NEWSLETTER

INDICE:

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI IRCCS

BIBLIOGRAFIA ADHD LUGLIO 2017

ANAE Approche Neuropsychol Apprentiss Enfant. 2017;29:17-25.

ASSESSMENT OF EXECUTIVE DISORDERS DURING DEVELOPMENT OF CHILDREN: THE PRACTICAL QUESTIONS ARISING IN CLINICAL PRACTICE.

Gerard Y, Barbe F, Touzin M, et al.

We intend to present a multidisciplinary evaluation with a medical, neuropsychological and speech assessment within a level 2 resource structure dedicated to learning disorders. Following the results of these various tests, the questions on the interpretation and clinical consequences of executive malfunctions identified during the development of children will be presented

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Anesthesiology. 2017;127:227-40.

ASSOCIATION BETWEEN EXPOSURE OF YOUNG CHILDREN TO PROCEDURES REQUIRING GENERAL ANESTHESIA AND LEARNING AND BEHAVIORAL OUTCOMES IN A POPULATION-BASED BIRTH COHORT.

Hu D, Flick RP, Zaccariello MJ, et al.

Background: Exposure of young animals to general anesthesia causes neurodegeneration and lasting behavioral abnormalities; whether these findings translate to children remains unclear. This study used a population-based birth cohort to test the hypothesis that multiple, but not single, exposures to procedures requiring general anesthesia before age 3 yr are associated with adverse neurodevelopmental outcomes.

Methods: A retrospective study cohort was assembled from children born in Olmsted County, Minnesota, from 1996 to 2000 (inclusive). Propensity matching selected children exposed and not exposed to general anesthesia before age 3 yr. Outcomes ascertained via medical and school records included learning disabilities, attention-deficit/hyperactivity disorder, and group-administered ability and achievement tests. Analysis methods included proportional hazard regression models and mixed linear models.

Results: For the 116 multiply exposed, 457 singly exposed, and 463 unexposed children analyzed, multiple, but not single, exposures were associated with an increased frequency of both learning disabilities and attention-deficit/hyperactivity disorder (hazard ratio for learning disabilities = 2.17 [95% CI, 1.32 to 3.59], unexposed as reference). Multiple exposures were associated with decreases in both cognitive ability and academic achievement. Single exposures were associated with modest decreases in reading and language achievement but not cognitive ability.

Conclusions: These findings in children anesthetized with modern techniques largely confirm those found in an older birth cohort and provide additional evidence that children with multiple exposures are more likely to develop adverse outcomes related to learning and attention. Although a robust association was observed, these data do not determine whether anesthesia per se is causal

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Per la ricerca degli articoli pubblicati nella letteratura scientifica nel mese in esame sono state consultate le banche dati Medline, Embase, PsycINFO e PsycArticle utilizzando le seguenti parole chiave (o i loro sinonimi): 'Attention deficit disorder', 'Attention deficit hyperactivity disorder', 'Infant', 'Child', 'Adolescent', 'Human'. Sono qui riportate le referenze considerate rilevanti e pertinenti.

Ann Neurosci. 2016;23:81-88.

HEART RATE VARIABILITY IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: A PILOT STUDY.

Rukmani MR, Seshadri SP, Thennarasu K, et al.

Background: Attention deficit/hyperactivity disorder (ADHD) is a common childhood neuropsychiatric disorder. Autonomic nervous system plays a vital role in attention, self-regulation, emotional stability and social affiliation, which are affected in ADHD. The prefrontal cortex, which is vital for attention, motor control, emotional regulation and higher order autonomic control, is hypofunctional in ADHD. In addition, catecholamine dysregulation is there.

Purpose: We hypothesized that there is autonomic dysfunction: reduction in overall heart rate variability (HRV) and sympathovagal imbalance in children with ADHD.

Methods: Study criteria were drug-naïve ADHD children who were 7-12 years of age of either gender who fulfilled DSM-IV criteria for ADHD and did not have any associated comorbid psychiatric/neurological/medical disorders. Two hundred and seventy ADHD children were screened out of which only 12 were found eligible and 10 participated. Sample size was 20 (cases = 10, age- and gender-matched healthy controls = 10). Short-term HRV of both time and frequency domains were assessed by recording lead II electrocardiogram after using Tell-Show-Do, a behavior shaping technique. Comparison between groups was done using Mann-Whitney and Wilcoxon test. Demographic variables like age, height, weight and body mass index were similar between groups.

Results: Among time domain parameters, SD of all NN intervals, square root of the mean of the sum of squares of differences between adjacent NN intervals and percentage of count of number of pairs of adjacent NN intervals differing by more than 50 ms were reduced in ADHD group with $p < 0.05$. Among frequency domain parameters, total power was reduced in ADHD group with $p < 0.05$, high frequency power (HF) was reduced in ADHD group with $p < 0.01$ and low frequency power to HF ratio was higher in ADHD group with $p < 0.01$.

Conclusion: There is autonomic dysfunction in children with ADHD – reduction in overall HRV with sympathovagal imbalance with sympathetic dominance

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Annals of Physical and Rehabilitation Medicine. 2017.

READY! SET? LET'S TRAIN!: FEASIBILITY OF AN INTENSIVE ATTENTION TRAINING PROGRAM AND ITS BENEFICIAL EFFECT AFTER CHILDHOOD TRAUMATIC BRAIN INJURY.

Séguin M, Lahaie A, Matte-Gagné C, et al.

BACKGROUND: Attention deficits are common after pediatric Traumatic Brain Injury (TBI); they complicate return to activities of daily living and disrupt socioacademic reintegration. Yet, clinicians in rehabilitation settings have limited access to cognitive remediation protocols for which feasibility has been demonstrated.

OBJECTIVE: The aim of this study was to evaluate the feasibility of intensive attention process training program Ready! Set? Let's Train! (RST), based on an adaptation of the Attention Process Training-I program.

MATERIALS AND METHODS: In a randomized controlled trial, participants with attention deficits were assigned to receive the attention process training intervention (RST) or Homework Assistance (HWA). Pre- and post-intervention assessments consisted of standardized attentional and executive tests and a behavior checklist.

RESULTS: Analyses conducted for 17 participants (RST, n=8; HWA, n=9; mean age 14.70±2.17 years, 11 males) indicated the study was successful in that it showed improvements in working memory ($F(14)=5.44$, $P=0.04$; $\eta2=0.19$), inhibition ($F(14)=10.18$, $P=0.007$; $\eta2=0.75$) and cognitive flexibility ($F(14)=5.36$, $P=0.04$; $\eta2=0.57$).

CONCLUSIONS: These findings indicate positive support for combined process-specific and metacognitive strategy training for attention and executive functions

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Arch Dis Child. 2017;102:A166-A167.

VISION PROBLEMS IN ATTENTION DEFECIT HYPERACTIVITY DISORDER (ADHD)-A PRELIMINARY SURVEY.

Perera SJ, Katangodage D.

Aim: To ascertain the type and the prevalence of visual problems in Children and Adolescents attending ADHD clinics.

Method: 1. Hospital records coded for 1.ADHD 2. vision problems(any) 3. eye problems were serched for the five year period preceding the survey. 31.October 2016.Current capacity problems within the service structure meant children awaiting confirmation of the diagnosis; similar clinical presentations were included in the cohort but separated at analysis. Data collection and analysis-done using Microsoft XL/SPSS.

Results: I. no records of ADHD and visoin problems or eye problems were identified for the paediatric age group (<18 years) with the data coding. Results of the Survey. Age range 4.11-14.4years, M: F 46:4. ADHD 23, ASD 2, Tics 1, others 24. Vision problems identified in 24/50. (Table Presented) 83% needed prescription glasses. Squints were identified in six children. (1ADHD vs 5 non ADHD). Colour vision anomalies were identified in 4 (type not known)

Conclusion: Visual problems are common in children attending clinics at the Light House CDC. (24/50)ADHD children (43 %) and non ADHD children (51%) both have visual problems.83% needed prescription glasses.colour naming deficits were also identified. Limitations of the survey.small sample size.non ADHD group included children awaiting a diagnosis. The degree of visual impairment not quantified

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Arch Dis Child. 2017;102:A166.

ATTENTION DEFICIT HYPERACTIVITY DISORDER: AN AUDIT TO ASSESS LOCAL COMPLIANCE WITH THE DIAGNOSTIC PROCESS AND MEDICAL ASSESSMENT STANDARDS, BASED ON THE 2008 NICE GUIDELINES.

Archard E.

Aims The aims of this audit were to assess compliance with the standards set out in the NICE guidelines with respect to assessment, diagnosis and management of children with Attention Deficit Hyperactivity Disorder (ADHD); and to assess compliance with the local 'ADHD clinic review proforma'.

Method 20 patients who were coded with an ADHD diagnosis and under the care of the local community paediatric team, were randomly selected in October 2016. Each patient's notes were reviewed in regards to specific aspects of the national guidelines. The use of the local 'ADHD clinic review' proforma was assessed in follow-up patients.

Results All patients had diagnostic questionnaires completed by both school and parents; but only 50% had questionnaires completed by the child themselves. Additional written information was rarely provided by school (13%) and only a quarter of children had an educational psychology report. In relation to premedication assessment, the child's weight and height were generally documented (88%), but not consistently plotted on a centile chart. Cardiac family history was documented in 75% of cases. However, cardiac symptoms were only recorded in 25% of cases, and cardiac examination completed in 38% of cases. Blood pressure was often taken (62%), but rarely plotted on a centile chart. All children identified as being at higher risk of cardiac problems did get an ECG prior to commencing medication. The local 'ADHD clinic review' proforma was generally utilised (82%). Further areas for improvement include: plotting height, weight and blood pressure on centile charts. All changes in medication were clear, and informed consent obtained. The 'voice of the child' was only documented in 28% of cases.

Conclusion This audit has demonstrated that generally local compliance with the the NICE guidelines regarding diagnosis and pre-medication assessment of children with ADHD was good. However, several areas for improvement have been identified, including improvement around pre-medication assessment, and ensuring the 'voice of the child' is documented. In view of this, a new 'Pre-Medication Assessment' proforma was created, and the results of the audit presented to the local ADHD team, with a plan to re-audit following these interventions

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Arch Dis Child. 2017;102:A166.

AN ONLINE SURVEY OF ADOLESCENTS WITH ADHD TO DEVELOP A PATIENT-CENTRED TEEN-FRIENDLY SERVICE.

Yemula C, Gadiraju A, MacKinnon L, et al.

Aims Teenagers with ADHD (Attention Deficit Hyperactivity Disorder) often present with significant comorbidity and engaging them is a difficult task. There is an unmet need to shape a teen-friendly service. We sought to: 1. Ascertain teenagers' views about our ADHD service. 2. Quantify their knowledge of ADHD. 3. Use these results to develop a patient-centred teen-friendly service

Methods A 20-question web survey was designed using the 'SurveyMonkey' website, for adolescent ADHD patients aged 12 to 18 years. The questions included preference for clinic duration and slots, understanding of ADHD, whether they were involved in decision making and their views on improving the service. After obtaining consent from both parents or carers and adolescents, the survey was conducted by web link via text message or email. Surveys were also completed in clinic using a computer or paper-based questionnaire.

Results 40 adolescent patients with ADHD (30 boys and 10 girls) completed the survey. 42.5% (n=17) indicated preference for a morning clinic and 60% (n=24) did not wish to attend during school holidays. 55% (n=22) of teenagers were unwilling to see the doctor on their own, while 15% (n=6) felt rushed and wanted a longer follow-up appointment. A majority, 57.5% (n=23) were happy to discuss lifestyle issues including smoking and alcohol. 50% (n=20) of respondents felt they suffered from sleep deprivation and 22.5% (n=9) admitted missing their medication occasionally or often. Pleasantly, 85% (n=34) of teenagers were satisfied they were listened to and 95% (n=38) confirmed that they were involved in decisions about their care. Unfortunately, only 20% (n=8) of teenagers reported having good knowledge about ADHD. 32.5% (n=13) were not aware of different treatment options, while 20% (n=8) lacked knowledge of medication side effects. Less than half, 47.5% (n=19) were provided with written information about their medical condition.

Conclusions Following adolescent patients' feedback about our service, we have identified significant gaps in their knowledge of ADHD, as well as evidence of poor compliance with medications. We have used these results to design and pilot teen-friendly clinics to address these issues and will continue to ensure we engage and empower teenagers to make them partners in managing their ADHD

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Arch Dis Child. 2017;102:A40-A41.

ATTENTION DEFICITS IN PAEDIATRIC SICKLE CELL DISEASE; LINKS WITH NOCTURNAL OXYGEN DESATURATION IN ADOLESCENTS, BUT NOT CHILDREN.

Stotesbury H, Kirkham FJ, Balfour P, et al.

Aim Homozygous sickle cell anaemia (SCA; HbSS) is associated with neurological compromise and attention difficulties. Previous work has shown tentative links between executive dysfunction and daytime oxygen desaturation in SCA. Previous work has not however examined the effects of nocturnal oxygen saturation on attention, nor has it considered whether any relationship is confounded by the effects of socio-economic status (SES) or age.

Methods Thirteen children (8-12 years, 6 Female) and twentytwo adolescents (13-18 years, 11 Female) with SCA enrolled on the Prevention of Morbidity in Sickle Cell Disease Phase 2 randomised controlled trial of auto-adjusting continuous positive airways pressure underwent cognitive assessment at baseline, which included the Conners' Continuous Performance Test (CPT). Overnight oximetry was conducted at home within two weeks of assessment. Multiple deprivation indices (MDI) were derived from postcodes.

Results In adolescents, after correcting for the effects of MDI, correlations were found between time spent with oxygen saturation <94% and Conners' CPT detectability (r=0.430, p=0.036) and omissions (r=0.418, p=0.042), and between the time spent with oxygen saturation <84% and detectability (r=0.728, p=0.0001), omissions (r=0.566, p=0.004), commissions (r=0.679, p=0.0001), perseverations (r=0.898, p=0.0001), hit reaction time (r=0.372, p=0.0001), and variability (r=0.776, p=0.0001). Relationships were also found between mean nocturnal oxygen saturation and hit reaction time (RT; r=0.374, p=0.072), omissions (r=0.360, p=0.084) and RT standard deviation (r=0.389, p=0.060), between minimum nocturnal oxygen saturation and perseverations (r=0.374, p=0.072) and between the number of 3% oxygen dips per hour and RT (r=0.354, p=0.089). In children the only relationship found was a trend in the opposite direction between RT and mean overnight oxygen saturation (r=0.502, p=0.067).

Conclusion This study confirms, for the first time in SCA, links between hypoxia and attention deficits. The relationships hold when SES is taken into account. The absence of similar links and existence of a relationship in the opposite direction in children requires further scrutiny. These preliminary data indicate that the effects of hypoxia on these domains may only emerge during brain development in adolescence. CPT performance may serve as a useful cognitive endpointfor trials of reducing hypoxic exposure

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Arch Dis Child. 2017;102:A22.

ROLE OF ADHD NURSE.

Jackson C, Abbas E.

Introduction Attention deficit hyperactivity disorder (ADHD) is the most common and treatable neurodevelopmental disorder in childhood. The estimated UK prevalence of ADHD in children and adolescents is 3%-9%. The outcome for children with ADHD depends on early diagnosis and appropriate management. The annual cost to the NHS of a child with ADHD (1310) has been shown to be significantly greater than one without ADHD (328). In Wigan the ADHD service is provided by the community paediatrics.
Aim 1) To evaluate ADHD specialist Nurse role 2) To improve ADHD services 3) To Support parents and patients
Method The ADHD specialist nurse appointed, April 2015. Working in partnership with WWL, Shire Pharmaceuticals Ltd part-funded the specialist nurse role within the ADHD service for six month. Together we updated ADHD guideline per NIICE, ADHD information leaflet for parent and staff, ADHD assessment checklist, ADHD assessment proforma introduced. Contact numbers of various services available in Wigan was produced. GP Shared care protocols updated. ADHD study day was organised for 100 professionals. Various training sessions for staff. A Small scale questionnaire, a total number of 17 parents/carers and 7 staff of community child health team.
Results 100% of parent and staff found having contact with specialist nurse very helpful. 76% parents understood the ADHD assessment process .76% understands the process of prescription's and Shared Care Agreement .76% found telephone contact very useful and 76% find it useful to speak to Specialist Nurse in-between clinical appointments. 70% found follow up telephone consultation very helpful and 66% said they will extremely recommend our service. ADHD nurse had 325 contacts with GP, and answered over 1000 parents phone calls.
Conclusion The role has clearly demonstrated benefits for patients, parents, GPs, commissioners and the ADHD team. Since then we developed ADHD database. With 750 patients on ADHD medication. Keeping referral record. Of 420 referral for ADHD assessment. Working to have clinical coding and working with adult ADHD for transitional clinics. Following from the success of the specialist nurse ADHD role the post has received ongoing funding from WWL and there are plans to expand the number of nurses

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Arch Dis Child. 2017;102:A165.

EVIDENCE-BASED MANAGEMENT OF TICS IN CHILDREN WITH ADHD.

Ogundele MO, Ayyash HF, Skeete I.

Aims We aimed to provide a summary of best practice and published evidence for the management of tic disorders in children and adolescents with ADHD. Background ADHD is the most common neurodevelopmental disorder in children and adolescents with in developed countries. Up to 20% ADHD patients have a Tic disorder. There is conflicting evidence of the role of psychostimulants in either precipitating or exacerbating tics in ADHD patients. Tics naturally wax and wane in clinical severity and are exacerbated by stress (e.g., consequences of untreated ADHD). It is often difficult to attribute blame to treatment.
Method We also carried out a literature review relating to the management of tic disorders in children and adolescents with ADHD. We performed a comprehensive search of Medline, EMBASE, CINAHL and Cochrane databases. No quantitative synthesis (meta-analysis) was deemed appropriate.

Results Meta-analysis of controlled trials does not support an association between new onset or worsening of tics and psychostimulant use. Apparent worsening or new onset of tics during ADHD treatment is oftentimes due to the coincidental waxing and waning natural history of tics. It is best to persevere for a few weeks with stimulant treatment if it is effectively controlling the ADHD symptoms and in most cases the tics will gradually subside. Nonetheless, stimulants may exacerbate tics in individual cases. Level A of evidence supported the use of noradrenergic agents (clonidine). Reuptake inhibitors (atomoxetine) and stimulants (methylphenidate) could be, also used for the treatment of Tics and comorbid ADHD. Aripiprazole resulted in an effective treatment for Tics, but it was only moderately effective on cooccurring ADHD symptomatology.
Conclusion The incidence of tic disorders and the severity of tics are not increased by the use of stimulants in paediatric patients treated with for ADHD. For patients with pre-existing tic disorders, the usual recommended dosing of stimulants should be used because supratherapeutic doses of this class of medications, specifically dextroamphetamine, have been shown to exacerbate tic disorders. If tics are disabling, stimulants could be substituted or complemented with Clonidine, or trial of non-stimulant Atomoxetine considered. Antipsychotics should be reserved for the most severe and uncontrollable tic disorders

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Basic and Clinical Pharmacology and Toxicology. 2016;119:18.

UTILIZATION STUDY FOR ADHD PEDIATRIC POPULATION IN SPECIALIZED HEALTH CARE. A LONGITUDINAL STUDY 2011-2015.

Ruiz B, Centeno GA, Camargo AP, et al.

Objective: To describe the profile of current drug therapy use in paediatric patients diagnosed of ADHD in specialized health care and its evolution from 2011 to 2015.
Methods: Retrospective longitudinal drug utilization study. We included all patients with electronic medical records seen at the paediatrics northwest mental health area (VI) of Madrid between 2011 and 2015 with a diagnosis of ADHD (ICD 10: F90.0-F90.9).
Results: We identified 1.851 patients diagnosed with ADHD. 77.2% were male, mean age 12.2 years (range 4.4 to 18.0), with no differences among the different evaluated years. The percentage of ADHD patients among the attended patients increased annually (2011: 28.7%, 2012: 34.7%, 2013: 42.0%, 2014: 48.8% 2015: 47.5%) as well as the absolute numbers of patients. The percentage of treated patients remained stable at around 70-80%. The subgroup of children under 8 years showed an increasing trend in both the diagnosis and the use of stimulants. Methylphenidate was the most prescribed stimulant. It stands out the emergence of Lisdexamfetamine in the usage profile, reaching 20% of treatments in the first year after its introduction (2014), increasing to 26% in 2015. 30% of children with ADHD were treated concomitantly with stimulants and other psychoactive drugs. Around 3% of ADHD patients had a diagnosis of autism spectrum disorder as well. The percentage of these children treated pharmacologically was comparable to that of patients without associated autism (2011: 85.7%, 2012: 72.7%, 2013: 55.6%, 2014: 82.4% 2015: 76.9%).
Conclusions: Between 2011 and 2015 there was an increase in the number of treated patients that could be explained by the increase of patients diagnosed with ADHD. In the population under 8 years, there is a tendency to a progressive increase in the percentage of diagnosed patients that are treated pharmacologically

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Behav Brain Res. 2017;333:90-97.

DOPAMINE TRANSPORTER (DAT1/SLC6A3) POLYMORPHISM AND THE ASSOCIATION BETWEEN BEING BORN SMALL FOR GESTATIONAL AGE AND SYMPTOMS OF ADHD.

Waldie KE, Cornforth CM, Webb RE, et al.

Being small for gestational age (SGA) has been established as a risk factor for Attention Deficit Hyperactivity Disorder (ADHD). Likewise, several molecular genetic studies have found a link between DAT1 and ADHD. This study investigated whether SGA moderates the effect of dopamine transporter gene variants on the risk of ADHD. A total of 546 children of European descent were genotyped at age 11 for seven DAT1 SNPs

(rs6347, rs11564774, rs40184, rs1042098, rs2702, rs8179029 and rs3863145). The Strengths and Difficulties Questionnaire was used to measure symptoms of ADHD at ages 3.5, 7 and 11. We found significant gene-environment interactions between birth weight and DAT1 SNPs (rs6347, rs40184, rs1042098, rs3863145) on ADHD symptoms at 3.5 years only. Results suggest that genotypic variation of DAT1 may confer a relative protective effect against ADHD in SGA individuals. This study supports the idea that being born SGA moderates the effect of the DAT1 gene on ADHD symptoms in the preschool years and may help to explain some of the heterogeneity in ADHD outcomes

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BMC Psychiatry. 2017 Jan;17:19.

SYMPTOMS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) AMONG ADULT EATING DISORDER PATIENTS.

Svedlund NE, Norring C, Ginsberg Y, et al.

BACKGROUND: Very little is known about the prevalence of ADHD symptoms in Bulimia Nervosa and Binge Eating Disorder and even less in other eating disorders. This knowledge gap is of clinical importance since stimulant treatment is proven effective in Binge Eating Disorder and discussed as a treatment possibility for Bulimia Nervosa. The objective of this study was to explore the prevalence and types of self-reported ADHD symptoms in an unselected group of eating disorder patients assessed in a specialized eating disorder clinic.
METHODS: In total 1165 adults with an eating disorder were assessed with a battery of standardized instruments, for measuring inter alia ADHD screening, demographic variables, eating disorder symptoms and psychiatric comorbidity. Chi-square tests were used for categorical variables and Kruskal-Wallis tests for continuous variables.
RESULTS: Almost one third (31.3 %) of the patients scored above the screening cut off indicating a possible ADHD. The highest prevalence rates (35-37 %) were found in Bulimia Nervosa and Anorexia Nervosa bingeing/purging subtype, while Eating Disorder Not Otherwise Specified type 1-4 and Binge Eating Disorder patients reported slightly below average (26-31 %), and Anorexia Nervosa restricting subtype patients even lower (18 %). Presence of binge eating, purging, loss of control over eating and non-anorectic BMI were related to results indicating a possible ADHD. Psychiatric comorbidity correlated to ADHD symptoms without explaining the differences between eating disorder diagnoses.
CONCLUSIONS: There is a high frequency of ADHD symptoms in patients with binge eating/purging eating disorders that motivates further studies, particularly concerning the effects of ADHD medication. The finding that the frequency of ADHD symptoms in anorexia nervosa with binge eating/purging is as high as in bulimia nervosa highlights the need also for this group

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BMC Psychiatry. 2017 Mar;17:116.

METHYLPHENIDATE USE AND SCHOOL PERFORMANCE AMONG PRIMARY SCHOOL CHILDREN: A DESCRIPTIVE STUDY.

van der Schans J, Cicek R, Vardar S, et al.

BACKGROUND: There is no conclusive evidence that stimulants have beneficial effects on major associated outcome parameters, particularly school performance. We assessed the differences in school performance among children using methylphenidate at the end of primary school in relation to various parameters of methylphenidate use.
METHODS: We linked children from a pharmacy prescription database with standardized achievement test results at the end of primary school. We explored differences in test scores between current methylphenidate users versus never users and methylphenidate users who stopped treatment at least 6 months before the test, early versus late starters, different dosage of methylphenidate, and concurrent antipsychotic or asthma treatment.
RESULTS: Out of the 7736 children, 377 (4.9%) children were treated with methylphenidate at the time of the test. After adjusting for confounders the methylphenidate users (532.58 +/- .48) performed significantly lower on the test than never users (534.72 +/- .11). Compared with late starters of methylphenidate treatment (536.94 +/- 1.51) we found significantly lower test scores for the early starters (532.33 +/- .50).

CONCLUSION: Our study indicates that children using methylphenidate still perform less at school compared to their peers. Our study also suggests that earlier start of methylphenidate treatment is associated with a lower school performance compared to children starting later with the treatment. This result could either indicate a limited effect of long term treatment or a more strongly affected group of early starters

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BMC Psychiatry. 2017;17.

ESCASCHOOL STUDY: TRIAL PROTOCOL OF AN ADAPTIVE TREATMENT APPROACH FOR SCHOOL-AGE CHILDREN WITH ADHD INCLUDING TWO RANDOMISED TRIALS.

Döpfner M, Hautmann C, Dose C, et al.

Background: The ESCAschool study addresses the treatment of school-age children with attention-deficit/hyperactivity disorder (ADHD) in a large multicentre trial. It aims to investigate three interrelated topics: (i) Clinical guidelines often recommend a stepped care approach, including different treatment strategies for children with mild to moderate and severe ADHD symptoms, respectively. However, this approach has not yet been empirically validated. (ii) Behavioural interventions and neurofeedback have been shown to be effective, but the superiority of combined treatment approaches such as medication plus behaviour therapy or medication plus neurofeedback compared to medication alone remains questionable. (iii) Growing evidence indicates that telephone-assisted self-help interventions are effective in the treatment of ADHD. However, larger randomised controlled trials (RCTs) are lacking. This report presents the ESCAschool trial protocol. In an adaptive treatment design, two RCTs and additional observational treatment arms are considered.

Methods: The target sample size of ESCAschool is 521 children with ADHD. Based on their baseline ADHD symptom severity, the children will be assigned to one of two groups (mild to moderate symptom group and severe symptom group). The adaptive design includes two treatment phases (Step 1 and Step 2). According to clinical guidelines, different treatment protocols will be followed for the two severity groups. In the moderate group, the efficacy of telephone-assisted self-help for parents and teachers will be tested against waitlist control in Step 1 (RCT I). The severe group will receive pharmacotherapy combined with psychoeducation in Step 1. For both groups, treatment response will be determined after Step 1 treatment (no, partial or full response). In severe group children demonstrating partial response to medication, in Step 2, the efficacy of (1) counselling, (2) behaviour therapy and (3) neurofeedback will be tested (RCT II). All other treatment arms in Step 2 (severe group: no or full response; moderate group: no, partial or full response) are observational.

Discussion: The ESCAschool trial will provide evidence-based answers to several important questions for clinical practice following a stepped care approach. The adaptive study design will also provide new insights into the effects of additional treatments in children with partial response. Trial registration: German Clinical Trials Register (DRKS) DRKS00008973. Registered 18 December 2015

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BMC Psychiatry. 2017;17.

THE ASSOCIATION BETWEEN ATTENTION DEFICIT/HYPERACTIVITY DISORDER AND INTERNET ADDICTION: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Wang B-Q, Yao N-Q, Zhou X, et al.

Background: This study aimed to analyze the association between Attention Deficit/Hyperactivity Disorder (ADHD) and Internet addiction (IA).

Methods: A systematic literature search was performed in four online databases in total including CENTRAL, EMBASE, PubMed and PsychINFO. Observational studies (case-control, cross-sectional and cohort studies) measuring the correlation between IA and ADHD were screened for eligibility. Two independent reviewers screened each article according to the predetermined inclusion criteria. A total of 15 studies (2 cohort studies and 13 cross-sectional studies) met our inclusion criteria and were included in the quantitative synthesis. Meta-analysis was conducted using RevMan 5.3 software.

Results: A moderate association between IA and ADHD was found. Individuals with IA were associated with more severe symptoms of ADHD, including the combined total symptom score, inattention score and

hyperactivity/impulsivity score. Males were associated with IA, whereas there was no significant correlation between age and IA.
Conclusions: IA was positively associated with ADHD among adolescents and young adults. Clinicians and parents should pay more attention to the symptoms of ADHD in individuals with IA, and the monitoring of Internet use of patients suffering from ADHD is also necessary. Longitudinal studies controlling for baseline mental health are needed

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Brain Cogn. 2017;117:33-40.
PROCEDURAL LEARNING IN TOURETTE SYNDROME, ADHD, AND COMORBID TOURETTE-ADHD: EVIDENCE FROM A PROBABILISTIC SEQUENCE LEARNING TASK.
Takács Á, Shilon Y, Janacsek K, et al.
Procedural memory, which is rooted in the basal ganglia, plays an important role in the implicit learning of motor and cognitive skills. Few studies have examined procedural learning in either Tourette syndrome (TS) or Attention Deficit Hyperactivity Disorder (ADHD), despite basal ganglia abnormalities in both of these neurodevelopmental disorders. We aimed to assess procedural learning in children with TS (n-á=-á13), ADHD (n-á=-á22), and comorbid TS-ADHD (n-á=-á20), as well as in typically developing children (n-á=-á21). Procedural learning was measured with a well-studied implicit probabilistic sequence learning task, the alternating serial reaction time task. All four groups showed evidence of sequence learning, and moreover did not differ from each other in sequence learning. This result, from the first study to examine procedural memory across TS, ADHD and comorbid TS-ADHD, is consistent with previous findings of intact procedural learning of sequences in both TS and ADHD. In contrast, some studies have found impaired procedural learning of non-sequential probabilistic categories in TS. This suggests that sequence learning may be spared in TS and ADHD, while at least some other forms of learning in procedural memory are impaired, at least in TS. Our findings indicate that disorders associated with basal ganglia abnormalities do not necessarily show procedural learning deficits, and provide a possible path for more effective diagnostic tools, and educational and training programs

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Brain Dev. 2017.
INTRA-INDIVIDUAL COGNITIVE IMBALANCE IN ASD BETWEEN PERCEPTUAL REASONING AND AMBIGUITY-SOLVING RELATED TO TOOL USE: COMPARISON AMONG CHILDREN EXHIBITING ASD, AD/HD, AND TYPICAL DEVELOPMENT.
Wakusawa K, Nara C, Kubota Y, et al.
Objective: Several studies have suggested that objective deficits in the processing of abstract information in conjunction with an enhanced ability to process concrete information is a definitive characteristic of autism spectrum disorder (ASD). However, this cognitive imbalance is not necessarily clear in high-functioning autistic individuals who do not display absolute differences relative to typically developing (TD) populations. Thus, the purpose of this study was to identify this cognitive tendency in high-functioning autistic individuals using intra-individual cognitive comparisons.
Methods: The reaction times (RTs) of TD children, children with ASD, and children with attention deficit hyperactivity disorder (AD/HD) (n = 17 in each group, mean age = 11.9. years, age range = 9.8-15.8. years) were compared using the Which/How-to-Apply Tools (W/HAT) test, which consists of tasks requiring the adaptive use of novel tools and familiar tools in atypical and typical situations. Differences in RTs between the atypical and typical trials ([A-T]) were used to assess intra-individual cognitive imbalances.
Results: As predicted, the [A-T] scores of the ASD group were significantly higher than those of the TD group even though the RTs in the atypical and typical trials did not differ. Additionally, the [A-T] values were significantly higher in the ASD group than in the AD/HD group, which indicates that the cognitive imbalance was specific to ASD individuals. No significant interaction was detected between the trial and subject group.

Conclusions: The findings of this study demonstrate that a cognitive imbalance in ASD individuals may enhance the current understanding of the pathophysiology of this disorder, which is found in a range of individuals, including those with obvious cortical dysfunction to those with only intra-individual imbalances

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Brain Injury. 2017;31:901-02.

AN ALTERNATIVE APPROACH TO INTERPRETING BASELINE NEUROCOGNITIVE PERFORMANCE IN HIGH SCHOOL ATHLETES WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER AND LEARNING DIFFICULTIES.

Wojtowicz M, Schatz P, Cook N, et al.

Background: Baseline preseason computerized cognitive testing is often used as a component of sport concussion management programmes. There is growing evidence that high school students with attention-deficit hyperactivity disorder (ADHD) or academic difficulties perform more poorly on baseline computerized neurocognitive tests, which suggests the need for separate normative data. We investigated an alternative approach to interpreting cognitive performance in these populations using multivariate base rate analysis (i.e. considering multiple test scores simultaneously).

Method: Participants were adolescent student athletes (ages 13-18 years) from the state of Maine who completed baseline preseason testing using ImPACT-« and had not sustained a concussion in the past 6 months. Extreme outliers (i.e. > than 3 SD below the mean) for each composite score were removed and only valid tests were used. Participants were divided into four groups: ADHD only (n = 1496), ADHD and learning difficulties (n = 751), learning difficulties only (n = 2837) and healthy controls (n = 31 838). ImPACT-« Online normative data were used to identify percentile ranks for performance on the four composite scores and to calculate multivariate base rates. Rates of low scores were examined separately for girls and boys.

Results: Means and standard deviations [M (SD)] of percentile ranks for the entire sample were as follows: Verbal Memory [48.0 (29.2)]; Visual Memory [47.2 (29.3)]; Visual Motor [34.3 (27.8)] and Reaction Time [39.9 (27.0)]. Of the control subjects, 52.7.6-59.2% obtained one or more scores below the 16th percentile. Adolescents with ADHD had a higher frequency of one or more scores below the 16th percentile compared to healthy controls, regardless of age group and gender (58-66.7%; p <.05). Similarly, high school students with learning difficulties (73.7-80.2%; p <.001) and those with learning difficulties plus ADHD (71.9-83.0%; p <.001) obtained a higher frequency of scores below the 16th percentile. Furthermore, low scores were more common in those with learning difficulties, and those with learning difficulties and ADHD, compared to high school students with ADHD only (ps<.05).

Conclusions: This study used a multivariate base rate approach to characterize performance on computerized neurocognitive testing (i.e. ImPACT-«). Using a large sample of high school students from Maine, we found lower scores than expected, overall, on the speed and reaction time composites of ImPACT-«. Healthy high school students obtained a larger number of low scores than has been previously reported. Furthermore, students with neurodevelopmental difficulties obtained a higher frequency of low scores compared to healthy controls. This study illustrates the utility of using a multivariate approach to interpret neurocognitive test performance (i.e. expected vs. obtained number of low scores) in students with ADHD and/or learning difficulties

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Child Neuropsychol. 2017;1-21.

COMT AND DAT1 POLYMORPHISMS MODERATE THE INDIRECT EFFECT OF PARENTING BEHAVIOR ON YOUTH ADHD SYMPTOMS THROUGH NEUROCOGNITIVE FUNCTIONING.

Morgan JE, Caplan B, Tung I, et al.

Although gene × environment interactions contribute to youth attention-deficit/hyperactivity disorder (ADHD) symptoms, the pathways mediating these influences are unknown. We tested genetic moderation of indirect effects from parenting behavior to youth ADHD symptoms through multiple neurocognitive factors. Two hundred and twenty-nine youth with and without ADHD were assessed at baseline (Wave 1; ages 5-10) and at a 2-year follow-up (Wave 2; ages 7-13). At Wave 1, youth completed a neurocognitive battery including measures of response inhibition, visuospatial working memory, and fluid reasoning, and a standardized

parent-child interaction task yielding observational measures of positive and negative parenting. At Wave 2, youth psychopathology was rated by parents and teachers using multiple methods (i.e., structured interview, rating scale). We employed moderated multiple mediation and compared conditional indirect effects across youth genotypes at two biologically plausible genetic loci. Controlling for parent ADHD symptoms as well as youth demographic factors and co-occurring externalizing symptoms, these genetic factors moderated the indirect effect from Wave 1 parenting to multi-method/informant Wave 2 ADHD symptoms through Wave 1 neurocognitive functioning. This preliminary study is the first to identify genetic moderation of mediated effects underlying ADHD symptoms and suggests that specific gene × parenting interactions may underlie neurocognitive functioning deficits and subsequent ADHD

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CNS Drugs. 2017;31:625-38.

LONG-TERM SAFETY AND EFFICACY OF LISDEXAMFETAMINE DIMESYLATE IN CHILDREN AND ADOLESCENTS WITH ADHD: A PHASE IV, 2-YEAR, OPEN-LABEL STUDY IN EUROPE.

Coghill DR, Banaschewski T, Nagy P, et al.

BACKGROUND: Attention-deficit/hyperactivity disorder (ADHD) is increasingly recognized as a persistent disorder requiring long-term management.

OBJECTIVES: Our objective was to evaluate the 2-year safety and efficacy of lisdexamfetamine dimesylate (LDX) in children and adolescents with ADHD.

METHODS: Participants (aged 6-17 years) with ADHD received open-label, dose-optimized LDX 30, 50, or 70 mg/day for 104 weeks. Safety monitoring included treatment-emergent adverse events (TEAEs), vital signs, electrocardiography, and growth. The TEAEs decreased appetite, weight decrease, insomnia events (including insomnia, initial insomnia, middle insomnia, and terminal insomnia), headache, and psychiatric TEAEs were pre-defined as being of special interest. Efficacy was assessed as a secondary objective using the ADHD Rating Scale IV (ADHD-RS-IV), the Clinical Global Impressions-Improvement (CGI-I) scale, and the CGI-Severity (CGI-S) scale.

RESULTS: Of 314 participants enrolled, 191 completed the study. TEAEs were reported in 89.8% of participants, led to discontinuation in 12.4%, and were reported as serious in 8.9%. TEAEs that were reported by ≥5% of participants and considered by investigators as related to LDX were decreased appetite (49.4%), weight decrease (18.2%), insomnia (13.1%), initial insomnia (8.9%), irritability (8.6%), nausea (6.7%), headache (5.7%), and tic (5.1%). The median time to first onset and duration, respectively, of TEAEs of special interest were as follows: decreased appetite, 13.5 and 169.0 days; weight decrease, 29.0 and 225.0 days; insomnia, 17.0 and 42.8 days; and headache, 22.0 and 2.0 days. Reports of decreased appetite, weight decrease, insomnia, and headache were highest in the first 4-12 weeks. Psychiatric TEAEs were infrequent: psychosis and mania (n = 1), suicidal events (suicidal ideation, n = 2; suicide attempt, n = 1), and aggression events (aggression, n = 14; anger, n = 2; hostility, n = 1). At the last on-treatment assessment (LOTA), mean increases from baseline in vital signs were as follows: pulse rate, 7.0 bpm (95% confidence interval [CI] 5.7-8.2); systolic blood pressure (SBP), 3.4 mmHg (95% CI 2.2-4.5); and diastolic blood pressure (DBP), 3.2 mmHg (95% CI 2.2-4.2). Pre-defined thresholds for a potentially clinically important (PCI) high pulse rate were met at one or more visits by 22 participants (7.0%), for PCI high SBP were met by 45 children (22.4%) and 17 adolescents (15.2%), and for PCI high DBP were met by 78 children (38.8%) and 24 adolescents (21.4%). The mean QT interval corrected using Fridericia's formula (QTcF) decreased from baseline to LOTA (-0.6 ms [95% CI -2.3 to 1.2]; range -50 to +53). Mean changes in growth from baseline to LOTA were weight, 2.1 kg (95% CI 1.5-2.8); height, 6.1 cm (95% CI 5.6-6.7); and body mass index (BMI), -0.5 kg/m2 (95% CI -0.7 to -0.3). There was a general shift to lower z score categories for height, weight, and BMI from baseline to LOTA. The mean change in ADHD-RS-IV from baseline to LOTA was -25.8 (95% CI -27.0 to -24.5) for total score, -12.6 (95% CI -13.4 to -11.9) for the hyperactivity/impulsivity subscale score, and -13.1 (95% CI -13.8 to -12.4) for the inattention subscale score. At LOTA, 77.9% of participants had a CGI-I score of 1 or 2. In addition, 77.3 and 69.2% of participants were classified as treatment responders, based on a CGI-I score of 1 or 2 and a ≥30% or ≥50% reduction from baseline in ADHD-RS-IV total score, respectively.

CONCLUSIONS: The safety profile of LDX in this longer-term study was similar to that reported in previous studies. The efficacy of LDX was maintained throughout the 2-year study period. CLINICALTRIALS.
GOV IDENTIFIER: NCT01328756

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CNS Spectr. 2017;1-12.

BEYOND THE PILL: NEW MEDICATION DELIVERY OPTIONS FOR ADHD.

Cutler AJ, Mattingly GW.

Successful treatment of pediatric disorders has necessitated the development of alternative medication formulations, as children may prefer alternative dosage forms to tablets or capsules. This is especially true for attention-deficit/hyperactivity disorder (ADHD), which is one of the most common chronic pediatric conditions and often involves children with a variety of overlapping physical, psychological, or neurodevelopmental disorders. A special challenge for developing alternative dosage forms for ADHD treatment is the incorporation of a once-daily long-acting formulation. Traditional ADHD medication formulations have been limited, and issues surrounding prescribed dosing regimensΓÇöincluding poor medication adherence, difficulty swallowing, and the lack of dosing titration optionsΓÇöpersist in ADHD treatment. In other disease areas, the development of alternative formulations has provided options for patients who have issues with consuming solid dosage forms, particularly children and individuals with developmental disorders. In the light of these new developments, several alternative formulations for ADHD medications are under development or have recently become available. This article reviews the various strategies for developing alternative dosage forms in other disease areas and discusses the application of these strategies in ADHD treatment. Alternative dosage forms may increase medication adherence, compliance, and patient preference and, therefore, improve the overall treatment for ADHD

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Cogn Behav Pract. 2017.

DEVELOPMENT AND OPEN TRIAL OF A DEPRESSION PREVENTIVE INTERVENTION FOR ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Meinzer MC, Hartley CM, Hoogesteyn K, et al.

Adolescents with attention-deficit/hyperactivity disorder (ADHD) are at elevated risk for experiencing unipolar depressive symptoms and disorders. The current study describes the development of a behaviorally oriented depression preventive intervention tailored for adolescents with ADHD targeting variables empirically shown to mediate ADHD and depression (i.e., reward responsivity, emotion regulation, and family support). Eight adolescents with a history of ADHD and currently elevated depressive symptoms and their parents participated in an open trial of the Behaviorally Enhancing Adolescents' Mood (BEAM) program. Adolescents and their parents reported high satisfaction with BEAM. Staff reported BEAM was easy to implement with high adherence. Following BEAM, there were significant reductions in parent-report of adolescents' depressive symptoms and emotion regulation at posttreatment and the 6-week follow-up and adolescent-report of reward responsivity at posttreatment. Case vignettes are also provided to illustrate implementation of the BEAM program. In spite of the small sample, lack of a control group, and some discrepancies across informants, results overall support the feasibility and acceptability of the BEAM program, and suggest it has promise in reducing depressive symptoms in adolescents with ADHD

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Critical Care Medicine. 2017.

NEUROBIOLOGIC CORRELATES OF ATTENTION AND MEMORY DEFICITS FOLLOWING CRITICAL ILLNESS IN EARLY LIFE.

Schiller RM, IJsselstijn H, Madderom MJ, et al.

OBJECTIVES: Survivors of critical illness in early life are at risk of long-term-memory and attention impairments. However, their neurobiologic substrates remain largely unknown.

DESIGN: A prospective follow-up study.
SETTING: Erasmus MC-Sophia Children's Hospital, Rotterdam, the Netherlands.
PATIENTS: Thirty-eight school-age (8-12 yr) survivors of neonatal extracorporeal membrane oxygenation and/or congenital diaphragmatic hernia with an intelligence quotient greater than or equal to 80 and a below average score (z score ≤ -1.5) on one or more memory tests.
INTERVENTIONS: None.
MEASUREMENTS AND MAIN RESULTS: Intelligence, attention, memory, executive functioning, and visuospatial processing were assessed and compared with reference data. White matter microstructure and hippocampal volume were assessed using diffusion tensor imaging and structural MRI, respectively. Global fractional anisotropy was positively associated with selective attention (β = 0.53; p = 0.030) and sustained attention (β = 0.48; p = 0.018). Mean diffusivity in the left parahippocampal region of the cingulum was negatively associated with visuospatial memory, both immediate (β = -0.48; p = 0.030) and delayed recall (β = -0.47; p = 0.030). Mean diffusivity in the parahippocampal region of the cingulum was negatively associated with verbal memory delayed recall (left: β = -0.52, p = 0.021; right: β = -0.52, p = 0.021). Hippocampal volume was positively associated with verbal memory delayed recall (left: β = 0.44, p = 0.037; right: β = 0.67, p = 0.012). Extracorporeal membrane oxygenation treatment or extracorporeal membrane oxygenation type did not influence the structure-function relationships.
CONCLUSIONS: Our findings indicate specific neurobiologic correlates of attention and memory deficits in school-age survivors of neonatal extracorporeal membrane oxygenation and congenital diaphragmatic hernia. A better understanding of the neurobiology following critical illness, both in early and in adult life, may lead to earlier identification of patients at risk for impaired neuropsychological outcome with the use of neurobiologic markers

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Current Pediatric Research. 2017;21:321-26.

PREVALENCE OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN SCHOOL GOING CHILDREN AGED BETWEEN 5-12 YEARS IN BENGALURU.

Ramya HS, Goutham AS, Pandit LV.

Background: Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood psychiatric disorders that affect 2% to 14% of school age children. It is characterized by age inappropriate level of inattention with or without motor over activity and impulsivity in academic and social spheres. Boys are more affected than girls and male female ratio is 4:1. Although ADHD is the most common condition, the evidence from Indian studies is very less. Many studies are required in India to see the magnitude of ADHD. Evaluation of the prevalence of this condition in our country will help clinicians to consider the diagnosis of ADHD and related disorders. This study aims to determine the prevalence of ADHD among school going children (5 years to 12years) and to know the difference between government and private schools as well as to determine male to female ratio in Bengaluru.
Methods: This was a cross-sectional study done in Bengaluru city by convenience sampling method. A total 18 schools comprising of both private and government were selected. 3120 Children aged between 5-12years studying in these schools were included in the study. Introduction about ADHD was given by Paediatrician to the teachers followed by screening for ADHD was done by teachers using Conner's teachers rating scale for all children. Positive cases in these were screened with Parents and Paediatrician by using Conner's parent rating scale. Children who were positive in Parents and Paediatrician rating scale were interviewed by the Psychiatrist at KIMS Hospital and ADHD was diagnosed by using DSM V criteria along with IQ assessment and treatment was started for the needy.
Results: The prevalence of ADHD in our study was 1.3%. Male to female ratio was 1.6:1. Among the positive cases, children belonging to Hyperactivity type were 34.1%, inattention was 9.8% and combined type was 56.1%. Prevalence in private school was 1.25% and government school was 1.37%. Total dropouts were 2.5% who did not reach the hospital for the final diagnosis.
Conclusion: ADHD is prevalent worldwide and it is also one of the emerging disorders in our country. It constitutes a significant mental health disorder in children and 50% of this disorder will be carried to adulthood. In our study we had prevalence of 1.3% ADHD and 2.5% dropouts due to lack of awareness of this disorder, their work pressure, distance, social and financial constricts. It is high time to identify the

disorder and creating wide spread awareness about ADHD by the Paediatrician's among the Teachers, Parents and Primary care Physicians, in order to prevent the social and academic impact of the disorder. By introducing an ADHD standard screening methods in all schools along with the regular health check-ups will bring awareness in the society for the healthy future of the children. Lastly every school should have a counsellor to overcome ADHD and other related problems

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Eur Rev Med Pharmacol Sci. 2017 Jan;21:383-88.

EFFECTS OF METHYLPHENIDATE TREATMENT ON THE CEREBELLUM IN ADULT ATTENTION-DEFICIT HYPERACTIVITY DISORDER: A MAGNETIC RESONANCE SPECTROSCOPY STUDY.

Inci Kenar AN, Unal GA, Kiroglu Y, et al.

OBJECTIVE: This study investigated the relationship between the use of methylphenidate (MPH) and changes in creatine, choline, and N-acetyl-aspartate (NAA) in the dorsolateral prefrontal cortex (DLPFC), striatum, cerebellum, and anterior cingulate cortex (ACC) in adults with attention-deficit hyperactivity disorder (ADHD).

PATIENTS AND METHODS: The study enrolled 60 patients 18-60 years of age who met the criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) for ADHD. The amounts of NAA, creatine, and choline in the ACC, cerebellum, striatum, and DLPFC were measured using magnetic resonance spectroscopy. After the first measurement, the patients were given 10 mg oral MPH, and the same metabolite levels were measured 30 minutes later.

RESULTS: No significant differences were observed in the NAA and choline levels in the DLPFC, ACC, cerebellum, and striatum after MPH. Although there were no significant differences in the creatine levels in the DLPFC, ACC, and striatum after MPH, the creatine level in the cerebellum increased significantly.

CONCLUSIONS: Our results suggest that MPH affects the cerebellum in adult ADHD. Therefore, we suggest that, due to its effects on the cerebellum, MPH can be used in adult ADHD not only for attention deficit symptoms but also for hyperactivity symptoms

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Eur Child Adolesc Psychiatry. 2017;1-13.

SLEEP, CHRONOTYPE, AND SLEEP HYGIENE IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER, AUTISM SPECTRUM DISORDER, AND CONTROLS.

Van Der Heijden KB, Stoffelsen RJ, Popma A, et al.

Sleep problems are highly prevalent in ADHD and autism spectrum disorder (ASD). Better insight in the etiology is of clinical importance since intervention and prevention strategies of sleep problems are directed at underlying mechanisms. We evaluated the association of sleep problems and sleep patterns with sleep hygiene (behavioral/environmental practices that influence sleep quality, e.g. caffeine use), access to electronic media, chronotype, and anxiety/depression in children aged 6ΓÇô12 years with ADHD, ASD, or typical development (TD) using parental questionnaires. ANOVA and linear regression analyses were adjusted for age and sex. Children with ADHD and ASD showed more sleep problems (63.6 and 64.7%, vs 25.1% in TD) and shorter sleep duration than controls, while differences between ADHD and ASD were not significant. Sleep hygiene was worse in ADHD and ASD compared to TD, however, the association of worse sleep hygiene with more sleep problems was only significant in ASD and TD. There was a significant association of access to electronic media with sleep problems only in typically developing controls. Chronotype did not differ significantly between groups, but evening types were associated with sleep problems in ADHD and TD. Associations of greater anxiety/depression with more sleep problems were shown in ADHD and TD; however, anxiety/depression did not moderate the effects of chronotype and sleep hygiene. We conclude that sleep problems are highly prevalent in ADHD and ASD, but are differentially

related to chronotype and sleep hygiene. In ASD, sleep problems are related to inadequate sleep hygiene and in ADHD to evening chronotype, while in TD both factors are important. Clinical implications are discussed

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Eur Child Adolesc Psychiatry. 2017;1-11.

MEDICAL COMORBIDITIES IN CHILDREN AND ADOLESCENTS WITH AUTISM SPECTRUM DISORDERS AND ATTENTION DEFICIT HYPERACTIVITY DISORDERS: A SYSTEMATIC REVIEW.

Muskens JB, Velders FP, Staal WG.

Somatic disorders occur more often in adult psychiatric patients than in the general adult population. However, in child and adolescent psychiatry this association is unclear, mainly due to a lack of integration of existing data. To address this issue, we here present a systematic review on medical comorbidity in the two major developmental disorders autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD) and formulate clinical recommendations. The literature was searched using the PubMed and PsycINFO databases (2000-1 May 2016) with the keywords "[((child and adolescent) AND (Autism OR Attention Deficit Hyperactivity Disorder* OR ADHD)) AND ("Cardiovascular Diseases" [Mesh] OR "Endocrine System Diseases" [Mesh] OR "Immune System Diseases" [Mesh] OR "Neurobehavioral Manifestations" [Mesh] OR "Gastrointestinal Disorders" [Mesh] OR Somatic OR Autoimmune disease OR Nervous system disease OR Infection OR Infectious disease)]. Two raters independently assessed the quality of the eligible studies. The initial search identified 5278 articles. Based on inclusion and exclusion criteria 104 papers were selected and subsequently subjected to a quality control. This quality was assessed according to a standardized and validated set of criteria and yielded 29 studies for inclusion. This thorough literature search provides an overview of relevant articles on medical comorbidity in ADHD and/or ASD, and shows that medical disorders in these children and adolescents appear to be widespread. Those who work with children with ASD and/or ADHD should be well aware of this and actively promote routine medical assessment. Additionally, case-control studies and population-based studies are needed to provide reliable prevalence estimates. Future studies should furthermore focus on a broader evaluation of medical disorders in children and adolescents with ADHD and/or ASD to improve treatment algorithm in this vulnerable group

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Eur Child Adolesc Psychiatry. 2017;1-9.

SERUM BRAIN-DERIVED NEUROTROPHIC FACTOR LEVELS IN TREATMENT-NAÏVE BOYS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER TREATED WITH METHYLPHENIDATE: AN 8-WEEK, OBSERVATIONAL PRETEST-POSTTEST STUDY.

Akay AP, Resml H, Güney SA, et al.

Brain-derived neurotrophic factor (BDNF) is an important neurotrophin in the brain that modulates dopaminergic neurons. In this study, we aimed to investigate the changes in serum BDNF levels of children with attention-deficit/hyperactivity disorder (ADHD) in response to OROS methylphenidate treatment. We also aimed to determine whether there were any pre-post-differences between ADHD subtypes and comorbid psychiatric disorders in serum BDNF levels. Fifty male children with ADHD and 50 male healthy controls within the age range of 6-12 years were recruited to the study. The psychiatric diagnoses were determined by applying a structured interview with Kiddie schedule for affective disorders and schizophrenia for school-age children-present and lifetime version. The symptom severity of ADHD was measured using the Clinical Global Impression ADHD Severity Scale (CGI-S). Physicians completed Du Paul ADHD questionnaires. The levels of serum BDNF were assessed before and after 8 weeks of treatment with effective dosages of OROS methylphenidate. In the present study, the mean serum BDNF levels of boys with ADHD and of the healthy controls were 2626.33 ± 1528.05 and 2989.11 ± 1420.08 pg/mL, respectively. Although there were no statistically significant difference between the ADHD group and healthy controls at baseline ($p = 0.22$), the increase of serum BDNF was statistically significant from baseline to endpoint in the ADHD group ($p = 0.04$). The mean serum BDNF levels at baseline and endpoint of the ADHD group were 2626.33 ± 1528.05 and 3255.80 ± 1908.79 pg/mL, respectively. The serum BDNF levels of ADHD-inattentive subtype were

significantly lower at baseline (p = 0.02), whereas BDNF levels post-treatment showed no significant difference. The increase of serum BDNF levels with methylphenidate treatment after 8 weeks was significantly higher in the inattentive group (p = 0.005). The increase of serum BDNF levels with methylphenidate treatment after 8 weeks in boys with ADHD may support the potential role of BDNF in the pathophysiology of ADHD. The role of BDNF in ADHD subtypes in particular should be evaluated with further, larger studies

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Eur Child Adolesc Psychiatry. 2017;1-10.

MATERNAL BODY MASS INDEX BEFORE PREGNANCY AS A RISK FACTOR FOR ADHD AND AUTISM IN CHILDREN.

Andersen CH, Thomsen PH, Nohr EA, et al.

The risk of attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorders (ASD) may be influenced by environmental factors such as maternal obesity before pregnancy. Previous studies investigating those associations have found divergent results. We aim to investigate in a large birth cohort this association further in children with ADHD, ASD and comorbid ADHD and ASD. Our study population consisted of 81,892 mother-child pairs participating in the Danish National Birth Cohort (DNBC). Information about pre-pregnancy weight and height was collected in week 16 of pregnancy; the analysis was divided into groups based on BMI. Children with a clinical diagnosis of ADHD and/or ASD were identified in the Danish health registries at an average age of 13.3 years. Hazard ratios (HRs) were estimated using time-to-event analysis. Compared to normal weight mothers, the risk of having a child with ADHD was significantly increased if the mother was overweight (HR = 1.28 [95% CI 1.15;1.48]), obese (HR = 1.47 [95% CI 1.26;1.71]) or severely obese (HR = 1.95 [95% CI 1.58;2.40]). The same pattern was seen for the combined ADHD and ASD group. Regarding ASD, an increased risk was observed in underweight (HR = 1.30 [95% CI 1.01;1.69]) and obese (HR = 1.39 [95% CI 1.11;1.75]) mothers. Subgroup analysis revealed that the association in the ADHD group could mostly be attributable to the hyperactive group. Maternal obesity before pregnancy is a risk factor for ADHD in children. Maternal obesity as well as underweight may also be associated with an increased risk for ASD

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Eur Child Adolesc Psychiatry. 2017;1-10.

CHARACTERISTICS OF UNDIAGNOSED CHILDREN WITH PARENT-REPORTED ADHD BEHAVIOUR .

Madsen KB, Ravn MH, Arnfred J, et al.

There is an ongoing public debate on the diagnosis of attention deficit hyperactivity disorder (ADHD) in which critics have claimed that the disorder is over-diagnosed, while the potential under-diagnosis of children with ADHD has received little attention. In this study we estimate the number of children with parent-reported ADHD behaviour at age 7 and absence of recorded ADHD diagnosis through adolescence, and investigate whether socio-demographic characteristics of this group differed from the children diagnosed with ADHD during follow-up. Our study was based on data from the Danish National Birth Cohort, where parents of 51,527 children completed questionnaires, including the Strength and Difficulties Questionnaire (SDQ). ADHD diagnosis was identified through Danish registers and parent-reported ADHD behaviour by the specific SDQ subscale. Socio-demographic predictors of positive parent-reported SDQ ADHD behaviour and absence of recorded ADHD diagnosis in their children were examined using logistic regression analyses. Children with parent-reported ADHD behaviour and no diagnosis (1.3%) were more likely to be girls (OR 1.83; 95% CI 1.45; 2.29), more likely to have mothers with a low socioeconomic status (OR high vs. low 1.49; 95% CI 1.10; 2.02), and to live in certain regions of the country (OR: Capital vs. Southern: 2.04; 95% CI 1.51; 2.73) than children with an ADHD diagnosis. The children showed markedly impairments on all the SDQ subscales. The results demonstrate a considerable number of children with ADHD symptoms who potentially go undetected and underline the influence of socio-demographic factors in the pathway to a diagnosis of ADHD

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Eur Child Adolesc Psychiatry. 2017;1-10.

HIGH MATERNAL VITAMIN D LEVELS IN EARLY PREGNANCY MAY PROTECT AGAINST BEHAVIORAL DIFFICULTIES AT PRESCHOOL AGE: THE RHEA MOTHER CHILD COHORT, CRETE, GREECE.

Daraki V, Roumeliotaki T, Koutra K, et al.

Animal studies suggest that prenatal vitamin D status may affect fetal brain growth. However, human studies are scarce with conflicting results. We aimed to investigate the association of maternal 25-hydroxyvitamin D [25(OH) D] levels with multiple neurodevelopmental outcomes at 4 years of age. We included 487 mother-child pairs from the prospective pregnancy cohort, "Rhea" in Crete, Greece. Maternal serum 25(OH) D concentrations were measured at the first prenatal visit (13 ± 2.4 weeks). Cognitive functions at 4 years were assessed by means of the McCarthy Scales of Children's Abilities. Behavioral difficulties were assessed by means of Strengths and Difficulties Questionnaire and Attention Deficit Hyperactivity Disorder Test. Children of women in the high 25(OH) D tertile (>50.7 nmol/l) had 37% decreased number of hyperactivity-impulsivity symptoms (IRR 0.63, 95% CI 0.39, 0.99, p trend = 0.05) and 40% decreased number of total ADHD-like symptoms (IRR 0.60, 95% CI 0.37, 0.95, p trend = 0.03) at 4 years of age, compared to children of women in the low 25(OH) D tertile (<38.4 nmol/l), after adjustment for several confounders. Similar associations were found with the hyperactivity/inattention score of the SDQ questionnaire. Children of mothers with high 25(OH) D levels had also fewer total behavioral difficulties (beta-coeff: -1.25, 95% CI -2.32, -0.19) and externalizing symptoms (beta-coeff: -0.87, 95% CI -1.58, -0.15) at preschool age. The observed associations were stronger in girls than in boys (p for interaction < 0.1). No association was observed between maternal 25(OH) D concentrations and cognitive function in preschoolers. Our results suggest that high maternal vitamin D levels in early pregnancy may protect against behavioral difficulties, especially ADHD-like symptoms at preschool age

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European Journal of Medical Genetics. 2017.

FIRST DE NOVO ANK3 NONSENSE MUTATION IN A BOY WITH INTELLECTUAL DISABILITY, SPEECH IMPAIRMENT AND AUTISTIC FEATURES.

Kloth K, Denecke J, Hempel M, et al.

Ankyrin-G, encoded by ANK3, plays an important role in neurodevelopment and neuronal function. There are multiple isoforms of Ankyrin-G resulting in differential tissue expression and function. Heterozygous missense mutations in ANK3 have been associated with autism spectrum disorder. Further, in three siblings a homozygous frameshift mutation affecting only the longest isoform and a patient with a balanced translocation disrupting all isoforms were documented. The latter four patients were affected by a variable degree of intellectual disability, attention deficit hyperactivity disorder and autism. Here, we report on a boy with speech impairment, intellectual disability, autistic features, macrocephaly, macrosomia, chronic hunger and an altered sleeping pattern. By trio-whole-exome sequencing, we identified the first de novo nonsense mutation affecting all ANK3 transcripts. Thus, our data expand the phenotype of ANK3-associated diseases and suggest an isoform-based, phenotypic continuum between dominant and recessive ANK3-associated pathologies

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Front Human Neurosci. 2017;11.

NEURONAL INTRA-INDIVIDUAL VARIABILITY MASKS RESPONSE SELECTION DIFFERENCES BETWEEN ADHD SUBTYPES-A NEED TO CHANGE PERSPECTIVES.

Bluschke A, Chmielewski WX, Mückschel M, et al.

Due to the high intra-individual variability in attention deficit/hyperactivity disorder (ADHD), there may be considerable bias in knowledge about altered neurophysiological processes underlying executive dysfunctions in patients with different ADHD subtypes. When aiming to establish dimensional cognitive-neurophysiological constructs representing symptoms of ADHD as suggested by the initiative for Research Domain Criteria, it is crucial to consider such processes independent of variability. We examined patients

with the predominantly inattentive subtype (attention deficit disorder, ADD) and the combined subtype of ADHD (ADHD-C) in a flanker task measuring conflict control. Groups were matched for task performance. Besides using classic event-related potential (ERP) techniques and source localization, neurophysiological data was also analyzed using residue iteration decomposition (RIDE) to statistically account for intra-individual variability and S-LORETA to estimate the sources of the activations. The analysis of classic ERPs related to conflict monitoring revealed no differences between patients with ADD and ADHD-C. When individual variability was accounted for, clear differences became apparent in the RIDE C-cluster (analog to the P3 ERP-component). While patients with ADD distinguished between compatible and incompatible flanker trials early on, patients with ADHD-C seemed to employ more cognitive resources overall. These differences are reflected in inferior parietal areas. The study demonstrates differences in neuronal mechanisms related to response selection processes between ADD and ADHD-C which, according to source localization, arise from the inferior parietal cortex. Importantly, these differences could only be detected when accounting for intra-individual variability. The results imply that it is very likely that differences in neurophysiological processes between ADHD subtypes are underestimated and have not been recognized because intra-individual variability in neurophysiological data has not sufficiently been taken into account

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Frontiers in Neuroscience. 2017;11.

REDUCED PREFRONTAL CORTEX ACTIVATION IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER DURING GO/NO-GO TASK: A FUNCTIONAL NEAR-INFRARED SPECTROSCOPY STUDY.

Miao S, Han J, Gu Y, et al.

Objective: Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neuropsychiatric disorders in children and affects 3 to 5% of school-aged children. This study is to demonstrate whether functional near-infrared spectroscopy (fNIRS) can detect the changes in the concentration of oxygenated hemoglobin (oxy-HB) in children with ADHD and typically developing children (TD children).

Method: In this study, 14 children with ADHD and 15 TD children were studied. Metabolic signals of functional blood oxygen were recorded by using fNIRS during go/no-go task. A statistic method is used to compare the fNIRS between the ADHD children and controls.

Results: A significant oxy-HB increase in the left frontopolar cortex (FPC) in control subjects but not in children with ADHD during inhibitory tasks. Moreover, ADHD children showed reduced activation in left FPC relative to TD children.

Conclusion: Functional brain imaging using fNIRS showed reduced activation in the left prefrontal cortex (PFC) of children with ADHD during the inhibition task. The fNIRS could be a promising tool for differentiating children with ADHD and TD children

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Indian J Med Res. 2016 Nov;144:704-11.

PREVALENCE & CORRELATES OF TOBACCO USE AMONG ADOLESCENTS IN KERALA, INDIA.

Jaisoorya TS, Beena KV, Beena M, et al.

BACKGROUND & OBJECTIVES: Most tobacco users who initiate its use during adolescence are likely to continue the use into adulthood and contribute to the 90 per cent of premature deaths among tobacco users. In this context the prevalence, patterns and correlates of tobacco use were studied among adolescent school students in Kerala, India.

METHODS: Total 7560 students from classes 8, 10 and 12, within the age group of 12-19 yr, across 73 schools in Ernakulam district, Kerala, India, selected by cluster random sampling, completed a self-administered questionnaire incorporating standardized instruments.

RESULTS: Of the 7350 valid questionnaires, the overall lifetime prevalence of tobacco use was 6.9 per cent (12.5% males and 1.2% females). The prevalence of tobacco use increased from 3.1 per cent at 12-13 yr to 15.1 per cent at 18-19 yr. The mean age of onset of tobacco use was 14.0+/-2.2 yr. The prevalence was higher among students from urban backgrounds, lower socio-economic status and those with part-time jobs. Tobacco users had significantly higher rates of use of alcohol (67.8 vs. 11%) and illicit drugs (33 vs. 6.1%).

They had poorer academic performance (24.7 vs. 9.1%), more severe psychological distress (10.8 vs. 4.5%), suicidal attempts (10.2 vs. 3.5%), higher scores of ratings of attention deficit hyperactivity disorder (8.3 vs. 2.5%) and history of sexual abuse (12.5 vs. 3.8%).
INTERPRETATION & CONCLUSIONS: The prevalence of tobacco use in adolescents reported in this study was relatively lower than those reported from other Indian States. However, it correlates with multiple negative outcomes suggesting a need to promote specific interventions to prevent adolescent tobacco use

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Indian J Med Res. 2016 Sep;144:385-92.
ARE CHILDHOOD EXTERNALIZING DISORDERS THE HARBINGER OF EARLY-ONSET ALCOHOL DEPENDENCE?
Ghosh A, Malhotra S, Basu D.
BACKGROUND & OBJECTIVES: The subtyping of alcohol dependence (AD) into early-onset (EO) and late-onset (LO) subgroups has been shown to have clinical and biological validity. As externalizing disorders (EDs) predate AD, the link of ED with age of onset of alcohol dependence needs to be investigated. The aim of this study was to examine the relationship of EDs such as disruptive behaviour disorder (DBD) and attention deficit hyperactivity disorder (ADHD) with age at onset of AD in a sample of male subjects.
METHODS: One hundred consecutive male subjects with AD presenting to the De-Addiction Services and an equal number of biologically unrelated non-substance-dependent control subjects were included in the study. The AD subjects were divided into EO (age of onset of AD </=25 yr; n = 21) and LO (age of onset of AD >25 yr; n = 79). Subjects were examined for evidence of DBD and ADHD in childhood, and current ADHD using structured instruments such as Semi-Structured Assessment for the Genetic of Alcoholism-IV (SSAGA-IV) and Kiddie - S

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International Journal of Clinical and Experimental Medicine. 2017;10:9576-82.
A RANDOMIZED PARALLEL-CONTROLLED STUDY OF CURATIVE EFFECT AND SAFETY OF ATOMOXETINE AND METHYLPHENIDATE IN TREATMENT OF ADHD IN CHILDREN.
Zhu X, Sun X, Zhang Y, et al.
Objective: To compare the curative effect and safety of atomoxetine and methylphenidate in treatment of attention deficit hyperactivity disorder (ADHD) in children.
Methods: One hundred and four children with ADHD reated in our hospital from February 2014 to January 2016 were included in this study. They were divided into atomoxetine group (52 cases) and methylphenidate group (52 cases) according to the design method of the ran-domized single-blind parallel controlled trial. Both groups were respectively treated with atomoxetine and methyl-phenidate for 8 weeks. Curative efficacy was evaluated through the changes of recorded scores of ADHD Rating Scale-IV: Parent Version (ADHDRS-IV-Parent: Inv), Conners' Parent Rating Scale-Revised: Short Form (CPRS-R: S) and Clinical Global Impression of ADHDSeverity (CGI-ADHD-S) before and after treatments. Cohen's d, an effect size index, and the Treatment Emergent Symptom Scale (TESS) were used to evaluate and compare the safety of the two treatments.
Results: The response rates of atomoxetine group and methylphenidate group were 71.2% and 78.8% (P=0.365), respectively; and the dropout rates were 11.5% and 7.7% (P=0.506), which were not signifi-cantly different. A statistically significant decrease from baseline was observed in the postoperative scores of both groups in comparison with the preoperative ones (P<0.001). It had significant clinical significance, but there was no significant difference in curative effect between the two treatments. No serious adverse event occurred during the treatment, and the most common adverse events in two groups were loss of appetite, lethargy and nausea. The incidence of lethargy of atomoxetine group was significantly higher than that of methylphenidate group (P=0.027).

Conclusion: The short-term efficacy and safety of atomoxetine in the treatment of ADHD in children is similar to that of methylphenidate, and the long-term efficacy and safety of the two treatments need to be further verified by more randomized controlled trials

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Iran J Med Sci. 2017;42:354-61.

THE IMPACT OF METHYLPHENIDATE ON MOTOR PERFORMANCE IN CHILDREN WITH BOTH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND DEVELOPMENTAL COORDINATION DISORDER: A RANDOMIZED DOUBLE-BLIND CROSSOVER CLINICAL TRIAL.

Soleimani R, Kousha M, Zarrabi H, et al.

Background: Children with attention deficit hyperactivity disorder/developmental coordination disorder (ADHD/DCD) suffer from problems associated with gross and fine motor skills. There is no effective pharmacological therapy for such patients. We aimed to assess the impact of methylphenidate (MPH) on motor performance of children with ADHD/DCD.

Methods: In this double-blind placebo-controlled, 17 children (12 boys) with ADHD/DCD with a mean age of 7 years 6 months were recruited in Shafa Hospital, Rasht, Iran. The response was defined as 25% reduction in the total score of ADHD rating scale-IV from the baseline. Sixteen boys entered phase 2 of the study in which the impact of MPH on motor function was determined through a crossover randomized clinical trial. Eligible individuals were scheduled for baseline and two assessment visits after a one-week period of intervention. We used the short form of Bruininks-Oseretsky test (BOT-2) to identify the disability of motor function. Children were randomly assigned to receive MPH or inert ingredients (placebo). In the second period, medication (MPH/placebo) was crossed over. The effects of MPH were analyzed using 2 test for related samples to compare the performance during baseline, placebo, and MPH trials. The results were analyzed using the SPSS software version 16.0.

Results: The mean minimal effective dose of MPH per day was 17.3 mg (0.85 mg/kg). Children with higher ADHD rating scale had a significantly lower standard score in BOT-2 (P=0.03). Following MPH intake, 26.6% of the children showed clinically significant improvement in motor function. However, the improvement was not statistically different between the MPH and placebo.

Conclusion: Although MPH improved ADHD symptoms, problems with motor performance still remained. Further work is required to determine the probable effects of MPH in a higher dosage or in different subtypes of ADHD.Trial Registration Number: IRCT201107071483N2

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Ir J Psychol Med. 2017;1-11.

ATTITUDES AND REPORTED PRACTICE OF PAEDIATRICIANS AND CHILD PSYCHIATRISTS REGARDING THE ASSESSMENT AND TREATMENT OF ADHD IN IRELAND.

Honorio NF, Tatlow-Golden M, Mulligan A, et al.

Objectives: This mixed-method national survey has obtained original data on attention deficit hyperactivity disorder (ADHD) attitudes, assessment and treatment regimes reported by paediatricians and child psychiatrists; and has compared their clinics. It has examined the extent of involvement of Irish paediatricians in the management of ADHD.

Methods: A questionnaire was designed, based on a review of literature and ADHD guidelines, and piloted by expert clinicians. Universal recruitment was conducted among Child and Adolescent Mental Health Services (CAMHS) consultants (n=71) and community/general paediatric consultants (n=72). Quantitative and qualitative data was collected and analysed.

Results: There was an overall response rate of 43%. A dedicated ADHD clinic is offered in 79% of CAMHS services, but only in one paediatric service. Participants reported that the assessment of ADHD involves multidisciplinary work and this was only established in CAMHS clinics. Medication is initiated by 82% of child psychiatrists and only 22% of paediatricians.

Conclusions: This first national study of ADHD attitudes and practices presents comprehensive data regarding the management of children with ADHD in CAMHS and paediatric settings in Ireland.

Paediatricians reported a minor role in managing ADHD. Study limitations are related to subjective reporting rather than case note audit, and a moderate response rate for the paediatriciansΓÇÖ participants

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J Am Acad Dermatol. 2017 Jul;77:105-08.

PROPRANOLOL TREATMENT OF INFANTILE HEMANGIOMA IS NOT ASSOCIATED WITH PSYCHOLOGICAL PROBLEMS AT 7 YEARS OF AGE.

Moyakine AV, Spillekom-van KS, van der Vleuten CJM.

BACKGROUND: Concern has been raised about the potential long-term effects of propranolol treatment for infantile hemangioma (IH).

OBJECTIVES: We sought to assess psychologic (social, emotional, behavioral, and executive) functioning in children treated with propranolol for IH.

METHODS: Twenty-seven patients with IH (6.1-7.6 years of age) treated with propranolol for >/=6 months during infancy, and without other developmental risk factors, were recruited. Parents completed the Behavior Rating Inventory of Executive Function, Social Emotional Questionnaire, Child Behavior Checklist, and Strengths and Difficulties Questionnaire. For each questionnaire, the number of patients with abnormal scores, based on established cutoff points, was calculated.

RESULTS: Only 1 child (3.7%) scored outside the normal range. The Hemangioma Severity Scale did not correlate with psychologic problems in these patients. Longer treatment duration was found to correlate with less attention-deficit hyperactivity disorder (ADHD) characteristics (rho = -0.476; P = .012) and better executive functioning (rho = -0.466; P = .014).

LIMITATIONS: Exclusion of children born at gestational age <36 weeks or small for gestational age, no reference group and relatively small study size.

CONCLUSION: We found no increased risk for psychologic problems at age 7 in IH patients treated with propranolol

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J Clin Psychiatry. 2017 Jun;78:e648-e655.

RISK OF IRRITABILITY WITH PSYCHOSTIMULANT TREATMENT IN CHILDREN WITH ADHD: A META-ANALYSIS.

Stuckelman ZD, Mulqueen JM, Ferracioli-Oda E, et al.

OBJECTIVE: Irritability is listed as a common side effect of psychostimulant medications. However, psychostimulants have been demonstrated as an effective treatment in reducing irritability and aggression in children with attention-deficit/hyperactivity disorder (ADHD). The goal of this study was to quantify the risk of irritability as a side effect of psychostimulant treatment for ADHD.

DATA SOURCES AND STUDY SELECTION: A PubMed search was conducted on August 18, 2013, to identify all double-blind, randomized, placebo-controlled trials published in English examining the efficacy of psychostimulant medications in the treatment of children with ADHD. Trials were excluded if (1) they required additional psychiatric or medical comorbidity in addition to ADHD, (2) they involved fewer than 20 subjects (parallel group trials), or (3) children received psychostimulant medication for less than 1 week.

DATA EXTRACTION: A fixed-effects meta-analysis was used to examine the risk ratio of irritability reported as a side effect in children treated with psychostimulants compared to placebo. Stratified subgroup analysis and meta-regression were used to examine the effects of stimulant type, dosage, duration of use, and trial design on the measured risk of irritability.

RESULTS: From 92 potentially eligible trials, the meta-analysis identified 32 trials involving 3,664 children with ADHD that reported data on irritability as a side effect. The relative risk of irritability significantly differed between psychostimulant classes (test for subgroup differences chi(2)(1) = 7.6, P = .006). Methylphenidate derivatives were associated with a significantly decreased risk of irritability compared to placebo (risk ratio [RR] = 0.89 [95% CI, 0.82 to 0.96], z = -2.87, P = .004, k = 32, I(2) = 50%), whereas amphetamine derivatives were associated with a significantly increased risk of irritability (RR = 2.90 [95% CI, 1.26 to 6.71], z = 2.5, P = .01, k = 5, I(2) = 0%).

CONCLUSIONS: This meta-analysis suggests an increased risk of irritability may be confined to amphetamine-derived psychostimulants. Future meta-analyses examining the effects of amphetamine and methylphenidate derivatives on irritability as a continuous measure, as well as head-to-head trials between methylphenidate and amphetamine derivatives examining effects on irritability, will be important to replicate the findings of this meta-analysis

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J Clin Psychopharmacol. 2017 Apr;37:220-25.

EFFECT OF METHYLPHENIDATE ON EMOTIONAL DYSREGULATION IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER + OPPOSITIONAL DEFIANT DISORDER/CONDUCT DISORDER.

Kutlu A, Akyol AU, Ercan ES.

BACKGROUND AND AIM: Emotional dysregulation (ED) is a frequent feature of attention-deficit/hyperactivity disorder (ADHD). It can be observed as a dysregulation profile or a deficient emotional self-regulation (DESR) profile. Oppositional defiant disorder/conduct disorder (ODD/CD) comorbidity is prevalent in ADHD and known to be related with ED. The first-line treatment of ADHD includes psychostimulants, but their effects on ED are not well studied. This study aimed to evaluate the outcomes of methylphenidate (MPH) treatment on ED in ADHD + ODD/CD cases.

METHODS: A total of 118 ADHD + ODD/CD patients with a mean age of 9.0 +/- 1.9 years were treated with MPH for 1 year. Also, parents of cases were recruited for a parent-training program, which initiated after first month of MPH treatment. Symptom severity was assessed at baseline and 12th month by Turgay Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Based Child and Adolescent Behavior Disorders Screening and Rating Scale-Parent Form, Children Depression Inventory, Child Behavior Checklist 4-18 years, and Parental Acceptance and Rejection Questionnaire-Mother Form.

RESULTS: Emotional dysregulation (DESR + DP) was present in 85.6% of cases. Conduct disorder was significantly higher in patients with DP, whereas ODD was significantly higher in the DESR and non-ED groups ($P < 0.0001$). Symptoms of ADHD and ED were significantly improved with 1-year of MPH treatment ($P < 0.05$). The improvement in ED was independent of improvement in ADHD symptoms and parent training ($P < 0.05$).

CONCLUSIONS: Emotional dysregulation is highly prevalent in disruptive behavioral disorders as ODD and CD, which are comorbid with ADHD. The MPH treatment is effective on ED independently from other clinical determinants

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J Med Internet Res. 2017 Apr;19:e126.

SEEKING WEB-BASED INFORMATION ABOUT ATTENTION DEFICIT HYPERACTIVITY DISORDER: WHERE, WHAT, AND WHEN.

Rosenblum S, Yom-Tov E.

BACKGROUND: Attention Deficit Hyperactivity Disorder (ADHD) is a common neurodevelopmental disorder, prevalent among 2-10% of the population.

OBJECTIVE: The objective of this study was to describe where, what, and when people search online for topics related to ADHD.

METHODS: Data were collected from Microsoft's Bing search engine and from the community question and answer site, Yahoo Answers. The questions were analyzed based on keywords and using further statistical methods.

RESULTS: Our results revealed that the Internet indeed constitutes a source of information for people searching the topic of ADHD, and that they search for information mostly about ADHD symptoms. Furthermore, individuals personally affected by the disorder made 2.0 more questions about ADHD compared with others. Questions begin when children reach 2 years of age, with an average age of 5.1 years. Most of the websites searched were not specifically related to ADHD and the timing of searches as well as the query content were different among those prediagnosis compared with postdiagnosis.

CONCLUSIONS: The study results shed light on the features of ADHD-related searches. Thus, they may help improve the Internet as a source of reliable information, and promote improved awareness and knowledge about ADHD as well as quality of life for populations dealing with the complex phenomena of ADHD

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J Nerv Ment Dis. 2017 Jul;205:525-30.

THE COMORBIDITY OF DAYDREAMING DISORDER (MALADAPTIVE DAYDREAMING).

Somer E, Soffer-Dudek N, Ross CA.

To determine the comorbidity profile of individuals meeting criteria for a proposed new disorder, daydreaming disorder (more commonly known as maladaptive daydreaming [MD]), the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and the Structured Clinical Interview for DSM-IV Dissociative Disorders were administered to 39 participants who met criteria for MD on a structured interview. We determined high rates of comorbidity: 74.4% met criteria for more than three additional disorders, and 41.1% met criteria for more than four. The most frequent comorbid disorder was attention deficit hyperactivity disorder (76.9%); 71.8% met criteria for an anxiety disorder, 66.7% for a depressive disorder, and 53.9% for an obsessive-compulsive or related disorder. Notably, 28.2% have attempted suicide. Individuals meeting criteria for MD have complex psychiatric problems spanning a range of DSM-5 disorders. This finding provides evidence that MD is different than normal daydreaming and that these individuals experience considerable distress and impairment

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JAMA Pediatr. 2017;171:e170691.

EDUCATIONAL AND HEALTH OUTCOMES OF CHILDREN TREATED FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Fleming M, Fitton CA, Steiner MFC, et al.

IMPORTANCE Attention-deficit/hyperactivity disorder (ADHD) affects 39 million people worldwide; in isolation, it doubles annual health care costs and, when associated with comorbid mental health problems, it quadruples the costs.

OBJECTIVE To compare the education and health outcomes of schoolchildren treated for ADHD with their peers.

DESIGN, SETTING, AND PARTICIPANTS In this population-based cohort study, individual-level record linkage was performed of 8 Scotland-wide administrative databases covering dispensed prescriptions, admissions to acute and psychiatric hospitals, maternity records, annual pupil census, examinations, school absences and exclusions, and unemployment. The study cohort comprised 766 244 children attending Scottish primary, secondary, and special schools at any point between September 21, 2009, and September 18, 2013. Data analysis was performed from June 1, 2015, to December 6, 2016.

EXPOSURES Medication approved solely for ADHD treatment.

MAIN OUTCOMES AND MEASURES Special educational needs, academic attainment, unauthorized absence, exclusion, age at leaving school, unemployment after leaving, and hospitalization. Outcomes were adjusted for potential sociodemographic, maternity, and comorbidity confounders. RESULTS Of the 766 244 schoolchildren, 7413 (1.0%) were treated for ADHD; 6287 (84.8%) were male. These children had higher rates of unauthorized absence (adjusted incidence rate ratio [IRR], 1.16; 95%CI, 1.14-1.19) and exclusion (adjusted IRR, 5.79; 95%CI, 5.45-6.16), more commonly had a record of special educational need (adjusted odds ratio [OR], 8.62; 95%CI, 8.26-9.00), achieved lower academic attainment (adjusted OR, 3.35; 95%CI, 3.00-3.75), were more likely to leave school before age 16 years (1546 [64.3%] vs 61 235 [28.4%]), and were more likely to be unemployed (adjusted OR, 1.39; 95%CI, 1.25-1.53). Children with ADHD were more likely to require hospitalization overall (adjusted hazard ratio [HR], 1.25; 95%CI, 1.19-1.31) and for injury (adjusted HR, 1.52; 95%CI, 1.40-1.65).

CONCLUSIONS AND RELEVANCE Even while receiving medication, children with ADHD fare worse than their peers across a wide range of outcomes relating not only to education but also to health

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J Adolesc Health. 2017;61:140-46.

ASSOCIATION BETWEEN CHILDHOOD TO ADOLESCENT ATTENTION DEFICIT/HYPERACTIVITY DISORDER SYMPTOM TRAJECTORIES AND LATE ADOLESCENT DISORDERED EATING.

Yilmaz Z, Javaras KN, Baker JH, et al.

PURPOSE: Disordered eating is more prevalent among adolescents with attention deficit/hyperactivity disorder. Both inattention and hyperactivity/impulsivity symptoms show strong associations with disordered eating, but few investigations of these associations have been longitudinal. Thus, we examined the effect of childhood to adolescent inattention and hyperactivity/impulsivity symptom trajectories on late adolescent disordered eating.

METHODS: We used growth mixture modeling to identify distinct inattention and hyperactivity/impulsivity symptom trajectories (called "classes") across three time points (ages 8-9, 13-14, and 16-17 years) in the Swedish Twin study of CHild and Adolescent Development. The resulting classes were used to predict Eating Disorder Inventory-2 Bulimia, Drive for Thinness, and Body Dissatisfaction subscales at age 16-17 years, with adjustment for sex and body mass index at age 16-17 years.

RESULTS: The combined inattention and hyperactivity/impulsivity symptom trajectory classes included: a "low symptom" class characterized by low inattention and hyperactivity/impulsivity throughout childhood/adolescence; a "predominantly inattention" class characterized by elevated inattention, but not hyperactivity/impulsivity, throughout childhood/adolescence; a "predominantly hyp/imp" class characterized by elevated hyperactivity/impulsivity, but not inattention, throughout childhood/adolescence; and a "both inattention and hyp/imp" class characterized by elevated inattention and hyperactivity/impulsivity throughout childhood/adolescence. After adjusting for sex and body mass index or sex and anxiety/depression symptoms, the "both inattention and hyp/imp" (vs. "low symptom") class predicted significantly higher Eating Disorder Inventory-2 subscale scores during late adolescence.

CONCLUSIONS: Increased vigilance for disordered eating among children who have both inattention and hyperactivity/impulsivity symptoms throughout childhood and adolescence could aid in early identification of eating disorders

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J Adolesc Health. 2017.

CHILDHOOD OBESITY, OBESITY TREATMENT OUTCOME, AND ACHIEVED EDUCATION: A PROSPECTIVE COHORT STUDY.

Hagman E, Danielsson P, Brandt L, et al.

PURPOSE: Childhood obesity represents a social burden. This study aims to investigate whether achieved educational level differs in young adults who have suffered obesity in childhood compared with the general population and to determine how obesity treatment influences achieved educational level.

METHODS: This prospective cohort study includes subjects from the Swedish Childhood Obesity Treatment Registry (BORIS, n = 1,465) who were followed up after 20 years of age. They were compared with a randomly selected matched population-based group (n = 6,979). Achieved educational level was defined as ≥12 years in school (completers). Covariates include sex, migration background, and attention deficit disorders for both groups. Furthermore, age and degree of obesity at start of obesity treatment, treatment duration, and efficacy were analyzed in the obese cohort.

RESULTS: In the obese cohort, 55.4% were school completers, compared with 76.2% in the comparison group (adjusted odds ratio [OR] = .42, $p < .0001$). Subjects with moderate obesity had a completion rate of 64.4%, compared with 50.9% among subjects with morbid obesity (adjusted OR = .57, $p < .0001$). Successful obesity treatment was associated with increased future educational level, compared with those experiencing no treatment effect (61.9% vs. 51.3% completers; adjusted OR = 1.4, $p < .05$). In children with attention deficit disorder, obesity was not an extra risk for not completing 12 or more years of schooling, $p = .11$.

CONCLUSIONS: Obesity in childhood was associated with low educational level in early adulthood. Children and adolescents with obesity may require special support at school in addition to health care treatment to lose weight

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Journal of Clinical Oncology. 2017;35.

PREVALENCE OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN PEDIATRIC BRAIN TUMOR SURVIVORS.

Shabason EK, Brodsky C, Baran J, et al.

Background: Pediatric brain tumor survivors (PBTS) often have neurodevelopmental late effects, including attention and concentration deficits, which may impact cognitive and academic functioning. Such symptoms are also seen in attention-deficit/hyperactivity disorder (ADHD), which affects 5-8% of children and adolescents. This study examined the prevalence of ADHD diagnosis and ADHD medication use in PBTS and identified higher risk subsets of patients.

Methods: A retrospective chart review was completed of PBTS (n = 106), diagnosed from 1999-2013, who were at least 2 years from the end of tumor-directed therapy (surgery, chemotherapy and/or radiation therapy) and without a multi-system genetic disorder or severe developmental delay prior to brain tumor diagnosis. Subjects were already screened for or enrolled in 3 other studies of PBTS late effects. Statistical analysis involved chi-squared analysis.

Results: Among the 106 patients, 55.7% were male, with an average age at time of brain tumor diagnosis of 5.9 years (0-12.2 years). The most common tumor types were glioma (51.9% with 47.2% low grade, 4.7% high grade), medulloblastoma (13.2%) and ependymoma (11.3%), with 50% of tumors supratentorial, 46.2% infratentorial and 3.8% either extending or multifocal across the tentorium. Of the patients, 42.5% received radiation therapy, 38.7% chemotherapy and 86.8% surgery. Nineteen patients (17.9%) had ADHD diagnoses, and 20 (18.9%) had been on ADHD medications. Clinical factors associated with an ADHD diagnosis were supratentorial vs. infratentorial tumors (28.3% vs. 6.1%, p = 0.013), no radiation therapy vs. radiation therapy (27.9% vs. 4.4%, p = 0.002) and no chemotherapy vs. chemotherapy (24.6% vs. 7.3%, p = 0.024). ADHD diagnosis was not associated with age of brain tumor diagnosis or surgical treatment.

Conclusions: Our study suggests that PBTS have over twice the ADHD prevalence as the general population, most notably in patients with supratentorial tumors or without a history of radiation therapy or chemotherapy. The results suggest that a closer look at this population is warranted and that select patients may benefit from behavioral or pharmacologic ADHD treatments to optimize functioning

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J Clin Psychopharmacol. 2017.

EXCESSIVE AND FREQUENT MENSTRUAL BLEEDING WITH METHYLPHENIDATE IN AN ADOLESCENT GIRL WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Coskun M, Adak I.

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J Clin Psychopharmacol. 2017;37:484.

TRICHOTILLOMANIA IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER UNDER METHYLPHENIDATE TREATMENT.

Kara T, Akaltun I.

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Journal of Cognitive Psychotherapy. 2017;31:118-23.

A CASE REPORT OF INTENSIVE EXPOSURE-BASED COGNITIVE BEHAVIORAL THERAPY FOR A CHILD WITH COMORBID AUTISM SPECTRUM DISORDER AND OBSESSIVE-COMPULSIVE DISORDER.

Merricks KL, Nadeau JM, Ramos A, et al.

Cognitive behavioral therapy (CBT) with exposure and response prevention (ERP) has proven to be an effective treatment modality for children with obsessive-compulsive disorder (OCD). Less research exists demonstrating efficacy for this treatment modality among children with comorbid diagnoses of OCD and autism spectrum disorder (ASD), and virtually, nothing has been reported examining intensive interventions for the most severe cases. As such, this article discusses the treatment of an adolescent male with severe OCD comorbid with ASD, attention deficit hyperactivity disorder (ADHD), generalized anxiety disorder (GAD), and chronic tic disorder using a cognitive behavioral approach and ERP. We conclude with recommendations for continued clinical research to understand approaches to help nonresponders to standard therapeutic approaches with this challenging population

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Journal of Human Genetics. 2017;62:687-95.

COMPONENTS OF THE FOLATE METABOLIC PATHWAY AND ADHD CORE TRAITS: AN EXPLORATION IN EASTERN INDIAN PROBANDS.

Saha T, Chatterjee M, Sinha S, et al.

We investigated role of the folate-homocysteine metabolic pathway in the etiology of attention-deficit hyperactivity disorder (ADHD) due to its importance in maintaining DNA integrity as well as neurotransmission. Functional gene variants in MTR (rs1805087), CBS (rs5742905), MTHFR (rs1801133 &rs1801131), MTHFD (rs2236225), RFC1 (rs1051266), plasma vitamin B12, folate and homocysteine were analyzed. rs1805087 'A' showed strong association with ADHD. Vitamin B12 deficiency of ADHD probands (P=0.01) correlated with rs1801133 'T' and rs1805087'GG'. Mild hyperhomocysteinemia (P=0.05) in the probands was associated with rs1805087 'AA'. Probands having rs1805087 'GG' and rs1051266 'G' was more inattentive. Hyperactivity-impulsivity score revealed association with rs5742905 'TT' and rs2236225 'CC', while rs1801133 'CC' showed association with inattentiveness and hyperactivity-impulsivity. rs1801131 exhibited strong synergistic interaction with rs1051266 and rs2236225. This indicated that the folate-homocysteine pathway gene variants may affect ADHD etiology through mild hyperhomocysteinemia and vitamin B12 deficiency, factors known to be associated with cognitive deficit

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J Indian Assoc Child Adolesc Ment Health. 2017;13:180-207.

NEURAL OSCILLATIONS IN RESTING STATE EEG IN ADHD CHILDREN - A PRELIMINARY STUDY.

Saha P, Mukhopdhyay P, Chakraborty P, et al.

Background: Children with attention-deficit hyperactivity disorder (ADHD) have several cognitive deficits such as inattention, poor working memory and behavioral disinhibition. Electroencephalography (EEG) signals are related to better understanding the neuronal functions in children with ADHD. Aims: The aim of this study was to examine resting-state EEG power and identify specific neural abnormalities through oscillatory patterns in ADHD children.

Method: A total of 18 subjects between the age of 8 to12 years participated with 9 children diagnosed with ADHD and 9 matched healthy participants (HP). Conner's Parent Rating Scale (CPRS) was administered to establish a behavioural profile for the ADHD group. Using 19 channels, EEG was recorded in eyes-closed conditions. EEG power spectral analysis was used. Wilcoxon-Mann-Whitney test was used to compare EEG signals of the ADHD and HP group. The critical value for significance was set at 0.05 and 0.01 levels.

Result: The ADHD group had elevated absolute power in gamma1 band at the right hemispheric frontal and central channels. With relative power measures, children with ADHD had elevated levels of delta and gamma bands in the central and frontal regions. The ADHD group showed decreased relative power for alpha frequency in the occipital region, and decreased relative theta activity.

Conclusion: Increased relative delta activity suggests cortical underarousal and decreased theta may related to cognitive impairment in ADHD children. Elevated gamma activity in ADHD children denotes their enhanced level of neuronal excitation with unspecific activation of processing resources. A distinct neural pattern distinguishes the ADHD group from the HP

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J Isfahan Med Sch. 2017;35:511-17.

EFFECTIVENESS OF MINDFUL PARENTING TRAINING ON CLINICAL SYMPTOMS AND SELF-EFFICACY IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Behbahani M, Zargar F.

Background: The attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders that cause damage in different aspects such as educational, social, and familial. The purpose of this study was evaluation the effectiveness of mindful parenting training on clinical symptoms and self-efficacy in children with attention deficit hyperactivity disorder.

Methods: This was a clinical trial study with two control and intervention groups in three stages of pre-test, post-test, and two-month follow up. Sixty children with attention deficit hyperactivity disorder referred by the child psychiatrists in Kashan city, Iran, during the second half of the year 2016 were selected along with their mothers. The mothers were assigned in two groups using permuted blocked randomization. Children of these mothers in both groups were evaluated in three steps using Morris self-efficacy questionnaire and Swanson, Nolan and Pelham (SNAP-IV) questionnaire. Intervention group received 8 weekly sessions of mindful parenting training based on Kabat-Zinn protocol. The obtained data were analyzed using repeated measurements analysis of variance.

Findings: Significant increase of emotional and social self-efficacy and a meaningful improvement of symptoms of attention deficit hyperactivity disorder were seen in intervention group compared to the control group in post-test and follow up ($P < 0.001$ for all).

Conclusion: Mindful parenting training has a significant effect on increasing emotional and social self-efficacy and reducing attention deficit hyperactivity disorder symptoms in children

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J Pediatr Biochem. 2012;2:115-22.

SIMULTANEOUS VISUAL SUSTAINED ATTENTION-DISCRIMINATION AND GOAL-DIRECTED SEARCH ARE ASSOCIATED WITH EXCRETION OF CATECHOLAMINERGIC METABOLITES IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Llorente AM, Voigt R, Bhatnagar P, et al.

The relationship between visual sustained attention-discrimination and goal-directed search was evaluated using a visual discrimination and exploration (goal-directed search) paradigm and urinary excretion of catecholaminergic metabolites [dopamine (DA) and norepinephrine (NE)] in 6-12 year-old children (n = 31) strictly selected and diagnosed with attention-deficit/hyperactivity disorder (ADHD) using diagnostic criteria and other objective indices. The Structured Clinical Interview (SCID) (DSM-IV) was used to formally diagnose ADHD in children. A cognitive laboratory test was used to assess visual sustained attention-discrimination and goal-directed search (Children Color Trails Test 1 and 2). Urinary excretion of DA and NE metabolites was measured via reversed high-pressure liquid chromatography (HPLC). Pearson product-moment correlations were used to investigate the relationship between visual sustained attention and goal-directed search and urinary catecholamine metabolites of DA and NE. The present findings revealed a positive and moderately significant relationship between visual sustained attention and visual exploration and catecholaminergic metabolite levels of NE and DA, according to expectation. Decreased visual sustained attention and goal-directed search was associated with decreased DA and NE metabolite levels. The present results are consistent with past research with children with ADHD and studies with primates examining the intricate and respective interaction between the Locus Coeruleus and visual sustained attention-discrimination and the Ventral Tegmental Area and goal-directed search (visual exploration) respectively modulated through NE and DA. Applied and theoretical issues associated with the present findings also are

discussed addressing recent computer-generated analogues of action selection models within the context of the extant findings

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J Psychiatr Res. 2017;94:124-30.

PARENTAL PSYCHOPATHOLOGY AND OFFSPRING ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN A NATIONWIDE SAMPLE.

Joelsson P, Chudal R, Uotila J, et al.

Objective To study the associations between a wide range of parental psychiatric disorders and offspring attention-deficit/hyperactivity disorder (ADHD).

Method This study is based on a nested case-control design. The association between parental registered psychiatric diagnoses and offspring ADHD was examined adjusting for socioeconomic and prenatal factors. Data was linked from Finnish nationwide registers. The cases (n = 10,409) were all the children born between years 1991 and 2005 in Finland and diagnosed with ADHD by the end of 2011. Four controls without ADHD (n = 39,124) were matched for every case by sex, age and place of birth. Main outcomes were adjusted odds ratio (aOR) for parental diagnosis of cases vs controls. Analyses were further stratified by sex. Disorders diagnosed before and after birth were analyzed separately.

Results The odds ratio for ADHD increased when only mother (aOR 2.2, 95% CI 2.0-2.3), only father (aOR 1.7, 95% CI 1.6-1.8) and both parents (aOR 3.6, 95% CI 3.3-4.0) were diagnosed. Maternal diagnosis showed stronger association than paternal. The weight of association between several parental disorders and offspring ADHD were similar. Maternal psychopathology overall showed stronger associations with girls than boys with ADHD. The diagnoses registered after birth did not show stronger association than the diagnoses registered before.

Conclusions: Maternal psychopathology showing stronger association than paternal implies that environmental factors or their interaction with genetic factors partly mediates the risk of parental psychopathology. Similar associations between several maternal psychiatric disorders and offspring ADHD points towards the need for investigating some common mother-related risk factors

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J Am Acad Child Adolesc Psychiatry. 2017;56:602-09.

STRIATAL ACTIVATION PREDICTS DIFFERENTIAL THERAPEUTIC RESPONSES TO METHYLPHENIDATE AND ATOMOXETINE.

Schulz KP, Bédard A-C, Fan J, et al.

OBJECTIVE: Methylphenidate has prominent effects in the dopamine-rich striatum that are absent for the selective norepinephrine transporter inhibitor atomoxetine. This study tested whether baseline striatal activation would predict differential response to the two medications in youth with attention-deficit/hyperactivity disorder (ADHD).

METHOD: A total of 36 youth with ADHD performed a Go/No-Go test during functional magnetic resonance imaging at baseline and were treated with methylphenidate and atomoxetine using a randomized cross-over design. Whole-brain task-related activation was regressed on clinical response.

RESULTS: Task-related activation in right caudate nucleus was predicted by an interaction of clinical responses to methylphenidate and atomoxetine ($F_{1,30} = 17.00$; $p < .001$). Elevated caudate activation was associated with robust improvement for methylphenidate and little improvement for atomoxetine. The rate of robust response was higher for methylphenidate than for atomoxetine in youth with high (94.4% vs. 38.8%; $p = .003$; number needed to treat = 2, 95% CI = 1.31-3.73) but not low (33.3% vs. 50.0%; $p = .375$) caudate activation. Furthermore, response to atomoxetine predicted motor cortex activation ($F_{1,30} = 14.99$; $p < .001$).

CONCLUSION: Enhanced caudate activation for response inhibition may be a candidate biomarker of superior response to methylphenidate over atomoxetine in youth with ADHD, purportedly reflecting the dopaminergic effects of methylphenidate but not atomoxetine in the striatum, whereas motor cortex activation may predict response to atomoxetine. These data do not yet translate directly to the clinical setting, but the

approach is potentially important for informing future research and illustrates that it may be possible to predict differential treatment response using a biomarker-driven approach.
CLINICAL TRIAL REGISTRATION INFORMATION: Stimulant Versus Nonstimulant Medication for Attention Deficit Hyperactivity Disorder in Children; https://clinicaltrials.gov/; NCT00183391

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J Am Acad Child Adolesc Psychiatry. 2017;56:687-95.
CHILDHOOD PREDICTORS OF ADULT FUNCTIONAL OUTCOMES IN THE MULTIMODAL TREATMENT STUDY OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (MTA).
Roy A, Hechtman L, Arnold LE, et al.
Objective Recent results from the Multimodal Treatment Study of Attention-Deficit/Hyperactivity Disorder (ADHD; MTA) have demonstrated impairments in several functioning domains in adults with childhood ADHD. The childhood predictors of these adult functional outcomes are not adequately understood. The objective of the present study was to determine the effects of childhood demographic, clinical, and family factors on adult functional outcomes in individuals with and without childhood ADHD from the MTA cohort.
Method Regressions were used to determine associations of childhood factors (age range 7–10 years) of family income, IQ, comorbidity (internalizing, externalizing, and total number of non-ADHD diagnoses), parenting styles, parental education, number of household members, parental marital problems, parent-child relationships, and ADHD symptom severity with adult outcomes (mean age 25 years) of occupational functioning, educational attainment, emotional functioning, sexual behavior, and justice involvement in participants with (n = 579) and without (n = 258) ADHD.
Results Predictors of adult functional outcomes in ADHD included clinical factors such as baseline ADHD severity, IQ, and comorbidity; demographic factors such as family income, number of household members and parental education; and family factors such as parental monitoring and parental marital problems. Predictors of adult outcomes were generally comparable for children with and without ADHD.
Conclusion Childhood ADHD symptoms, IQ, and household income levels are important predictors of adult functional outcomes. Management of these areas early on, through timely treatments for ADHD symptoms, and providing additional support to children with lower IQ and from households with low incomes, could assist in improving adult functioning

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J Am Acad Child Adolesc Psychiatry. 2017;56:659-68.
VARIATION IN THE EARLY TRAJECTORIES OF AUTISM SYMPTOMS IS RELATED TO THE DEVELOPMENT OF LANGUAGE, COGNITION, AND BEHAVIOR PROBLEMS.
Visser JC, Rommelse NNJ, Lappenschaar M, et al.
OBJECTIVE: The objectives of this study were to model more homogeneous subgroups within autism spectrum disorder (ASD) based on early trajectories of core symptoms; and to further characterize these subgroups in terms of trajectories of language, cognition, co-occurring (attention-deficit/hyperactivity disorder [ADHD]-related) traits and clinical outcome diagnosis.
METHOD: Children (N = 203) referred for possible ASD at ages 1 to 4 years were assessed at three time points at intervals ranging from 9 months to 3 years. Assessments included standardized measures for ASD (Autism Diagnostic Observation Schedule [ADOS]), language (ADOS-language item), nonverbal IQ (NV-IQ; different tests adequate to chronological/mental age), and parent-reported behavioral problems (Infant-Toddler Social and Emotional Assessment, Child Behavior Checklist).
RESULTS: Latent-class growth curve analysis with ADOS total scores led to the identification of three main stable and two small improving groups: a severe-stable group (19.5% of sample)-the only group without considerable language improvement-showed persistent low NV-IQ and marked increase in attention problems over time; a moderate-stable group (21.7%) with below-average increasing NV-IQ; and a mild-stable group (48%) with stable-average NV-IQ and the highest scores on ADHD-related traits, whose ASD outcome diagnoses increased despite stable-low ASD scores. Two groups (each 5.4%) improved: one

moved from severe to moderate ASD scores, and the other moved from moderate to mild/nonspectrum scores. Both of these groups improved on language, NV-IQ, and ADHD-related traits.
CONCLUSION: Results support the high stability of ASD symptoms into various severity levels, but also highlight the significant contribution of non-ASD domains in defining and explaining the different ASD trajectories

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J Am Acad Child Adolesc Psychiatry. 2017;56:578-84.
TEENAGE PARENTHOOD AND BIRTH RATES FOR INDIVIDUALS WITH AND WITHOUT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: A NATIONWIDE COHORT STUDY.
Østergaard SD, Dalsgaard S, Faraone SV, et al.
OBJECTIVE: Prior studies have established that attention-deficit/hyperactivity disorder (ADHD) is associated with risky sexual behavior, but it remains unknown whether individuals with ADHD also are more likely to become parents while being teenagers. This aspect is clinically relevant because teenage parenthood is associated with adverse outcomes for parents and children. Therefore, the main aim of this study was to investigate whether individuals with ADHD would be more likely to become teenage parents compared with individuals without ADHD.
METHOD: This is a historical prospective cohort study based on nationwide data from Danish registers. The cohort consisted of all individuals (N = 2,698,052) born in Denmark from January 1, 1960 through December 31, 2001. The association between ADHD (n = 27,479 cases) and parenthood (first child) in age intervals of 12 to 16, 17 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, and 40 years and above was investigated by Poisson regression and expressed as incidence rate ratios (IRRs) with accompanying 95% CIs. IRRs can be interpreted as relative risks.
RESULTS: Compared with individuals without ADHD, those with ADHD were significantly more likely to become parents at 12 to 16 years of age (IRR for females 3.62, 95% CI 2.14-6.13; IRR for males 2.30, 95% CI 1.27-4.17) and at 17 to 19 years of age (IRR for females 1.94, 95% CI 1.62-2.33; IRR for males 2.27, 95% CI 1.90-2.70).
CONCLUSION: Individuals with ADHD are significantly more likely to become teenage parents compared with individuals without ADHD. Therefore, it might be appropriate to target this group with an intervention program that includes sexual education and contraceptive counseling

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Neuropsychiatr Dis Treat. 2017;13:1761-69.
ATTENTION□ÇÔMEMORY TRAINING YIELDS BEHAVIORAL AND ACADEMIC IMPROVEMENTS IN CHILDREN DIAGNOSED WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER COMORBID WITH A LEARNING DISORDER.
Farias AC, Cordeiro ML, Felden EPG, et al.
Background: Recent studies have suggested that children with attention-deficit hyperactivity disorder (ADHD) may benefit from computerized cognitive training. Therapy implementation is especially complicated when ADHD is associated with learning disorders (LDs). This study tested the efficacy of a computer-based cognitive training program, namely, computerized cognitive training (CCT), in children with ADHD comorbid with an LD (ADHD-LD), with or without psychostimulant medication.
Materials and methods: After diagnostic evaluations, 27 children with ADHD-LD (8 unmedi-cated and 19 medicated) participated in CCT, which is intended to improve attention, memory, reasoning, visual processing, and executive functioning. The participants completed 24 1-hour sessions over 3 months. Neuropsychometric and standardized academic test results before and after training were compared to assess treatment efficacy. ShapiroΓÇôWilk normality tests were applied, and subsequent Wilcoxon tests were used to identify significant differences in pre-versus post-training performance.
Results: After CAT, children diagnosed with ADHD-LD showed 1) improvements in trained skills, measured directly within the software and indirectly by external psychometric tests; 2) improvements in attention, memory, and some executive functioning; 3) improvements in academic performance, particularly in mathematics; and 4) reductions in maladaptive behavioral features.

Conclusion: The present findings suggest that cognitive training programs should be explored further as potential adjunctive therapies to improve outcomes in children with ADHD-LD

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NeuroQuantology. 2017;15:277-83.

NEUROFEEDBACK TRAINING INTERVENTION FOR ENHANCING WORKING MEMORY FUNCTION IN ATTENTION DEFICIT AND HYPERACTIVITY DISORDER (ADHD) CHINESE STUDENTS.

Wang Z.

Our study aimed to develop a neurofeedback training programme for enhancing the EEG-based alpha band and executive working memory. The study design is pre-test/post-test Control Group (CG), and analyses were limited to those randomized to the neurofeedback intervention. The sample were ADHD students below 15 years of age (7-14 years), of whom 10 completed the 5-week training assessment in the experimental group (EG), whereas 9 completed the assessment in the CG, students from elementary and secondary schools referred to a Chinese psychiatry clinic. The average age of the sample was 13.48 years in the EG. The findings showed the beneficial effects of neurofeedback training, which improved in ADHD students. These findings revealed that most of the working memory function measurements exhibited significant differences between the EG and CG. A neurofeedback training programme enhances the working memory function in ADHD students

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NeuroQuantology. 2017;15:261-68.

BEHAVIORAL INHIBITION IMPROVEMENT THROUGH AN EMOTIONAL WORKING MEMORY (EWM) TRAINING INTERVENTION IN CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER.

Wei X, Chen X, He L, et al.

The study was undertaken to examine the effects of a short-term Emotional Working Memory (EWM) training program on executive reaction of time and executive functions. The sample of 20 children with Attention Deficit/Hyperactivity Disorder (ADHD) was randomly assigned to a EWM training (n = 11) and an active control group (n = 9). Our study hypothesized that an increase in ADHD inattention and ADHD impulsive during the first weeks of the referral would lead to weak executive functions in the control group, but not in the EWM training group, due to the EWM intervention. The results revealed the beneficial effects of executive functions in the EWM group, but not in the control group. According to our data, executive reaction ability of time increased in the EWM training group but remained unchanged in the control group. Even a rather short intervention of 1.5h can protect children with ADHD from weak executive functions at the beginning of the referral

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No To Hattatsu. 2017;49:243-49.

NEUROPHYSIOLOGICAL BIOMARKERS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDERS USING NON-INVASIVE EVALUATIONS OF BRAIN FUNCTION.

Kaga Y.

The prevalence of children with attention deficit hyperactivity disorder (ADHD) appears to be increasing in Japan. Establishment of standardized diagnostic methods and approaches to the treatment of ADHD is therefore imperative. In general, ADHD is behaviorally diagnosed with behavioral questionnaires as a rating scale because objective biomarkers for ADHD remain elusive. For ADHD children, objective biomarkers must be simple, definitive, and definable using non-invasive evaluations. In recent years, neurophysiological findings with non-invasive evaluations of brain function have been reported for ADHD. Herein I review non-invasive evaluations of brain function for ADHD, with a particular focus on frequency analysis of electroencephalograms (EEGs), event-related potentials (ERPs), and near-infrared spectroscopy (NIRS). In resting EEGs, the rate of power spectra as measured by delta/beta was increased in ADHD children. Attempts have been made to apply the delta/beta ratio to the diagnosis of ADHD, and this approach has

positive and negative aspects. ERPs such as P300, NoGo potentials, and mismatch-negativity (MMN) have reportedly shown utility in diagnosis and evaluation of treatment for ADHD children. NIRS is easy to perform at the forehead and is suitable for analysis of frontal functions in children. As a result, numerous studies have reported frontal dysfunctions in ADHD children. These data suggest that hemodynamic and electrophysiological findings might be useful as biomarkers in ADHD children. In the future, these methods are likely to be applicable as adjunctive methods for diagnosis and evaluation of therapy

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Nord J Psychiatry. 2017;1-4.

THE PROBABLE ROLE OF ADRENOMEDULLIN AND NITRIC OXIDE IN CHILDHOOD ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Gürbüz Özgür B, Aksu H, Yılmaz M, et al.

Background: The role of adrenomedullin hormone, which has been shown to be associated with many psychiatric disorders, in the etiology of ADHD and its relation to disease is not yet known. Aim: In this study, it was aimed to compare plasma adrenomedullin and nitric oxide (NO) levels of newly diagnosed, treatment-naive patients with ADHD with healthy children.
Methods: A total of 45 children with ADHD and 45 healthy children were included. The Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (K-SADS), a semi-structured interview, was applied to all cases by child and adolescent psychiatrist. Age and gender matched participants who admitted to the hospital for any other reasons without any psychiatric diagnosis according to K-SADS were selected as a control group. Sociodemographic data form and The Turgay DSM-IV-Based Child and Adolescent Disruptive Behavioral Disorders Screening and Rating Scale-parental form were applied to the all groups. NO and adrenomedullin levels were analysed by ELISA method with specific commercial kits.
Results: There was no statistically significant difference in NO and adrenomedullin levels, neither between the groups nor ADHD subtypes. A positive correlation between adrenomedullin and NO levels was found in both the case (r = 0.659) and the control groups (r = 0.494).
Conclusions: Besides being the first study to evaluate adrenomedullin levels to elucidate the etiology of childhood ADHD as well as NO, significant differences was not found between the case and the control groups in terms of NO and adrenomedullin levels

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Nurs Child Young People. 2017 Jun;29:24-32.

EVALUATION OF A DROP-IN CLINIC FOR YOUNG PEOPLE WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Sfar-Gandoura H, Ryan GS, Melvin G.

Aims To implement and evaluate a nurse-led, multi-agency drop-in clinic for young people with attention deficit hyperactivity disorder (ADHD).
Method A repeated measures observational study over 12 months exploring clinic attendance and user satisfaction, crisis management and did not attend (DNA) rates, consultant time spent with patients, benefits to quality of care, and service flexibility.
Results A total of 62 service users participated. A significant improvement in service user experience was observed (P=0.001). Crisis management attendances significantly increased (P=0.005). DNA rates did not reduce significantly (P=0.057). Service users attended for their medication review before or on their due date (P=0.011). Those who needed to were able to spend more time with the staff (P=0.001).
Conclusion The clinic improved service accessibility and flexibility. It allowed adherence to clinical guidance, including uptake of psychosocial interventions. There was an overwhelmingly positive improvement in service user experience. Importantly, as contact with the ADHD nurse specialists increased, this significantly reduced the amount of time consultant community paediatricians spent with service users. Further research should examine the cost-effectiveness and longitudinal effect of the drop-in model

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Oncotarget. 2017;8:44785-99.

ALTERED BRAIN STRUCTURAL NETWORKS IN ATTENTION DEFICIT/ HYPERACTIVITY DISORDER CHILDREN REVEALED BY CORTICAL THICKNESS.

Liu T, Chen Y, Li C, et al.

This study investigated the cortical thickness and topological features of human brain anatomical networks related to attention deficit/hyperactivity disorder. Data were collected from 40 attention deficit/hyperactivity disorder children and 40 normal control children. Interregional correlation matrices were established by calculating the correlations of cortical thickness between all pairs of cortical regions (68 regions) of the whole brain. Further thresholds were applied to create binary matrices to construct a series of undirected and unweighted graphs, and global, local, and nodal efficiencies were computed as a function of the network cost. These experimental results revealed abnormal cortical thickness and correlations in attention deficit/ hyperactivity disorder, and showed that the brain structural networks of attention deficit/hyperactivity disorder subjects had inefficient small-world topological features. Furthermore, their topological properties were altered abnormally. In particular, decreased global efficiency combined with increased local efficiency in attention deficit/hyperactivity disorder children led to a disorder-related shift of the network topological structure toward regular networks. In addition, nodal efficiency, cortical thickness, and correlation analyses revealed that several brain regions were altered in attention deficit/hyperactivity disorder patients. These findings are in accordance with a hypothesis of dysfunctional integration and segregation of the brain in patients with attention deficit/hyperactivity disorder and provide further evidence of brain dysfunction in attention deficit/hyperactivity disorder patients by observing cortical thickness on magnetic resonance imaging

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Pediatr Neurol. 2017.

FEBRILE SEIZURES AND EPILEPSY: ASSOCIATION WITH AUTISM AND OTHER NEURODEVELOPMENTAL DISORDERS IN THE CHILD AND ADOLESCENT TWIN STUDY IN SWEDEN.

Gillberg C, Lundstr+Âm S, Fernell E, et al.

Background: There is a recently well-documented association between childhood epilepsy and early s ymptomatic s yndromes e liciting n eurodevelopmental c linical e xaminations (ESSENCE) including autism spectrum disorder, but the relationship between febrile seizures and ESSENCE is less clear.

Methods: The Child and Adolescent Twin Study in Sweden (CATSS) is an ongoing population-based study targeting twins born in Sweden since July 1, 1992. Parents of 27,092 twins were interviewed using a validated DSM-IV-based interview for ESSENCE, in connection with the twins' ninth or twelfth birthday. Diagnoses of febrile seizures (n = 492) and epilepsy (n = 282) were based on data from the Swedish National Patient Register. Prevalence of ESSENCE in individuals with febrile seizures and epilepsy was compared with prevalence in the twin population without seizures. The association between febrile seizures and ESSENCE was considered before and after adjustment for epilepsy. Age of diagnosis of febrile seizures and epilepsy was considered as a possible correlate of ESSENCE in febrile seizures and epilepsy.

Results: The rate of ESSENCE in febrile seizures and epilepsy was significantly higher than in the total population without seizures (all $P < 0.001$). After adjusting for epilepsy, a significant association between febrile seizures and autism spectrum disorder, developmental coordination disorder, and intellectual disability remained. Earlier age of onset was associated with all ESSENCE except attention-deficit/hyperactivity disorder in epilepsy but not with ESSENCE in febrile seizures.

Conclusions: In a nationally representative sample of twins, there was an increased rate of ESSENCE in childhood epilepsy and in febrile seizures. Febrile seizures alone could be seen as a marker for a broader ESSENCE phenotype in some cases

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PLoS ONE. 2017;12.

THE RELATIONSHIP BETWEEN EARLY AND LATE EVENT-RELATED POTENTIALS AND TEMPERAMENT IN ADOLESCENTS WITH AND WITHOUT ADHD.

Alperin BR, Gustafsson H, Smith C, et al.

Differences in emotional processing are prevalent in adolescents with attention deficit/ hyperactivity disorder (ADHD) and are related to clinical impairment, but substantial heterogeneity exists. Within ADHD, some individuals experience difficulty with positive/approach emotions, negative/withdrawal emotions, or both. These problems may reflect differences in emotional reactivity, emotion regulation, or a combination, and the neurophysiological correlates remain unclear. Event-related potentials were collected from 109 adolescents (49 with ADHD) while they completed an emotional go/no-go task with three conditions: happy (positive/approach), fear (negative/withdrawal), and neutral. The P1 and N170 were used as a marker of early emotional processing and the P3b and late positive potential (LPP) were used as markers of later elaborative emotional processing. Emotional response style was assessed with parent and adolescent report on the Early Adolescent Temperament Questionnaire. There were no effects of emotion or group for the P1. Typically-developing adolescents exhibited a larger N170 to emotional vs. neutral faces while adolescents with ADHD showed the opposite pattern. All adolescents exhibited a larger P3b to fearful versus other faces and a larger LPP to emotional vs. non-emotional faces. Within the ADHD group, N170 responses to happy faces predicted parent ratings of positive/approach emotions. Findings highlight the importance of considering within-group heterogeneity when studying clinical populations and help clarify the time-locked neurophysiological correlates of emotion dysregulation

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Psychiatr Genet. 2017;27:131-38.

ANALYSIS OF SHARED HOMOZYGOSITY REGIONS IN SAUDI SIBLINGS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Shinwari JMA, Al Yemni EAA, Alnaemi FM, et al.

Aim Genetic and clinical complexities are common features of most psychiatric illnesses that pose a major obstacle in risk-gene identification. Attention deficit hyperactivity disorder (ADHD) is the most prevalent child-onset psychiatric illness, with high heritability. Over the past decade, numerous genetic studies utilizing various approaches, such as genome-wide association, candidate-gene association, and linkage analysis, have identified a multitude of candidate loci/genes. However, such studies have yielded diverse findings that are rarely reproduced, indicating that other genetic determinants have not been discovered yet. In this study, we carried out sib-pair analysis on seven multiplex families with ADHD from Saudi Arabia. We aimed to identify the candidate chromosomal regions and genes linked to the disease.

Patients and methods A total of 41 individuals from multiplex families were analyzed for shared regions of homozygosity. Genes within these regions were prioritized according to their potential relevance to ADHD.

Results We identified multiple genomic regions spanning different chromosomes to be shared among affected members of each family; these included chromosomes 3, 5, 6, 7, 8, 9, 10, 13, 17, and 18. We also found specific regions on chromosomes 8 and 17 to be shared between affected individuals from more than one family. Among the genes present in the regions reported here were involved in neurotransmission (GRM3, SIGMAR1, CHAT, and SLC18A3) and members of the HLA gene family (HLA-A, HLA-DPA1, and MICC).

Conclusion The candidate regions identified in this study highlight the genetic diversity of ADHD. Upon further investigation, these loci may reveal candidate genes that enclose variants associated with ADHD. Although most ADHD studies were conducted in other populations, our study provides insight from an understudied, ethnically interesting population

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Psychiatr Serv. 2017;68:681-88.

CARE PROVISION AND PRESCRIBING PRACTICES OF PHYSICIANS TREATING CHILDREN AND ADOLESCENTS WITH ADHD.

Patel A, Medhekar R, Ochoa-Perez M, et al.

Objective: Care provision and prescribing practices of physicians treating children with attention-deficit hyperactivity disorder (ADHD) were compared.

Methods: A retrospective cohort study was conducted with the 1995-2010 General Electric Centricity Electronic Medical Record database. The sample included children (#18 years) with newly diagnosed ADHD (ICD-9-CM code 314.XX) who received a prescription for a stimulant or atomoxetine. Identification of comorbid psychiatric disorders, duration from initial ADHD diagnosis to treatment, prescription of other psychotropicmedications, and follow-up care during the ten months after the ADHD treatment initiation were compared across provider type (primary care physicians [PCPs], child psychiatrists, and physicians with an unknown specialty). The associations between provider type and practice variations were further determined by multivariate logistic regression accounting for patient demographic characteristics, region, insurance type, and priormental health care utilizations.

Results: Of the 66,719 children identified, 75.8% were diagnosed by PCPs, 2.6% by child psychiatrists, and 21.6% by physicians whose specialty was unknown. Child psychiatrists were less likely than PCPs to initiate ADHD medication immediately after the diagnosis. However, once the ADHD treatment was initiated, they were more likely to prescribe psychotropic polytherapy even after analyses accounted for the comorbid psychiatric disorders identified. Only onethird of ADHD cases identified by both PCPs and child psychiatrists have met the HEDIS quality measure for ADHD medication-related follow-up visits.

Conclusions: Differences were found by physician type in care of children with ADHD. Additional studies are needed to understand clinical consequences of these differences and the implications for care coordination across provider specialties

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Psychol Addict Behav. 2017.

BETWEEN- AND WITHIN-PERSON ASSOCIATIONS BETWEEN NEGATIVE LIFE EVENTS AND ALCOHOL OUTCOMES IN ADOLESCENTS WITH ADHD.

King KM, Pedersen SL, Louie KT, et al.

Escalations in alcohol use during adolescence may be linked with exposure to negative life events, but most of this research has focused on between-person associations. Moreover, adolescents with attention-deficit hyperactivity disorder (ADHD) may be an especially vulnerable population, reporting more life events and alcohol involvement and may even be more sensitive to the effects of life events on alcohol outcomes compared with those without ADHD. We tested the between- and within-person effects of the number and perceptions of negative life events on the development of alcohol use outcomes from age 14 to 17 years in 259 adolescents with and without ADHD using generalized estimating equations. Between-person differences in exposure to negative life events across adolescence, but not the perception of those events, were associated with a higher likelihood of alcohol use and drunkenness at age 17 years. Within-person differences in life events were associated with alcohol use above and beyond that predicted by an adolescents' typical trajectory over time. Parent- and teacher-reported ADHD symptoms were associated with more negative perceptions of life events and with greater alcohol use and drunkenness at age 17 years, but symptoms did not moderate the life event-alcohol association. Interventions should consider the variables that produce vulnerability to life events as well as the immediate impact of life events. That the accumulation of life events, rather than their perceived negativity, was associated with alcohol outcomes indicates that interventions targeting the reduction of negative events, rather than emotional response, may be more protective against alcohol use in adolescence

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Res Dev Disabil. 2017 Feb;61:108-15.

COGNITIVE PROFILES OF ADULTS WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDER AND THOSE WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER BASED ON THE WAIS-III.

Kanai C, Hashimoto R, Itahashi T, et al.

The cognitive profile differences between adult patients with autism spectrum disorder (ASD) and those with attention-deficit/hyperactivity disorder (ADHD) are not well characterized. We examined the cognitive profiles of adults having either ASD (n=120) or ADHD (n=76) with no intellectual disabilities (IQ>/=70) using the Wechsler Intelligence Scale III (WAIS-III). Verbal Intelligence (VIQ) - Performance Intelligence (PIQ) difference discrepancies were detected between the two groups. Information subtest scores of the Verbal Comprehension index and Arithmetic and Digit Span subtests of the Freedom from Distractibility index were significantly higher in ASD than in ADHD, while the Picture Completion subtest was significantly lower in ASD. To our knowledge, this is the first study to evaluate the difference in the cognitive profiles of adults with ASD and those with ADHD based on the WAIS III with a large number of participants

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Taiwan J Obstet Gynecol. 2016 Dec;55:856-60.

MOLECULAR CYTOGENETIC CHARACTERIZATION OF MOSAICISM FOR A SMALL SUPERNUMERARY MARKER CHROMOSOME DERIVED FROM CHROMOSOME 8 OR R(8)(::P11.22-->Q11.21::) IN AN 18-YEAR-OLD FEMALE WITH SHORT STATURE, OBESITY, ATTENTION DEFICIT HYPERACTIVITY DISORDER, AND INTELLECTUAL DISABILITY.

Chen CP, Lin SP, Chern SR, et al.

OBJECTIVE: We present molecular cytogenetic characterization of mosaicism for a small supernumerary marker chromosome (sSMC) derived from chromosome 8.

MATERIALS AND METHODS: An 18-year-old female presented with short stature, obesity, developmental delay, speech delay, dyslexia, attention deficit hyperactivity disorder, and intellectual disability. Cytogenetic analysis of the peripheral blood revealed a karyotype of 47,XX,+mar[22]/46,XX[18]. Array comparative genomic hybridization and metaphase fluorescence in situ hybridization analyses were performed on the peripheral blood to determine the origin and mosaicism of the sSMC, and quantitative fluorescent polymerase chain reaction was used to exclude uniparental disomy.

RESULTS: Array comparative genomic hybridization analysis of the blood revealed a result of arr 8p11.22q11.21 (39,136,065-49,725,726)×2.80 (Log2 ratio=0.49), consistent with 70-80% mosaicism, encompassing 33 OMIM genes including GOLGA7, AGPAT6, NKX6-3, KAT6A, and FNTA. The sSMC(8) was r(8)(::p11.22→q11.21::). Metaphase fluorescence in situ hybridization analysis using the probes of RP11-754D24 (8p11.21) and RP11-769N21 (8q11.21) showed the sSMC(8) in 12/27 of cultured lymphocytes. Quantitative fluorescent polymerase chain reaction analysis excluded uniparental disomy 8.

CONCLUSION: Mosaic sSMC(8) derived from r(8)(::p11.22→q11.21::) can be associated with obesity, intellectual disability, and attention deficit hyperactivity disorder

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Trends in Psychiatry and Psychotherapy. 2017;39:65-76.

COMPUTERIZED COGNITIVE TRAINING IN CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER AS ADD-ON TREATMENT TO STIMULANTS: FEASIBILITY STUDY AND PROTOCOL DESCRIPTION.

Rosa VO, Schmitz M, Moreira-Maia CR, et al.

Background: Cognitive training has received increasing attention as a non-pharmacological approach for the treatment of attention deficit/hyperactivity disorder (ADHD) in children and adolescents. Few studies have assessed cognitive training as add-on treatment to medication in randomized placebo controlled trials. The purpose of this preliminary study was to explore the feasibility of implementing a computerized cognitive training program for ADHD in our environment, describe its main characteristics and potential efficacy in a small pilot study.

Methods: Six ADHD patients aged 10-12-years old receiving stimulants and presenting residual symptoms were enrolled in a randomized clinical trial to either a standard cognitive training program or a controlled

placebo condition for 12 weeks. The primary outcome was core ADHD symptoms measured using the Swanson, Nolan and Pelham Questionnaire (SNAP-IV scale).
Results: We faced higher resistance than expected to patient enrollment due to logistic issues to attend face-to-face sessions in the hospital and to fill the requirement of medication status and absence of some comorbidities. Both groups showed decrease in parent reported ADHD symptoms without statistical difference between them. In addition, improvements on neuropsychological tests were observed in both groups - mainly on trained tasks.
Conclusions: This protocol revealed the need for new strategies to better assess the effectiveness of cognitive training such as the need to implement the intervention in a school environment to have an assessment with more external validity. Given the small sample size of this pilot study, definitive conclusions on the effects of cognitive training as add-on treatment to stimulants would be premature.
Clinical Trial Registration Number: NCT02184598

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Zh Nevrologii Psihiatrii im S S Korsakova. 2017;117:39-45.

PHARMACOTHERAPY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN: THE RESULTS OF A MULTICENTER DOUBLE-BLIND PLACEBO-CONTROLLED STUDY OF HOPANTENIC ACID.

Zavadenko NN, Suvorinova NY, Vakula IN, et al.

AIM: To assess the efficacy and safety of hopantenic acid (pantogam) compared to placebo in the treatment of attention deficit hyperactivity disorder (ADHD) in children, aged from 6 to 12 years, during 4 month in the prospective multicenter comparative double-blind placebo-controlled study in parallel groups.
MATERIAL AND METHODS: One hundred patients enrolled in the safety assessment population were stratified into two equal pantogam and placebo groups. Eighty-nine patients who completed the study in according to the protocol were included in the efficacy assessment group: 45 in the pantogam group and 44 in the placebo group. Pantogam was administered in tablets (250 mg) in the therapeutic dose 30 mg/kg of body mass, divided into 2 doses, during 4 month. Patient's state was assessed by the total score on ADHD-DSM-IV, CGI-S WFIRS-P and results of the Toulouse-Piéron test for sustained attention.
RESULTS AND CONCLUSION: There was a trend towards an increase in the percentage of patients with positive changes (a decrease in the total ADHD-DSM-IV by ≥25%) in the end of the 3rd and 4th month in the pantogam group (treatment response was 66.7 and 68.9%, respectively) compared to the placebo group (treatment response was 52.3 and 61.4%, respectively). A significant decrease in disease severity assessed by the CGI-S was noted in the pantogam group compared to the placebo group. After 4 month of treatment with pantogam, the severity of functional disturbances was reduced by 4 out of 6 WFIRS-P domains: Family, School and learning, Child's self-concept and Risky activities. Pantogam improved the measures of sustained attention (accuracy and speed) in the Toulouse-Piéron test. The drug used in mean daily dose 30 mg/kg during 4 month had a favorable safety profile which did not differ from that of placebo

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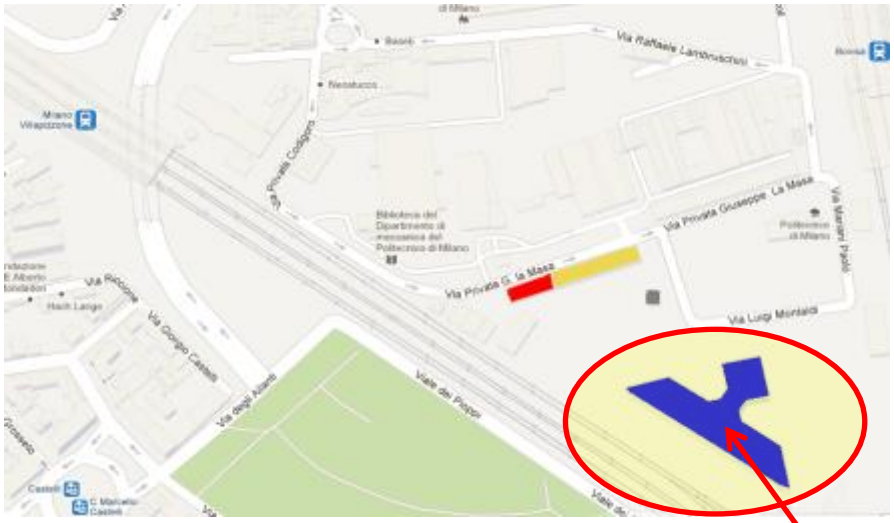

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI IRCCS

L'IRCCS – Istituto di Ricerche Farmacologiche Mario Negri si trova a Milano in zona Bovisa nelle vicinanze del Campus Politecnico (Ingegneria) e della Triennale Bovisa.
E' facilmente raggiungibile con il passante ferroviario, scendendo alle fermate di Bovisa (FNM) o Villapizzone (FS).
Se fermate a Bovisa ricordatevi di scendere le scale che si trovano sul lato destro della stazione.

Con il patrocinio della:

SINPIA
Società Italiana di Neuropsichiatria dell'Infanzia e dell'Adolescenza

Segreteria scientifica:
M. Antonella Costantino – Direttore UONPIA*
Segreteria organizzativa:
Jessica Babboni – Centro ADHD – UONPIA*

* Fondazione IRCCS Ca' Granda – Osp. Maggiore Policlinico – Milano

La partecipazione è gratuita ed è stato richiesto l'accreditamento ECM (Regione Lombardia) per le seguenti figure professionali: medici, psicologi, educatori professionali, terapisti della neuro e psicomotricità dell'età evolutiva, assistenti sanitari, infermieri ed infermieri pediatrici, tecnici della riabilitazione pediatrica, farmacisti, fisioterapisti, logopedisti.
Per l'iscrizione al corso è necessario accedere e registrarsi a TOM attraverso il sito:
https://tom.policlinico.mi.it

MEETING

FONDAZIONE IRCCS CA' GRANDA
OSPEDALE MAGGIORE POLICLINICO

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI IRCCS

ASST
SPEDALI CIVILI BRESCIA

Audit clinico nell'ambito del Progetto ADHD lombardo: le azioni migliorative

Milano, 27 settembre, 2017
Ore 9.30-18.00 - AULA GUASTI

IRCCS
Istituto di Ricerche Farmacologiche Mario Negri
Via G. La Masa 19 - 20156 Milano

Sistema Socio Sanitario Regione Lombardia ASST Cremona

Sistema Socio Sanitario Regione Lombardia ASST Lecco

Regione Lombardia ASST Santi Paolo e Carlo

PRESENTAZIONE

L'Audit Clinico è l'iniziativa condotta da clinici, che si pone l'obiettivo di migliorare la qualità e gli outcomes dell'assistenza attraverso una revisione strutturata fra pari, per mezzo della quale i clinici esaminano la propria attività e i propri risultati in confronto a standard espliciti e la modificano se necessario, sottoponendo i risultati di tali modifiche a nuove verifiche.

Il nuovo Progetto *Percorsi diagnostici-terapeutici in rete per l'ADHD* si è posto un nuovo importante obiettivo per rafforzare il lavoro e l'impegno degli ultimi anni: consolidare la struttura della rete curante per l'ADHD in Lombardia, ampliarla alla partecipazione di nuovi servizi e garantire risposte terapeutiche e interventi formativi e informativi omogenei ed appropriati in tutto il territorio regionale. Nello specifico si prefigge di implementare l'adesione dei Centri al monitoraggio strutturato e programmato dei percorsi di cura e diffondere modalità di audit clinico. I Centri ADHD nell'ambito del Progetto dovranno assumere un ruolo attivo all'interno della rete UONPIA per implementare e diffondere e coordinare gli obiettivi previsti a livello regionale e garantire un percorso di audit ad essi relativi.

Con questo Audit si cercherà di effettuare il passaggio dall'individuazione e analisi degli scostamenti rispetto agli standard condivisi, che è stata oggetto degli incontri precedenti, alla individuazione e condivisione di possibili azioni correttive.

L'incontro prevede pertanto un momento di sintesi degli audit precedenti (su trattamento farmacologico, su Parent Training e Teacher Training e sul Child training) a partire dal quale definire quali possano essere le azioni migliorative da apportare.

RELATORI

Daniele Arisi
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UONPIA IRRCS Mondino, Pavia
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Monica Saccani
UONPIA ASST SS Paolo e Carlo
Davide Villani
UONPIA, ASST di Lecco
Edda Zanetti
UONPIA ASST Spedali Civili di Brescia

Referenti dei Centri ADHD

Il Progetto: "Condivisione dei percorsi diagnostico-terapeutici per l'ADHD in Lombardia" è stato finanziato dalla Regione Lombardia con Decreto della Dg Welfare N. 1077 del 02 febbraio 2017. Il progetto coinvolge 18 Centri di Riferimento per l'ADHD e il Laboratorio per la Salute Materno Infantile dell'IRCCS - Istituto di Ricerche Farmacologiche Mario Negri. Coordinatore del Progetto è la UONPIA dell'ASST di Brescia.

PROGRAMMA

08:30 – 09:30 Registrazione

09:30 – 10:00
Dall'analisi degli scostamenti alle azioni migliorative
Laura Reale

10:00 – 11:30
TAVOLA ROTONDA CON DISCUSSIONE CON IL PUBBLICO:
CHILD TRAINING: CRITERI DI INDICAZIONE, PRIORITÀ ED ESCLUSIONE
*Coordina: **Ottaviano Martinelli** – Discussant: **Antonella Costantino***
*Presentano: **Centro ADHD ASST Rhodense e Referenti Centri ADHD***

11:30 – 13:00
TAVOLA ROTONDA CON DISCUSSIONE CON IL PUBBLICO:
CHILD TRAINING: VALUTAZIONE PRE E POST INTERVENTO
*Coordina: **Davide Villani** – Discussant: **Edda Zanetti***
*Presentano: **i Referenti dei Centri ADHD***

13:00- 14:00 Pausa pranzo

14:00- 15:00
TAVOLA ROTONDA CON DISCUSSIONE CON IL PUBBLICO:
LE AZIONI MIGLIORATIVE A PARTIRE DAGLI SCOSTAMENTI: REPORT DELL'AUDIT "FARMACOTERAPIA"
*Coordina: **Monica Saccani** – Discussant: **Maurizio Bonati***

15:00-16:00
TAVOLA ROTONDA CON DISCUSSIONE CON IL PUBBLICO:
LE AZIONI MIGLIORATIVE A PARTIRE DAGLI SCOSTAMENTI: REPORT DELL'AUDIT "PARENT TRAINING"
*Coordina: **Daniele Arisi** – Discussant: **Massimo Molteni***

16:00-17:00
TAVOLA ROTONDA CON DISCUSSIONE CON IL PUBBLICO:
LE AZIONI MIGLIORATIVE A PARTIRE DAGLI SCOSTAMENTI: REPORT DELL'AUDIT "TEACHER TRAINING"
*Coordina: **Gianluca Daffi** – Discussant: **Monica Saccani***

17:00-18:00
CONCLUSIONI
Umberto Balottin, Maurizio Bonati, Antonella Costantino, Ottaviano Martinelli, Massimo Molteni, Monica Saccani, Edda Zanetti, Daniele Arisi, Gianluca Daffi

Per ricevere la newsletter iscriversi al seguente indirizzo:
http://www.adhd.marionegri.it/index.php/newsletter/iscrizione-newsletter

Iniziativa nell'ambito del Progetto di Neuropsichiatria dell'Infanzia e dell'Adolescenza
(Delibera n. 406 - 2014 del 04/06/2014 Progetti NPI)
Il Progetto è realizzato con il contributo, parziale, della Regione Lombardia
(in attuazione della D.G. sanità n. 3798 del 08/05/2014, n. 778 del 05/02/2015, n. 5954 del 05/12/2016 e N. 1077 del 02/02/2017) Capofila Progetto: UONPIA Azienda Ospedaliera "Spedali Civili di Brescia" "*Percorsi diagnostico-terapeutici per l'ADHD*".

IRCCS ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI
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