Open Access Journal [doi: 10.54584/lms.2023.28] Research Article

Life and Medical Sciences

Prevalence of Attention Deficit Hyperactivity Disorder and Sluggish Cognitive Tempo Symptoms in Children Presenting with Foreign Body Ingestion: A Case-Control Study

Yabancı Cisim Yutulmasıyla Başvuran Çocuklarda Dikkat Eksikliği Hiperaktivite Bozukluğu ve Ağır Bilişsel Tempo Belirtilerinin Yaygınlığı: Bir Vaka Kontrol Çalışması

Bahadır ÇALIŞKAN[1] [ID], Hesna GÜL[2] [ID], Gökhan Berktuğ BAHADIR[1] [ID], Nurullah KAYASÖKEN[3] [ID], Melike ARSLAN[4] [ID], Necati BALAMTEKİN[4] [ID]

[1]Department of Pediatric Surgery, Gülhane Training and Research Hospital, University of Health Sciences, Ankara, Türkiye.
[2]Department of Child and Adolescent Psychiatry, Ufuk University Faculty of Medicine, Ankara, Türkiye.
[3]The Ministry of Health, Provincial Ambulance Service Command and Control Center, Kilis, Türkiye.
[4]Division of Pediatric Gastroenterology, Department of Pediatrics, Gulhane Training and Research Hospital, University of Health Sciences, Ankara, Türkiye.

Article Info: Received; 10.01.2023. Accepted; 23.01.2023. Published; 25.01.2023.
Correspondence: Bahadır Çalışkan; MD, Department of Pediatric Surgery, Gülhane Training and Research Hospital, University of Health Sciences, Ankara, Türkiye. E-mail: bahadircaliskan@hotmail.com

Cite as: Çalışkan B, Gül H, Bahadır GB, Kayasöken N, Arslan M, Balamtekin N. Prevalence Of Attention Deficit Hyperactivity Disorder And Sluggish Cognitive Tempo Symptoms in Children Presenting With Foreign Body Ingestion: A Case-Control Study. Life Med Sci 2022; 2(1): 41-47.

Abstract

Foreign body ingestion (FBI) is one of the common causes of emergency admissions in infancy and childhood. Although the large majority of children who present with the FBI have no psychiatric diagnosis, present studies demonstrate that attention deficit hyperactivity disorder (ADHD) and related psychiatric problems might be a risk factor for FBI. This study aimed to compare the demographic variables and attention deficit hyperactivity disorder levels and sluggish cognitive tempo symptoms (ADHD-SCT) in children who ingested foreign bodies with healthy children. Also, we aimed to address the relationship between ADHD-SCT symptoms and the age of FBI. The FBI group comprised 44 children (age 2-8, median age: 5, 68.2% boys) admitted to the emergency, pediatric surgery, and pediatric gastroenterology department after FBI, and the healthy control group comprised 30 children (age 3-8, median age: 6, 56.7% boys). We administered the sociodemographic information form, SNAP-IV ADHD rating scale, and Barkley's child SCT ratings scale to both groups of parents. Our results demonstrated that maternal education level was significantly lower in the FBI group, although other demographic characteristics of the samples were similar (p=0.023). In addition, ADHD-hyperactivity/impulsivity scores were significantly higher in the FBI group (p=0.01). Still, there were no significant differences in ADHD-inattention, SCT-daydreaming, and SCT-sluggishness scores (for all, p>0.05). We found positive-moderate relationships between SCT-daydreaming and sluggishness symptoms and FBI age (r=0.314, r=0.348, respectively). This means that higher SCT scores are related to an older FBI age. In conclusion, for the first time, we evaluated the ADHD and SCT symptoms in young children against FBI and found that ADHD-hyperactivity, but not ADHD-inattention symptoms, were significantly higher in the FBI

group, and SCT symptoms increase the risk of FBI at an older age. In addition, we found that a lower maternal education level could be an additional risk factor for FBI. Despite the high hyperactivity in the FBI group, the low rate of child psychiatry evaluation should be considered when evaluating a child.

Keywords: ADHD, Foreign bodies, Gastrointestinal tract.

Özet

Yabancı cisim (YC) yutulması, bebeklik ve çocukluk döneminde acil başvuruların yaygın nedenlerinden biridir. YC yutma ile başvuran çocukların büyük çoğunluğunda psikiyatrik tanı olmamasına rağmen, mevcut çalışmalar gösteriyor ki, dikkat eksikliği hiperaktivite bozukluğu (DEHB) ve ilişkili psikiyatrik problemler YC yutma için bir risk faktörü olabilir. Bu çalışmada yabancı cisim yutan çocuklarda demografik değişkenler ile dikkat eksikliği hiperaktivite bozukluğu düzeyleri ve ağır bilişsel tempo semptomlarının (DEHB-SCT) sağlıklı çocuklarla karşılaştırılması amaçlandı. Aynı zamanda DEHB-SCT belirtileri ile YC yutma yaşı arasındaki ilişkiyi belirlemeyi amaçladık. YC yutma grubu, yabancı cisim yutma sonrası acil, çocuk cerrahisi ve pediatrik gastroenteroloji bölümüne başvuran 44 çocuktan (yaş 2-8, ortanca yaş: 5, %68.2 erkek) ve sağlıklı kontrol grubu 30 çocuktan (yaş 3-8, medyan yaş: 6, %56.7 erkek) oluşmaktadır. Her iki ebeveyn grubuna da sosyodemografik bilgi formu, SNAP-IV DEHB derecelendirme ölçeği ve Barkley's Child SCT derecelendirme ölçeğini uyguladık. Bulgularımız, örneklemlerin diğer demografik özellikleri benzer olmasına rağmen, anne eğitim düzeyinin YC yutma grubunda anlamlı olarak düşük (p=0.023) olduğunu gösterdi. Ayrıca YC yutma grubunda DEHB-hiperaktivite/dürtüsellik puanları anlamlı olarak yüksekti (p=0.01). Yine de, DEHB-dikkatsizlik, SCT-hayal kurma ve SCT-tembellik puanlarında anlamlı bir fark yoktu (tümü için, p>0.05). SCT-hayal kurma ve halsizlik semptomları ile YC yutma yaşı arasında pozitif-orta derecede ilişkiler bulduk (sırasıyla r=0.314, r=0.348). Bu, daha yüksek SCT puanlarının daha ileri YC yutma yaşıyla ilişkili olduğu anlamına gelir. Küçük çocuklarda ilk kez DEHB ve SCT belirtilerini YC yutan hastalarda değerlendirdik ve DEHB-dikkatsizlik belirtilerinin (DEHB-hiperaktivite belirtilerinin değil) YC yutma grubunda anlamlı olarak daha yüksek olduğunu ve daha büyük yaşlarda SCT belirtilerinin, YC yutma riskini artırdığını bulduk. Ayrıca anne eğitim seviyesinin düşük olmasının YC yutma için ek bir risk faktörü olabileceğini bulduk. YC yutma grubunda hiperaktivitenin yüksek olmasına rağmen, çocuk değerlendirilirken çocuk psikiyatrisi konsültasyon oranının düşük olması göz önünde bulundurulmalıdır.

Anahtar Kelimeler: DEHB, Gastrointestinal sistem, Yabancı cisim.

Introduction

Foreign body ingestion (FBI) is one of the common causes of emergency admissions in infancy and childhood [1]. According to the data of the American Association of Poison Control Centers, it was determined that 75% of the cases who applied due to FBI were younger than five years old [2]. The objects swallowed are very diverse, and it can be an object that looks like food or something in the food (fish bones, chicken bones, nutshells, etc.). It might also be an object put into their mouth during play and exploration, such as coins, small toys, magnets, buttons, pencil tips, pins, hairpins. Most of the time, swallowed objects leave the human body physiologically [3,4]. Studies show that complication rates such as perforation and obstruction are low, and only 1% require surgery secondary to complications [3,4]. On the other hand, if the foreign object is a radioactive material such as a battery or a cusped object such as a pin that carries the risk of penetrating internal organs, a life-threatening risk may occur [5].

The large majority of children that present with FBI have no psychiatric diagnosis, and the reason was usually developmental curiosity, desire to explore, attention-seeking or boredom. However, present studies showed that attention deficit hyperactivity disorder (ADHD) and other psychiatric problems might be risk factors [6-8]. ADHD/hyperkinetic disorder is a common neuropsychiatric disorder with an incidence of 5.29% among children [9]. Symptoms usually begin in the early developmental period and include attention deficit, hyperactivity, and impulsivity. Studies show that the risk of unintentional injury, accident, and accident-related death rates in individuals with ADHD is

higher than the average population [7,10,11]. Another phenomenon associated with ADHD is sluggish cognitive tempo (SCT), characterized by sluggishness, excessive daydreaming, lethargy/apathy, slowed behavior/thinking, and mental confusion [12-14]. For a long time, these symptoms were thought to be part of ADHD [15-17]. However, some studies revealed high SCT symptoms were also found in non-ADHD populations of different age groups, and only 40-50% of the participants with high SCT symptoms also have high ADHD symptoms [18,19]. Supporting these results, many recent studies and meta-analyses demonstrated SCT has internal and external validity and is a related but different phenomenon from ADHD in children, adolescents, and adults from different cultures [20-25].

This study aimed to compare the demographic variables and levels of ADHD-SCT symptoms in children who ingested foreign bodies with healthy children. Also, we aimed to address the relationship between ADHD-SCT symptoms and the age of FBI.

Material and Method

This case-control study was conducted in pediatric surgery and pediatric gastroenterology services of a tertiary hospital in Ankara. Children's parents were further contacted by telephone through the Gülhane Training and Research Hospital Pediatric Surgery and Pediatric Gastroenterology services, and all were under eight years old during 2018-2021. The control group was selected from children who applied to pediatric outpatient clinics with no chronic physical or mental problems and no FBI history. Parents who agreed to participate in the study were asked to fill out an online informed consent form and the necessary scales for the study. samples. This study was approved by the Ethics Committee of University of Health Sciences (decision number; E-50687469-799 and date; 04.03.2021).

The study group comprised 44 children (age 2-8, median age: 5) and the control group of 30 healthy children (age 3-8, median age: 6). The results of demographic variables are presented in Table 1. There were no statistically significant differences between age and gender of the children, paternal education level, number of family members, and children in the family. Maternal education level and school success rate were significantly lower in the study group when compared to the control group (p=0.022 and p=0.023, respectively).

Measures

SNAP-IV (Swanson, Nolan, and Pelham) 18 item teacher and parent rating scale

This Likert-type scale with responses ranking between 0-3 was developed to screen for ADHD-hyperactivity/impulsivity symptoms and ADHD-attention deficit. It includes nine items for attention deficit and nine for hyperactivity-impulsivity. High scores on the subscales indicate more severe ADHD symptoms. It has previously been used in both clinical trials and population-based screening studies [26,27]. We used the previously determined cut-off scores in this study (parent-rated cut-off points for IA (*inattention*): 1.78 and HI (*hyperactivity-impulsivity*): 1.44) [28]. The Cronbach α values of the SNAP-IV in the present study were 0.89 for the inattention subscale and 0.91 for the hyperactivity-impulsivity subscale.

The Barkley's child SCT rating scale

Barkley created this rating scale in 2013 [19]. The scale consisted of 12 items, and the validity-reliability study in Turkey has been completed, and it has been determined the scale has a two-factor structure called 'daydreaming' and 'sluggishness' [29]. In our study, Cronbach's α values for daydreaming are 0.80 and for sluggishness 0.84.

Statistical analyses

Statistical analyses were performed using IBM Statistical Software for Social Sciences (SPSS) 22.0 (SPSS Inc. Chicago, IL, USA). We used the Kolmogorov-Smirnov test to find out if the data is normally distributed. Demographic information was analyzed through descriptive statistics, and differences of scale scores between groups were analyzed with Mann-Whitney U test. Then we used a Spearman correlation test to examine the relationships between foreign body ingestion age (FBIA), ADHD, and SCT symptoms in the study group. A p-value of $p<0.05$ was accepted as statistically significant

Results

When comparing the ADHD and SCT scale scores, we found ADHD-hyperactivity/impulsivity scores were significantly higher in the FBI group (p=0.01). On the other hand, there were no statistically significant differences among groups for ADHD-inattention, SCT-daydreaming, and SCT-sluggishness scores (for all p>0.05). We used parent-rated cut-off points to determine the high inattention and hyperactivity-impulsivity rates among groups. There was no statistically significant difference between groups. The ratios of IA were 4.5% (2 out of 44) and HI25% (11 out of 44) in the FBI group, but only two children had previously applied to child and adolescent psychiatric clinics (Table 2).

Finally, we used correlation analysis to find the possible relationship between FBIA and ADHD and SCT symptoms. We found positive-moderate relationships between SCT-daydreaming and sluggishness symptoms and FBIA (r=0.314 for daydreaming, r=0.348 for sluggishness). This means that higher SCT scores are related to older FBIA (Table 3).

Table 1. Characteristics of the study subjects.

	FBI Group			Control Group			Statistics
Gender	14 girls (31.8%)			13 girls (43.3%)			p=1.021*
	30 boys (68.2%)			17 boys (56.7%)			
Primary caregiver	School: 3 (6.8%)			School: 11 (36.7%)			
	Mother: 35 (79.5%)			Mother: 13 (43.3%)			
	Grandmother: 6 (13.6%)			Grandmother: 6 (20%)			
	min-max	**median**	**mean rank**	**min-max**	**median**	**mean rank**	
Age	2-8	5	34.6	3-8	6	41.6	z=-1.404 p=0.160
School Success Rate	0-4	0	29.5	0-4	3	40.2	**z=-2.290 p=0.022**
Maternal Education (year)	5-15	11	33.0	8-15	15	44.3	**z=-2.269 p=0.023**
Paternal Education (year)	5-15	11	33.9	8-15	15	42.7	z=-1.855 p=0.064
Number of Children in the Family	0-4	2	37.0	1-3	2	38.2	z=-0.265 p=0.791
Number of family members	0-7	4	38.2	3-5	4	36.4	z=-0.396 p=0.962

*Chi-square 2×2.

Table 2. Group differences in ADHD and SCT scores.

	Control Group		FBI Group		Statistics
	min-max (median)	mean rank	min-max (median)	mean rank	
ADHD-inattention	0-10 (2)	32.07	0-24 (4)	41.20	z=-1.814 p=0.07
ADHD-hyperactivity/impulsivity	0-22 (4)	29.92	0-26 (8)	42.67	**z=-2.518 p=0.01**
SCT-daydreaming	7-14 (8)	34.83	7-25 (8)	39.32	z=-0.913 p=0.36
SCT-sluggishness	5-14 (5)	36.88	5-15 (5)	37.92	z=-0.806 p=0.42
	n	**%**	**n**	**%**	
ADHD-inattention rate due to parent-rated cut-off	0	0	2	4.5	p>0.05
ADHD-hyperactivity/impulsivity rate due to parent-rated cut-off	3	10	11	25	p>0.05

Table 3. Correlations between foreign body swallowing age and ADHD-SCT scores in the study group.

	FBIA (r)
ADHD-inattention	.137
ADHD-hyperactivity/impulsivity	-.070
SCT-daydreaming	**.314***
SCT-sluggishness	**.348***

r: Spearman correlation rho *: p<0.05

Discussion

This study examined demographic variables, ADHD, and SCT symptoms among children with FBI and compared them to a control group. We can summarize our results:

1. Although paternal education level was similar, we found that the maternal education level was significantly lower in the FBI group.

2. ADHD-hyperactivity/impulsivity scores were significantly higher in the FBI group, but there was no statistically significant difference in the inattention scores.

3. SCT-daydreaming and sluggishness scores were associated with older FBI age.

Low maternal education level seems to be a risk factor for FBI in infants and young children. Maternal ability to assess FBI risk could be related to educational level. Many studies investigating the relationship between child mortality under five and maternal education levels demonstrated that child mortality decreases significantly with maternal education, especially in low-middle-income countries [30-33]. A study that examined the mothers' knowledge about foreign body aspiration (FBA) in young children demonstrated that 20.2% of mothers did not know that peanuts or other nuts can cause FBA and 48.1% did not know that they should not give peanuts to a child younger than 3 years old [34]. Also, 27.7% and 41.8% of mothers did not know that sudden choking and sudden coughing were the most common FBA signs respectively. The authors stated that being a mother of a first child and having an infant younger than 12 months are independent risk factors for lack of maternal knowledge about FBA [34]. In the light of these studies and our results, we can say it is essential for preventive health services to educate mothers about FBI and its signs, especially for first-time mothers.

The diagnosis of ADHD is usually made during the school years when academic failure and problems with social relationships are revealed. However, attention deficit and hyperactivity-impulsivity symptoms are present from early childhood, so ADHD children have a high risk of accidents, especially in late infancy and preschool (especially 3-6 years) [7,35,36]. Studies investigating the ADHD-trauma relationship focus primarily on falls, poisoning, injuries, and burns, but research on the relationship between ADHD and the FBI is still limited. Turgut et al. examined the prevalence of ADHD in children aged 3-17 and adolescents with FBI [8]. They found that ADHD and oppositional defiant disorder symptoms were significantly higher in the FBI group when compared to the controls. Studies evaluating the children that placed foreign bodies into their mouth, ears, or nose reported high ADHD incidence [37-40]. Our results reveal the main problem associated with ADHD in the 3-8 years old FBI group is hyperactivity. So, even if the symptoms of attention-deficit are mild or at a level that does not impair functionality, treating hyperactivity in the preschool period is still important to decrease the risk of FBI. In our study, high levels of hyperactivity were detected in 11 children, but only two had had a child or adolescent psychiatric evaluation. Psychiatric evaluation of children who applied to pediatric emergency or pediatric surgery due to FBI should not be neglected.

Finally, we found higher SCT-daydreaming and sluggishness symptoms are related to an older age FBI. A recent study demonstrated that children who seem to have SCT require extra time to re-arrange the active contents of working

memory, and so they usually delay responding. They also have an overactive inhibition system that terminates thoughts too quickly, so prevents intended behaviors from starting or completing [41]. When the results of our study are examined from this point of view, it can be proposed that SCT symptoms delay the age of realizing the possible FBI risks for young children. The relationship between children's age for risk recognition and SCT symptoms should be reconsidered in future studies.

Conclusion

In conclusion, we evaluated the ADHD and SCT symptoms in young children with FBI for the first time. ADHD-hyperactivity symptoms were significantly higher in the FBI group, and SCT symptoms increased the risk of FBI in older children. In addition, we found lower maternal education level could be an additional risk factor for FBI. High hyperactivity in the FBI group, but the low rate of child psychiatric evaluation should be considered when evaluating a child with FBI.

Conflict of interest: The authors declare that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper. **Financial disclosure:** There is no financial support for this study.

References

1. Gurevich Y, Sahn B, Weinstein T. Foreign body ingestion in pediatric patients. Curr Opin Pediatr 2018; 30(5): 677-82. [Crossref] [PubMed]

2. Gummin DD, Mowry JB, Spyker DA, Brooks DE, Osterthaler KM, Banner W. 2017 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 35th Annual Report. Clin Toxicol (Phila) 2018; 56(12): 1213-415. [Crossref] [PubMed]

3. Yalçin S, Karnak I, Ciftci AO, Senocak ME, Tanyel FC, Büyükpamukçu N. Foreign body ingestion in children: an analysis of pediatric surgical practice. Pediatr Surg Int 2007; 23(8): 755-61. [Crossref] [PubMed]

4. Lee JH, Lee JS, Kim MJ, Choe YH. Initial location determines spontaneous passage of foreign bodies from the gastrointestinal tract in children. Pediatr Emerg Care 2011; 27(4): 284-9. [Crossref] [PubMed]

5. Krom H, Visser M, Hulst JM, Wolters VM, Van den Neucker AM, de Meij T, et al. Serious complications after button battery ingestion in children. Eur J Pediatr 2018; 177(7): 1063-70. [Crossref] [PubMed]

6. Hesham A-Kader H. Foreign body ingestion: children like to put objects in their mouth. World J Pediatr 2010; 6(4): 301-10. [Crossref] [PubMed]

7. Brunkhorst-Kanaan N, Libutzki B, Reif A, Larsson H, McNeill RV, Kittel-Schneider S. ADHD and accidents over the life span - A systematic review. Neurosci Biobehav Rev 2021; 125: 582-91. [Crossref] [PubMed]

8. Turgut K, Poyraz MK, Sekmen E, Aydın İ, Algın A, Yavuz E. Prevalence of attention deficit hyperactivity disorder (ADHD) in children presenting with foreign body ingestion. Am J Emerg Med 2019; 37(12): 2121-4. [Crossref] [PubMed]

9. Polanczyk G, de Lima MS, Horta BL, Biederman J, Rohde LA. The worldwide prevalence of ADHD: a systematic review and metaregression analysis. Am J Psychiatry 2007; 164(6): 942-8. [Crossref] [PubMed]

10. Adeyemo BO, Biederman J, Zafonte R, Kagan E, Spencer TJ, Uchida M, et al. Mild traumatic brain injury and ADHD: a systematic review of the literature and meta-analysis. J Atten Disord 2014; 18(7): 576-84. [Crossref] [PubMed]

11. Dalsgaard S, Østergaard SD, Leckman JF, Mortensen PB, Pedersen MG. Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study. Lancet 2015; 385(9983): 2190-6. [Crossref] [PubMed]

12. Penny AM, Waschbusch DA, Klein RM, Corkum P, Eskes G. Developing a measure of sluggish cognitive tempo for children: content validity, factor structure, and reliability. Psychol Assess 2009; 21(3): 380-9. [Crossref] [PubMed]

13. Barkley RA. Barkley Adult ADHD Rating Scale-IV (BAARS-IV): 2011, Guilford Press, New York.

14. Barkley RA. Sluggish cognitive tempo (concentration deficit disorder?): current status, future directions, and a plea to change the name. J Abnorm Child Psychol 2014; 42(1): 117-25. [Crossref] [PubMed]

15. Carlson CL, Mann M. Sluggish cognitive tempo predicts a different pattern of impairment in the attention deficit hyperactivity disorder, predominantly inattentive type. J Clin Child Adolesc Psychol 2002; 31(1): 123-9. [Crossref] [PubMed]

16. Hartman CA, Willcutt EG, Rhee SH, Pennington BF. The relation between sluggish cognitive tempo and DSM-IV ADHD. J Abnorm Child Psychol 2004; 32(5): 491-503. [Crossref] [PubMed]

17. Garner AA, Marceaux JC, Mrug S, Patterson C, Hodgens B. Dimensions and correlates of attention deficit/hyperactivity disorder and sluggish cognitive tempo. J Abnorm Child Psychol 2010; 38(8): 1097-107. [Crossref] [PubMed]

18. Barkley RA. Distinguishing sluggish cognitive tempo from attention-deficit/hyperactivity disorder in adults. J Abnorm Psychol 2012; 121(4): 978-90. [Crossref] [PubMed]

19. Barkley RA. Distinguishing sluggish cognitive tempo from ADHD in children and adolescents: executive functioning, impairment, and comorbidity. J Clin Child Adolesc Psychol 2013; 42(2): 161-73. [Crossref] [PubMed]

20. Lee S, Burns GL, Snell J, McBurnett K. Validity of the sluggish cognitive tempo symptom dimension in children: sluggish cognitive tempo and ADHD-inattention as distinct symptom dimensions. J Abnorm Child Psychol 2014; 42(1): 7-19. [Crossref] [PubMed]

21. Burns GL, Becker SP. Sluggish Cognitive Tempo and ADHD Symptoms in a Nationally Representative Sample of U.S. Children: Differentiation Using Categorical and Dimensional Approaches. J Clin Child Adolesc Psychol 2021; 50(2): 267-80. [Crossref] [PubMed]

22. Becker SP, Burns GL, Smith ZR, Langberg JM. Sluggish Cognitive Tempo in Adolescents with and without ADHD: Differentiation from Adolescent-Reported ADHD Inattention and Unique Associations with Internalizing Domains. J Abnorm Child Psychol 2020; 48(3): 391-406. [Crossref] [PubMed]

23. Becker SP, Burns GL, Garner AA, Jarrett MA, Luebbe AM, Epstein JN, et al. Sluggish cognitive tempo in adults: Psychometric validation of the Adult Concentration Inventory. Psychol Assess 2018; 30(3): 296-310. [Crossref] [PubMed]

24. Fırat S, Gül H, Aysev A. Distinguishing SCT symptoms from ADHD in children: internal and external validity in Turkish culture. J Psychopathol Behav Assess 2019; 41(4): 716-29. [Crossref]

25. Becker SP. Systematic Review: Assessment of Sluggish Cognitive Tempo Over the Past Decade. J Am Acad Child Adolesc Psychiatry 2021; 60(6): 690-709. [Crossref] [PubMed]

26. Group MC. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. The MTA Cooperative Group. Multimodal Treatment Study of Children with ADHD. Arch Gen Psychiatry 1999; 56(12): 1073-86. [Crossref] [PubMed]

27. Bussing R, Fernandez M, Harwood M, Wei Hou, Garvan CW, Eyberg SM, et al. Parent and teacher SNAP-IV ratings of attention deficit hyperactivity disorder symptoms: psychometric properties and normative ratings from a school district sample. Assessment 2008; 15(3): 317-28. [Crossref] [PubMed]

28. Osman AM, Omer IM, Mohammed AA, Abdalla SE. The prevalence and factors affecting attention deficit hyperactivity disorder among school children in Khartoum State. Sudan J Paediatr 2015; 15(2): 29-36. [PubMed]

29. Firat S, Bolat GU, Gul H, Baytunca MB, Kardas B, Aysev A, et al. Barkley child attention scale validity and reliability study. Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2018; 3(31): 284-93. [Crossref]

30. Makate M. Education policy and under-five survival in Uganda: Evidence from the Demographic and Health Surveys. Soc Sci 2016; 5(4): 70. [Crossref]

31. Grépin KA, Bharadwaj P. Maternal education and child mortality in Zimbabwe. J Health Econ 2015; 44: 97-117. [Crossref] [PubMed]

32. Gakidou E, Cowling K, Lozano R, Murray CJ. Increased educational attainment and its effect on child mortality in 175 countries between 1970 and 2009: a systematic analysis. Lancet 2010; 376(9745): 959-74. [Crossref] [PubMed]

33. Andriano L, Monden CWS. The Causal Effect of Maternal Education on Child Mortality: Evidence From a Quasi-Experiment in Malawi and Uganda. Demography 2019; 56(5): 1765-90. [Crossref] [PubMed]

34. Higuchi O, Adachi Y, Adachi YS, Taneichi H, Ichimaru T, Kawasaki K. Mothers' knowledge about foreign body aspiration in young children. Int J Pediatr Otorhinolaryngol 2013; 77(1): 41-4. [Crossref] [PubMed]

35. Allan CC, DeShazer M, Staggs VS, Nadler C, Crawford TP, Moody S, et al. Accidental Injuries in Preschoolers: Are We Missing an Opportunity for Early Assessment and Intervention? J Pediatr Psychol 2021; 46(7): 835-43. [Crossref] [PubMed]

36. Altun H, Altun İ. Risk of mild head injury in preschool children: relationship to attention deficit hyperactivity disorder symptoms. Childs Nerv Syst 2018; 34(7): 1353-9. [Crossref] [PubMed]

37. Perera H, Fernando SM, Yasawardena AD, Karunaratne I. Prevalence of attention deficit hyperactivity disorder (ADHD) in children presenting with self-inserted nasal and aural foreign bodies. Int J Pediatr Otorhinolaryngol 2009; 73(10): 1362-4. [Crossref] [PubMed]

38. Özcan K, Özcan Ö, Muluk NB, Cingi C, Durukan K. Self-inserted foreign body and attention-deficit/hyperactivity disorder: evaluated by the Conners' Parent Rating Scales-Revised. Int J Pediatr Otorhinolaryngol 2013; 77(12): 1992-7. [Crossref] [PubMed]

39. Celenk F, Gokcen C, Celenk N, Baysal E, Durucu C, Kanlikama M. Association between the self-insertion of nasal and aural foreign bodies and attention-deficit/hyperactivity disorder in children. Int J Pediatr Otorhinolaryngol 2013; 77(8): 1291-4. [Crossref] [PubMed]

40. Tavarez MM, Saladino RA, Gaines BA, Manole MD. Prevalence, clinical features and management of pediatric magnetic foreign body ingestions. J Emerg Med 2013; 44(1): 261-8. [Crossref] [PubMed]

41. Kofler MJ, Irwin LN, Sarver DE, Fosco WD, Miller CE, Spiegel JA, et al. What cognitive processes are "sluggish" in sluggish cognitive tempo? J Consult Clin Psychol 2019; 87(11): 1030-42. [Crossref] [PubMed]