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Ensuring comprehensive treatment for children with attention problems

Report¹

Committee on Social Affairs, Health and Sustainable Development

Rapporteur: Ms Sílvia Eloïsa BONET PEROT, Andorra, Socialist Group

Summary

Attention deficit hyperactivity disorder (ADHD) is one of the most commonly diagnosed childhood disorders worldwide. Ensuring an accurate diagnosis and appropriate treatment of ADHD is essential for affected children and their families, but remains a challenge.

The Council of Europe member States should address the risk factors leading to misdiagnosis of ADHD, including by ensuring adequate training of health-care professionals and full compliance with diagnostic procedures. They should have a comprehensive approach to ADHD treatment, give priority to behavioural interventions and academic support for children with ADHD, and ensure that psycho-stimulants are used as a measure of last resort, and always in combination with other treatments.

The Committee on Social Affairs, Health and Sustainable Development further recommends carrying out and financing research on environmental factors involved with ADHD, as well as on short- and long-term outcomes of different treatment options, promoting the introduction of early identification programmes and increasing awareness of ADHD.

1. Reference to committee: [Doc.13055](#), Reference 3927 of 21 January 2013.



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A. Draft resolution²

1. In 2000, concerned about the increasing numbers of children being diagnosed with attention deficit hyperactivity disorder (ADHD) and treated with psycho-stimulant drugs, the Parliamentary Assembly adopted [Recommendation 1562 \(2002\)](#) on controlling the diagnosis and treatment of hyperactive children in Europe. Today, ADHD is one of the most commonly diagnosed childhood disorders worldwide, affecting 3.3 million children and adolescents in the European Union alone.
2. The last decade was marked by a significant increase both in the incidence of ADHD and the use of psycho-stimulants to treat it. While there are different scenarios explaining this increase, including possible over-diagnosis, changing environmental factors, growing awareness of ADHD and over-reliance on medication, attention is also drawn to possible under-diagnosis and undertreatment due to the inadequate training of care providers, inequalities in access to care as well as stigma and misconceptions surrounding ADHD.
3. ADHD is a complex disorder, which makes its assessment equally complex, thereby increasing the risk of misdiagnosis. In addition, two different sets of criteria continue to be applied for its diagnosis, one adopted by the American Psychiatric Association, the other, more stringent, by the World Health Organization (WHO), with the gap between the two sets of criteria still growing.
4. Research on treatment of ADHD has mostly focused on pharmacological interventions, without enough consideration of other treatment options, in particular psychosocial/behavioural interventions aimed at teaching skills to improve the behaviour of children with ADHD. Moreover, research on long-term outcomes associated with different treatment options, including adverse effects of long-term stimulant use on children, is almost inexistent. Similarly, compared to research on genetic and biological factors in the aetiology of ADHD, research on environmental aspects is less robust.
5. Today, there is an increasing recognition that ADHD requires a comprehensive multimodal treatment approach combining medical, behavioural and educational interventions, including parent and teacher education about diagnosis and treatment, behaviour management techniques for the child, the family and the teachers, medication and school programming and support. Multimodal interventions not only focus on ADHD symptoms but also target the associated conditions, such as school difficulties, family dysfunction, and low self-esteem as well as co-morbid disorders.
6. The Assembly therefore calls on the Council of Europe member States to:
 - 6.1. address the risk factors for misdiagnosis of ADHD, in particular by ensuring:
 - 6.1.1. adequate training of health-care professionals on the diagnosis and appropriate management of ADHD;
 - 6.1.2. full compliance with diagnostic procedures provided for in national and international guidelines;
 - 6.2. follow a comprehensive approach for the treatment of ADHD and ensure that psycho-stimulant drugs are used as a measure of last resort – and always in combination with other treatments – with priority given to behavioural interventions and academic support;
 - 6.3. carry out and/or finance research on environmental factors involved with ADHD and promote the introduction of early identification and intervention programmes, as well as independent and well-designed studies on ADHD treatment, with a focus on the following priority areas:
 - 6.3.1. short- and long-term outcomes of psycho-social treatments, as well as of other non-pharmacological treatments;
 - 6.3.2. long-term outcomes associated with psycho-stimulant medication, in particular long-term adverse effects of drugs on children;
 - 6.4. identify the underlying reasons for discrepancies in ADHD prevalence and treatment, and where relevant, tackle possible over- and under-diagnosis and undertreatment in this context;
 - 6.5. increase informed awareness and recognition of ADHD, in particular by educating parents and teachers about its diagnosis and treatment.

2. Draft resolution adopted unanimously by the committee on 2 December 2014.

7. The Assembly also invites WHO to extensively disseminate the upcoming new edition of the International Classification of Diseases and use this as an opportunity to increase adherence to the proposed stricter criteria for the diagnosis of ADHD, based upon the latest scientific knowledge.

B. Explanatory memorandum by Ms Bonet Perot, rapporteur

1. Introduction

1. All children sometimes have difficulty concentrating, forget instructions, interrupt others or are agitated. How many parents remember saying “You’re not paying attention!”, “Stop fidgeting!”, “Don’t interrupt!” to their children? But when the “usual” difficulty in staying focused, paying attention or controlling behaviour turns into a damaging one and starts affecting their children’s lives, with problems and distress at school and at home, including in their relations with their peers, parents may find themselves asking a worrying question: can this be “attention deficit hyperactivity disorder” (ADHD) and if so, will I have to medicate my child?

2. In 2000, concerned about the increasing numbers of children being diagnosed as suffering from ADHD and treated with psycho-stimulant drugs, the Parliamentary Assembly initiated a report which led to the adoption of its [Recommendation 1562 \(2002\)](#) on controlling the diagnosis and treatment of hyperactive children in Europe. Noting in particular that two different sets of criteria were applied in diagnosing ADHD, and that the long-term effects of psycho-stimulant medication used to treat it were uncertain, the Assembly invited member States to co-ordinate and step up research into the prevalence, causes, diagnosis and treatment of ADHD, and in particular into the long-term effects of psycho-stimulants, as well as into the possible social, educational and cultural factors involved.

3. Today, more than ten years after the adoption of [Recommendation 1562 \(2002\)](#), ADHD is one of the most commonly diagnosed childhood disorders, affecting 5.29% of children and adolescents worldwide,³ which represents 3.3 million children and adolescents in the European Union alone.⁴ The significant increase in the incidence of ADHD in the last decade was accompanied by an increase in the use of psycho-stimulants to treat the disorder.⁵ The United Nations Committee on the Rights of the Child has expressed concern with regard to the growing number of children who are being diagnosed with ADHD or related conditions, leading to an increase in the prescription of psycho-stimulant drugs. The Committee recommended improving the accuracy of the diagnosis of children with such problems and taking initiatives to provide children diagnosed with ADHD, as well as their parents and teachers, with access to a wide range of psychological, educational and social measures and treatments.⁶

4. While some experts argue that the increase in the number of children diagnosed with ADHD results from the fact that medical practitioners have become more familiar with the condition, and families and teachers more aware of it, others criticise a diagnostic inflation resulting from a widely inclusive definition of ADHD (namely diagnostic criteria being sufficiently general or vague) which allows virtually anybody with persistent unwanted behaviours to be classified as having ADHD.⁷ It is also suggested that changing environmental factors, including excessive attentional demands of the education system, growing social-family pressure for academic achievement or even exposure to electronic media,⁸ may play a role in the increase in the number of children suffering from ADHD.

5. Paradoxically, there is growing concern regarding over-diagnosis of ADHD, while at the same time some advocacy groups and experts worry a great deal about under-diagnosis, pointing out that there remain many people affected by ADHD who do not receive appropriate diagnosis and support, due to various reasons, including the inadequate education of care providers, inequalities in access to care as well as stigma and misconceptions surrounding ADHD.

3. Polanczyk et al., “The worldwide prevalence of ADHD: a systematic review and metaregression analysis”, *American Journal of Psychiatry*, 2007, 164: 942-8.

4. Wittchen et al., “The size and burden of mental disorders and other disorders of the brain in Europe 2010”, *European Neuropsychopharmacology*, 2011, 21:655-679.

5. Between 2000 and 2012, the use of stimulants quadrupled in the United Kingdom and in the Netherlands. Similar trends were observed in other European countries but to a lesser extent.

6. Concluding observations concerning Norway (2010), Denmark and Finland (2011), Iceland (2012) and Australia (2012).

7. Daniel P. Hallahan, James M. Kauffman and Paige C. Pullen, “Exceptional Learners: An Introduction to Special Education”, Boston, MA: Pearson/Allyn & Bacon, 2009.

8. “[There is an] increasingly stark contrast between the regimented and demanding school environment and the highly stimulating digital world, where young people spend their time outside school. Digital life, with its vivid gaming and exciting social media, is a world of immediate gratification where practically any desire or fantasy can be realised in the blink of an eye. By comparison, school would seem even duller to a novelty-seeking kid living in the early 21st century than in previous decades, and the comparatively boring school environment might accentuate student’s inattentive behaviour.” “A natural fix for ADHD”, Richard A. Friedman, *New York Times*, Sunday Review, 31 October 2014.

6. As for the increase in the use of psycho-stimulants, three potential scenarios may explain it: misdiagnosis of ADHD (including over-diagnosis), an actual increase in the number of children with ADHD and insufficient use of treatment alternatives. In relation to this latter point, there may indeed be a predominant tendency to rely on medication as a “quick fix”, to the detriment of non-pharmacological methods such as behavioural therapy. Hence, in addition to concerns with regard to possible over- and under-treatment – likely to result from possible over- and under-diagnosis –, there is a fear that psycho-stimulants are excessively used on children.

2. Changing definition (diagnostic criteria) of ADHD

7. In its [Recommendation 1562 \(2002\)](#), concerned that two different sets of criteria were applied in diagnosing ADHD – one adopted by the American Psychiatric Association, the other, more stringent, by the World Health Organization (WHO) – the Assembly had invited the two organisations to re-examine the basis of their diagnostic criteria with a view to clarifying and harmonising it.

2.1. Diagnostic and Statistical Manual of Mental Disorders (DSM)

8. According to the fourth edition of the DSM (DSM-IV) of the American Psychiatric Association, ADHD is characterised by persistent and impairing symptoms of inattention and/or hyperactivity-impulsivity that must be maladaptive and inconsistent with the developmental age of the child. For a positive diagnosis, at least six symptoms have to be present in either the “inattention” or the “hyperactive-impulsive” category. The symptoms should cause significant impairment and must occur in more than one setting (school, community, home, social events, etc.) and must have persisted for at least six months. Additionally, the diagnosis is only made if at least some of the behavioural symptoms were present before the age of seven.

9. The definition of ADHD has been updated in the fifth edition of the DSM (DSM-5), which was released in May 2013. While the diagnostic criteria have not changed from DSM-IV, examples have been included to illustrate the types of behaviour children, older adolescents and adults with ADHD might exhibit (does not appear to listen, struggles to follow instructions, has difficulty with organisation, fidgets with hands or feet or squirms in the chair, talks excessively, etc.). Moreover, the onset criterion has been relaxed from “symptoms that caused impairment were present before the age of 7” to “several inattentive or hyperactive-impulsive symptoms were present prior to age 12”. Some experts predict that the impact of DSM-5 on the diagnosis of ADHD is not likely to be great, as the fundamental conceptualisation of the disorder has not been changed. However, others are concerned that changes in DSM may increase ADHD diagnosis among individuals who display the symptoms of the disorder but who only manifest minor functional impairment.

2.2. International Classification of Diseases (ICD)

10. In its ICD-10, WHO classifies ADHD under a different terminology – hyperkinetic disorders – for which it lists similar but stricter criteria. According to ICD-10, hyperkinetic disorders are characterised by an early onset (usually in the first five years of life), lack of persistence in activities that require cognitive involvement, and a tendency to move from one activity to another without completing any of them, together with disorganised, ill-regulated, and excessive activity. Hyperkinetic children are often reckless and impulsive, prone to accidents, and often find themselves in disciplinary trouble because of unthinking breaches of rules rather than deliberate defiance. Their relationships with adults are often socially disinhibited, with a lack of “normal” caution and reserve. They are unpopular with other children and may become isolated. Impairment of cognitive functions is common, and specific delays in motor and language development are disproportionately frequent. Secondary complications include unsocial behaviour and low self-esteem.

11. WHO is currently working on the 11th revision of the ICD. While the process will continue until 2017, it should already be noted that, with regard to ADHD, the current draft of ICD-11 proposes a shift both in terminology and in content. Indeed, it is proposed to replace the term “hyperkinetic disorders” by “attention deficit disorders” under which ADHD and the attention deficit disorder without hyperactivity are considered distinct conditions. According to the proposed definition, attention deficit disorders are characterised by persistent, significant difficulty sustaining attention on tasks that do not provide a high level of stimulation or frequent reward that begins during childhood or adolescence and is inconsistent with the individual’s developmental level. Symptoms must be present to a degree that significantly interferes with personal, family, social, educational, occupational or other important areas of functioning and be evident in more than one situation (e.g. home, school, clinic, work). This proposed new definition clearly sets stricter criteria compared to the so-called hyperkinetic disorders.

12. According to the current draft of ICD-11, ADHD is a type of attention deficit disorder characterised by a variable mixture of persistent inattention, hyperactivity and impulsivity of a degree that significantly deviates from what would be expected given the individual's general developmental level. In the case of attention deficit disorder without hyperactivity, the persistent and significant difficulty sustaining attention is not accompanied by significant impulsivity or hyperactivity. Symptoms may include difficulties in concentrating, distractibility, and problems in organisation, often losing things and failing to pay attention to details of tasks undertaken.

2.3. Increasing gap between the DSM and the ICD

13. In view of the explanations above concerning DSM-5 (where the definition of ADHD remained practically the same) and the future ICD-11 (where the proposed definition is even more stringent than ICD-10, knowing that the latter was based already on stricter criteria than DSM-IV), it seems that the gap between the DSM and the ICD diagnostic criteria will be even greater in the coming years. While this missed opportunity for harmonising definitions⁹ – which the Assembly had desired in 2002 (see paragraph 7 above) – is to be regretted, WHO should not be expected, for harmonisation's sake, to align its upcoming definition of ADHD with that of the American Psychiatric Association. In any case, the Assembly should welcome WHO's thorough work in reconsidering the conception of ADHD with a view to clarifying the diagnostic criteria and invite WHO to use the ICD's upcoming new edition as an opportunity to increase adherence to the proposed stricter criteria for the diagnosis of ADHD, based upon the latest scientific knowledge.

3. Diagnosis of ADHD

14. According to WHO, hyperkinetic disorders are complex disorders where the diagnosis may too often be made with insufficient evidence. The symptoms associated with hyperkinetic disorders, including ADHD, are also seen with other disorders and sometimes as a part of normal developmental stages, or in response to environmental stress that can be remediated with psycho-social interventions, or sometimes in highly intelligent individuals. A focus only on the symptoms without an appropriate diagnostic evaluation may lead to misdiagnosis and inappropriate treatment.

3.1. Clinical assessment

15. The diagnosis of ADHD is based on clinical assessment which should focus not only on the symptoms associated with ADHD, but also on the nature, causes and outcome of these symptoms, including the risk and protective factors within the environment, such as the influence of the family, school and community. In this context, the assessment process should include a physical examination, a clinical interview at least with the parent(s), teacher(s) and the child, the use of child behaviour rating scales, a review of a child's complete school and health records, psychological testing, and behavioural observations of the child as well as parent and child interactions.¹⁰

16. A physical examination is needed to rule out other medical problems that may cause or relate to ADHD symptomatology, such as allergies, iron deficiency or anaemia, as well as hearing and vision impairments. Psychological testing looks to see if there are any other psychological disorders that could better account for the problems, knowing that as many as 75% of children with ADHD meet criteria for another behavioural disorder, with symptom overlap, such as anxiety, learning or bipolar disorder, depression, autism, and oppositional behaviour.¹¹ A clinical interview at least with the parent(s) and teacher(s), as well as the child is a critical part of the assessment because it provides information about a child's physical and psychological characteristics as well as his or her home life and how he or she interacts with peers.

17. A particular emphasis should be put on children's participation in the diagnosis process, as its consequences are likely to have a significant effect on their lives. In this context, it should be recalled that, according to Article 12 of the United Nations Convention on the Rights of the Child, children shall be assured

9. It should be noted that the draft ICD-11 proposes to replace the term "hyperkinetic disorders" with "attention deficit disorders" which, if adopted, would harmonise the terminology used.

10. Shanel M. Bryant (2005), "Attention Deficit Hyperactivity Disorder (ADHD) and Ethnicity: A Literature Review", *McNair Scholars Journal*: Vol. 9: Iss. 1, Article 5.

11. Being gifted (highly intelligent) can also cause symptoms such as disruptive behaviour (related to boredom) which can be mistaken for ADHD, in particular in boys.

the right to express their views freely in all matters affecting them. Should there be a positive diagnosis, children should also be involved in the decision-making process concerning their care and treatment, in particular with a view to ensuring adherence.¹²

18. Over the last few years, several national and international medical societies and organisations, representing and targeting various groups of health-care professionals, have published guidance on diagnosis and/or treatment of ADHD. A recent study reviewing 13 guidelines on diagnosis and/or management of ADHD from 10 medical associations highlight consensus and differences between recommended practices throughout the lifespan and in different geographical areas. The study revealed that all guidelines agreed that the diagnosis of ADHD was based on a full clinical interview, which included a mental state examination, assessments of impairment, development, co-morbidity and family history as well as a physical examination. All guidelines for children recommended a family interview and agreed that the clinical interview remained the gold standard of assessment of ADHD.¹³

3.2. Risk factors for misdiagnosis of ADHD

19. Despite this large consensus on the way in which ADHD should be diagnosed, views largely differ on the accuracy of the diagnosis finally made. Indeed, it is not uncommon to hear of misdiagnosis of ADHD, wherein a child is indicated as having ADHD when he/she does not (designated as a false positive), or as not having ADHD when he/she does (designated as a false negative). In connection to this, some argue that rising ADHD prevalence rates reflect many false positives (over-diagnosis) and others claim that many children with ADHD do not receive appropriate diagnosis (under-diagnosis). While it is difficult to establish whether or not there is a phenomenon of over- and/or under-diagnosis, the risk factors that may lead to misdiagnosis of ADHD (which in turn can lead to over- and/or under-diagnosis) are relatively identifiable.

20. First, as mentioned above, other psychological disorders can mimic ADHD type symptoms or can – and often do – exist concurrently with it (co-morbidity). Therefore, it needs to be established whether the symptoms and impairments in functioning are attributable to ADHD alone, or whether ADHD exists concurrently with one or more diagnosable issue(s). This is why assessment of ADHD should preferably be left to specialists who are well acquainted with all the disorders that share characteristics of ADHD and in any case they should be involved in the differential diagnosis process. However, it should be borne in mind that many children with ADHD receive their initial evaluation in a primary health-care setting. In relation to this, a recent study found that in many European countries, professional training for health-care professionals was lacking any specific training on ADHD, or only included ADHD as part of a general overview of neuropsychiatric dysfunctions.¹⁴

21. Some studies suggest that although documented in national and international guidelines or other literature, the diagnostic procedures might not always be adhered to in practice.¹⁵ Such non-compliance should be avoided, since diagnostic procedures are an important tool for guaranteeing an accurate diagnosis of ADHD.

22. There might also be pressure to make the diagnosis from those who may not have a comprehensive understanding of the disorder, including parents and school personnel. Indeed, given that ADHD tends to affect functioning most strongly at school, teachers may be the first to recognise a child's hyperactive and inattentive symptoms and may point it out to parents or consult the school psychologist. For example, knowing that children tend to develop very fast within a year, younger children in a classroom (who may be up to a year younger than their classmates) can be mistakenly identified as having ADHD. Therefore, while having a teacher involved in the assessment of ADHD is vital, doctors and psychologists may be influenced by a teacher's subjectivity and preconceived notion about the child and this may result in false positives.

12. Medication non-adherence seems to be common in children and adolescents with ADHD, L.D. Adler and A.A. Nierenberg, "Review of medication adherence in children and adults with ADHD", *Postgraduate Medicine*, 2010;122(1):184-91.

13. M. Seixas, M. Weiss and U. Muller, "Systemic review of national and international guidelines on attention-deficit hyperactivity disorder", *Journal of Psychopharmacology*, June 2012; 26(6), pp. 753-65.

14. S. Young and M. Fitzgerald, "ADHD: making the invisible visible, An Expert White Paper on attention-deficit hyperactivity disorder (ADHD): policy solutions to address the societal impact, costs and long-term outcomes, in support of affected individuals", Postma MJ, April 2013.

15. C. Travell and J. Visser, "ADHD does bad stuff to you: young people's and parents' experiences and perceptions of Attention Deficit Hyperactivity Disorder (ADHD)", *Emotional and Behavioural Difficulties*, Vol. 11, No. 3, September 2006, pp. 205-216.

23. Within the same country, important discrepancies in ADHD prevalence between different groups (according to their gender, race, socio-economic background, etc.) may be an indication of over- or under-diagnosis, if such discrepancies are not due to real differences among the groups, but are rather based on bias. A recent study indicates that the ratio of girls to boys with ADHD ranges from 1:3 to 1:16 in different countries across Europe. This discrepancy may indicate that, in some countries, more boys than girls with ADHD are referred for clinical evaluation, which may mean that girls are overlooked. However, it should also be noted that compared with boys, girls more frequently present inattentive and internalising symptoms, rather than disruptive behaviour or problems in school. Hence, this presentation may be more difficult to identify and can lead to a gender-based referral bias (and under-diagnosis of girls with ADHD).¹⁶

24. Some important differences in ADHD diagnostic and treatment rates within countries may also be explained by regional inequalities in terms of services, the latter being frequently concentrated in the capital and provincial capitals with little or nothing available in the provinces, which can lead to an under-diagnosis phenomenon in rural areas.

4. Treatment options for ADHD

25. Currently, treatment for ADHD has two important components: pharmacological treatments and non-pharmacological treatments.

4.1. Pharmacological treatments

26. The specific class of medication most commonly prescribed for ADHD is psycho-stimulants. These include methylphenidate and certain amphetamines. Psycho-stimulants help the child to focus its attention, while reducing hyperactivity and impulsiveness (they are usually more effective in doing the latter than the former). Non-stimulant medication such as Atomoxetine is also used for the treatment of ADHD.

27. Short-term studies have demonstrated the effectiveness of psycho-stimulants in decreasing the core symptoms of ADHD, although between 10% and 30% of children are not helped by the medication. The benefits reported are more acceptable behaviour at school and at home, improved family life and greater engagement with academic work. However, stimulant treatment is limited in a number of ways. First, the therapeutic effects of the stimulants are symptomatic, disappearing when the drug is no longer administered, which implies a need to prescribe the medication to children for long or indefinite periods of time.¹⁷ In addition, there is little evidence to suggest that the effects observed over the relatively short-term are maintained throughout longer periods of impairment. Similarly, little is known about the long-term outcomes associated with stimulant medication. While we know that children with ADHD can face negative life outcomes such as job failure, fatal road accidents, criminal involvement and unwanted pregnancy, we do not know whether psycho-stimulants decrease those risks.¹⁸

28. Last but not least, as with all medications, psycho-stimulants are associated with a range of adverse effects such as headaches, dizziness, insomnia, epilepsy and seizures, psychiatric effects (moods swings, anxiety, psychotic symptoms) and gastroenterological effects, including loss of appetite and overlap with possible growth delay. There are also concerns with regard to the risk of substance abuse resulting from the use of stimulants, as well as potential for drug diversion (where the medication is passed on to others for non-prescription uses).

29. A 2010 study concerning the adverse effects of medications for ADHD, based on an extensive research review, concluded that some of the effects of medication examined appeared to be minimal in impact or difficult to distinguish between treated or untreated populations. However, several areas required further study to allow a more precise understanding of risk associated with medication.¹⁹ With regard to substance abuse, while some studies have shown that children with ADHD in drug treatment are less likely to have substance

16. See footnote 14.

17. A. Miranda, S. Jarque and S. Rosel, "Treatment of children with ADHD: Psycho-pedagogical program at school versus psycho-stimulant medication", *Psicothema* 2006, Vol. 18, No. 3, pp. 335-341.

18. A study from 2009 conducted in Australia found a lack of significant improvement in long-term social, emotional and academic functioning associated with the use of stimulant medication. While limitations of the study prevent any strong causal relationships from being identified, this result indicates that rigorous research into the area is strongly warranted. Raine ADHD Study on long-terms outcomes associated with stimulant medication in the treatment of ADHD in children, 2009.

19. J. Graham, T. Banaschewski, J. Buitelaar et al., European Guidelines Group, "European guidelines on managing adverse effects of medication for ADHD", *Eur Child Adolesc Psychiatry* 2011; 20: 17-37.

abuse disorders in adolescence and adulthood than those who have not been treated with a drug, others suggested that exposure to stimulants neither protected nor increased the risk of later substance use disorders.

4.2. Non-pharmacological treatments

30. A variety of non-pharmacological treatments are available to treat ADHD. These include in particular psychosocial treatments (also called behaviour therapy or behaviour modification), as well as other strategies such as cognitive therapy, neurofeedback, dietary changes and homeopathic medicines.

4.2.1. Psychosocial treatments

31. WHO underlines that a variety of treatments are available for ADHD and that medication, while effective with an appropriate diagnosis, is not a substitute for other possibly important interventions to lessen the child's or adolescent's associated problems in the family, social setting and school. Indeed, children with ADHD face problems in daily life that go well beyond their symptoms of inattentiveness, hyperactivity and impulsivity, including poor academic performance and behaviour at school, poor relationships with peers and siblings, failure to obey adult requests and poor relationships with their parents. Therefore, it is extremely important for them to learn the skills that will help them overcome these impairments, knowing also that ADHD could be a lifetime condition and that these skills will be useful throughout the children's lives. Psychosocial treatments for children with ADHD are designed precisely with the objective of teaching them those skills (for example children are taught how to adjust their verbal and non-verbal behaviour in their social interactions to respect rules of play, to concentrate and to control impulsivity).

32. Behaviour therapy is also designed for parents and teachers with a view to teaching them specific techniques and skills to be used in their daily interactions with children with ADHD, then resulting in an improvement in the children's behaviour (for example training programmes for parents).

33. Compared to drug treatment, there is less evidence to support any given psychosocial treatment for ADHD and the methodological standards for research into these treatments are less well established. Two recent Cochrane²⁰ reviews, one on parent training and another one on social skills training concluded that parent training might have a positive effect on the behaviour of children with ADHD (especially for pre-school children). It may also reduce parental stress and enhance parental confidence, but the evidence from this review was not considered strong enough to form a basis for clinical practice guidelines. As regards social skills training for children, there was little evidence to support or refute the training and a lack of non-biased data.²¹ The reviews emphasised that more trials and better methodological quality were needed to accurately assess the impact of these interventions on reducing ADHD symptoms.

4.2.2. Other strategies

34. Neuroscience-based interventions also show promise for ADHD. Indeed, there is a growing body of preliminary evidence that computer games focused on working memory and other cognitive capacities can reduce inattentiveness symptoms in young children with ADHD as well as enhance fluid intelligence (abstract thinking, problem solving) in typically developing pre-schoolers. Neurofeedback and cognitive therapy²² are also considered, but further evidence is required to guide their use. It is possible that such interventions will emerge as adjunctive, if not as possible alternatives to pharmacological treatment options.²³

35. Similarly, a study undertaking the analysis of the efficacy of dietary treatments (restricted elimination diets, artificial food colour exclusion and free fatty acid supplementation) showed small but significant reductions in ADHD symptoms, although further studies are needed to confirm these positive effects and to decide whether they can be recommended as part of ADHD treatment.

20. Cochrane is a global independent network of health practitioners, researchers, patient advocates and others.

21. A. Rothenberger and L.G. Rothenberger, "Updates on treatment of attention-deficit/hyperactivity disorder: facts, comments, and ethical considerations", *Current Treatment Options in Neurology*, December 2012;14(6):594-607.

22. In cognitive therapy, negative patterns of thought about the self and the world are challenged in order to alter unwanted behaviour patterns.

23. J.F. Leckman, "What's next for developmental psychiatry?", *World Psychiatry*, June 2013, Vol. 12 (2): 125-126.

4.3. The need for a comprehensive approach for the treatment of ADHD

36. Treatment of children with ADHD should be planned on an individual basis, taking into account the age of the child²⁴ and the severity of the core symptoms, the presence of other disorders and the preferences of the child as well as of the parents. Indeed, parents are the key decision-makers regarding their child's health care. In this context, while for some parents, the tolerability and safety of medication used to treat ADHD remains of concern and they thus have serious reservations about its use, others privilege this "quick fix" which improves the child's attitude and academic performance very rapidly, to the detriment of other methods, with a view to avoiding an increase in the child's isolation and suffering.

37. Under parent pressure, medical professionals may also be inclined to privilege medication and make insufficient use of alternative treatments, despite official guidelines indicating otherwise. Budgetary cuts to health expenses can be another element which puts pressure on professionals, who may tend to privilege the cheapest option, namely medication.²⁵ This can all lead to an over-reliance on medication (and in most cases, to rely only on medication) which should be avoided considering its limitations explained above. In this context, it should also be noted that medication is symptomatic, that it does not address the underlying causes of ADHD, nor does it give a child the chance to work on his/her difficult behaviour. Experience shows that children react very positively when it is explained to them that they can learn to control and correct their behaviour, and when they are given the opportunity to take things into their own hands. Therefore, medication should be used as a measure of last resort with priority given to behavioural interventions and academic support, and when medication is used, it should always be in combination with other treatments.

38. Indeed, there is today an increasing recognition of the relevance of a comprehensive approach to treating ADHD where treatment involves medical, behavioural and educational interventions. This comprehensive approach to treatment is called "multimodal" and consists of parent and teacher education about diagnosis and treatment, behaviour management techniques for the child, the family and the teachers, medication, and school programming and supports (the provision of a trained professional to help with homework and/or exams for example).²⁶ Multimodal interventions not only focus on ADHD symptoms but also target the associated conditions, such as school difficulties, family dysfunction and low self-esteem as well as co-morbid disorders.

4.4. Under-treatment of children with ADHD?

39. Although under-diagnosis (see point 3.2 above) and under-treatment are closely linked, the latter may also exist in cases where an accurate diagnosis has been made. Indeed, ADHD-Europe reports that in some countries immigrant children receive less treatment despite similar or higher ADHD symptom rates or are less likely to receive any pharmacological or other treatment for ADHD. Similarly, socio-economic background can also be a risk factor for under-treatment, knowing that in some countries children from poorer backgrounds appear more likely to be prescribed with medication only (which is less expensive than psycho-social interventions).

5. Environmental factors for ADHD and prevention

40. ADHD is currently considered a disorder with multiple causes, including a genetic component, a neurobiological basis and environmental factors. Compared with the current data supporting the roles of genetic and biological factors in the aetiology of ADHD, research on environmental, including social and interpersonal aspects is less robust. Yet, understanding the risk and protective factors within the environment, such as the influence of the family (for example family conflict, lack of boundaries, parental psychopathology, high parental expectation on academic achievement), school (for example a rigid educational system) and other social elements (the media and exposure to electronic media), as well as their interactions with child characteristics, is extremely important for both diagnosis and treatment, as well as for prevention purposes.

41. Environmental factors also include pre- and perinatal complications such as intra-uterine exposure to tobacco, prematurity and low birth weight and some studies have already established a certain link between these environmental factors and susceptibility to ADHD. Diet is also an element to be taken into consideration.

24. For pre-school children, for example, existing national and regional guidelines recommend behaviour therapy as first-line therapy.

25. In 2013, the British Psychological Society launched an inquiry into the use of Ritalin amid fears that cuts in funding treatments recommended for ADHD, such as counselling, have led to over-reliance on medication.

26. Educational provision for ADHD varies across Europe, but may include a part-time or full-time special education teacher or special allowances during examinations.

A recent American study concluded that children who were exposed to high levels of organophosphate pesticides (through insufficiently washed fruit and vegetables) were more likely to be diagnosed as having ADHD, thus supporting the hypothesis that organophosphate exposure may contribute to ADHD prevalence.²⁷ However, prospective studies are needed to establish whether this association is causal.

6. Conclusion

42. A recent study concluded that ADHD was one of the most neglected and misunderstood psychiatric conditions in Europe.²⁸ Many children with ADHD (and their parents) experience stigma and have enormous difficulties because of the symptoms and impairment associated with the disorder. Since ADHD persists into adulthood in many cases, affected individuals are likely to continue suffering from emotional and social problems throughout their life, have difficulties in finding and maintaining employment, and risk engaging in delinquent and dangerous behaviour. The profound effects of ADHD on the quality of life of those affected and their families as well as on society are thus undeniable. It is also becoming clear that there are considerable costs associated with ADHD, attributable both to the patient and their family members (e.g. health-care services, costs associated with education, productivity loss and social services, relating to the criminal justice system or road traffic accidents). However, the full scale of the issue is yet to be understood, due to limited research in this area.

43. Member States should consider ADHD as a priority condition, alongside those such as dyslexia and autism, so that patients can receive adequate support. With a view to ensuring accurate diagnosis (and avoiding under- and over-diagnosis), clinicians should be adequately trained and compliance with diagnostic procedures should be guaranteed. For the treatment of ADHD, a comprehensive approach should be followed. Use of psycho-stimulant drugs should be the last resort and priority should be given to psychosocial methods and academic support. The misconception that ADHD can only be treated with medication should be combated by raising awareness among families and teachers, as well as clinicians. More research should be carried out with regard to different treatment options. Governments should also focus on prevention (for example by reducing risk factors and increasing protective factors through early intervention programmes²⁹) and early diagnosis of ADHD, in order to achieve maximum satisfaction for affected children, their families and professionals.

27. M.F. Bouchard et al., "ADHD and Urinary Metabolites of Organophosphate Pesticides", *Pediatrics*, 2010; 125: e1270-e1277.

28. See footnote 14.

29. A good example in this context is the Swedish Association of Local Authorities and Regions' guide aimed at providing support to local authorities that want to invest in early intervention for the mental health of children and adolescents.