presence of the pandemics when the study was conducted.

When “the department attended” variable is considered in the present study, the findings reveal a significant difference in ADHD total and its subdimensions. ADHD symptom levels were found to be higher in students attending “Coaching” department. Yılmaz et al. (2012) stated that students attending departments of basic sciences received lower attention deficiency dimension scores than those attending other departments. However, they did not find a significant difference in hyperactivity and impulsivity total scores. Finally, the study carried out by Yeşil Örnek & Durmuş (2017) reported a lack of significant difference between ADHD level and the department attended. The finding suggesting high levels of ADHD symptoms in students attending Coaching Department was not supported by the similar studies in the literature.

As for the accommodation variable, the study found a significant difference in ADHD total and its subdimensions. The students living in a flat with other students reported higher levels of ADHD symptoms. Özkan & Arslan (2019), in their study, reported a significant difference between accommodation variable and ADHD levels; lower ADHD scores for those living in a flat.

The present study found a significant difference also for “high school graduated” variable in ADHD total and its subdimensions. The students who graduated from a sports high school reported higher levels of ADHD symptoms. In contrast, the study conducted by Özkan & Arslan (2019) did not show a significant difference for “high school graduated” variable.

As for the class year variable, the study did not show a significant difference in ADHD and its subdimensions. There are some studies with similar findings in the literature (Zorlu, 2012; Yeşil Örnek & Durmuş, 2017; Atlı et

al., 2016). However, Yılmaz et al. (2012) reported a significant difference between class year variable and attention deficiency, hyperactivity – impulsivity and ADHD total scores. The study revealed lower scores in attention deficiency, hyperactivity – impulsivity dimension scores for students studying in 4th year and above in their departments.

The findings of the present study did not show a significant difference between ADHD level and educational background of mother. Some studies in the literature also reported similar findings. To illustrate, Özkan & Arslan (2019), Uyan et al. (2014) & Zorlu (2012), in their studies, did not find a significant difference in ADHD levels according to mother's educational background variable.

As for father's educational background variable in the present study, there was a significant difference in ADHD total and its subdimensions. ADHD symptom levels of the students with high school graduate fathers were found to be higher. The study carried out by Özkan & Arslan (2019) revealed that there was not a significant relationship between father's educational background and ADHD. Zorlu (2012), in his study, also found that there was not a statistically significant difference between ADHD level and father's educational background.

The present study did not show a significant difference between ADHD total and its subdimensions in terms of "income level" variable. Zorlu (2012) reported the lack of a significant difference between ADHD and income level. Similarly, the study conducted by Taneri et al. (2016) with medicine faculty students found that there was not a correlation between ADHD and financial status.

According to the findings of the present study, parents' marital status significantly differed in ADHD total and dimension scores. ADHD total and dimension scores of students with divorced parents were found to be higher. Similarly, Zorlu (2012) reported higher levels of ADHD prevalence in students living in an extended family or with a single parent.

As for academic achievement variable, there was a significant difference in ADHD total and dimension scores. The students reporting a "bad" academic performance displayed higher levels of ADHD symptoms while the students reporting a "very good" academic performance had lower levels of ADHD. The study conducted by Doğan et al. (2008) with university students found that ADHD symptoms negatively affected academic and psychological functionality. Also, Özkan & Arslan (2019), in their study, examined academic performance in terms of hyperactivity symptom levels and found a significant difference in favor of the participants reporting a "very good" academic performance.

When Body Mass Index (BMI) variable in the study was considered, there was a significant difference in ADHD and its subdimensions. The fat students were found to have higher levels of ADHD symptom levels. Atlı et al. (2016) in their study, did not find a significant correlation between ADHD level and BMI variable.

Finally, the study showed a significant difference between ADHD total and attention-deficit subdimension in terms of “free time activities” variable. However, there was not a significant difference in hyperactivity-impulsivity scores. According to the findings, hyperactivity symptom levels were higher in attention deficit subdimension for students who reported “I do sports” and in ADHD total dimension for students who reported “I spend my free time watching TV – surfing the Internet” for this variable. In addition, ADHD symptom levels of university students who regularly read books were lower and statistically significant. There were not any studies in the literature that support or contradict this finding.

In conclusion, our study provides invaluable data about education lives of university students attending special talent departments and ADHD cases. ADHD symptom levels of students attending Coaching Department were found to be higher than those attending other special talent departments.

RECOMMENDATIONS

It is suggested that further studies should be conducted with larger sampling groups and necessary trainings focusing on increasing awareness about ADHD and the ways to cope with it should be offered so that students could experience a healthier education life and sustain their academic achievement.

ETHICAL TEXT

In this article, the journal writing rules, publication principles, research and publication ethics, and journal ethical rules were followed. All responsibilities related to the article belong to the responsible authors. The permission required to conduct the study was taken from Van Yuzuncu Yil University Social Sciences and Humanities Ethical Committee (Date: 14.10.2019, the number: 2019/07-02).

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