

# Social paediatric perspective on Attention-Deficit/Hyperactivity Disorder

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### Relevance

In 2015 youth care in the Netherlands underwent a major transition and transformation. One purpose of this transformation was to focus on what the child and family say they need, and not on a diagnosis of the child. Youth care had to become easily accessible, and care had to take place as much as possible in the community or by primary care. The first part of this thesis focused on (health)care for children with symptoms of attention-deficit/hyperactivity disorder (ADHD), just before the transition and transformation of youth care. Biomedical, and psychosocial determinants of children referred to an ADHD clinic were studied in order to find characteristics applicable for triage between primary or specialized care. Adequate triage of children with symptoms of inattention and hyperactivity is necessary to prevent serious problems, and to avoid over- and misdiagnosis. In addition, the involvement of (healthcare) professionals, and their use of ADHD guidelines after the transformation of youth care were studied, in order to gain insights into diagnostic process. Overall, results of the first part of this research intended to discuss the referral of children with (symptoms related to) ADHD in the light of the transformation idea of youth care, and the role of paediatricians. Part two stemmed from a social paediatric framework, and studied the association between a wide variety of environmental risk factors associated with ADHD. Associations between childhood ADHD and pre-, peri- and postnatal risk factors, recreational screen time, sleep and general parenting were studied. Data from the KOALA Birth Cohort Study were used for these studies, to find risk factors suitable for intervention, and opportunities for early support or prevention.

### Bio-psycho-social characteristics and the healthcare system

Almost 50% of the children who were referred to an ADHD clinic, and analysed for this thesis, could have been treated or supported by primary care, according to the rationale of the new Youth Act. Biopsychosocial characteristics of these children were heterogeneous. No simple child- or social characteristic nor screening list was able to differentiate between the need for primary or specialized care. In addition, also children with *only symptoms* of inattention and / or hyperactivity showed physical problems. The survey, evaluating involvement of professionals after the transition of youth care, revealed that only a few paediatricians or GPs were involved in diagnosing ADHD. Only paediatricians reported to perform regular physical examination.

Adequate differentiation of children with symptoms of inattention and hyperactivity who need primary or specialized care requires:

- knowledge of developmental and psychosocial factors, and ability to integrate this data
- attention to biomedical / physical factors

As youth care is currently organized by the municipalities, it is important to examine within their regions what the options are for adequate evaluation of children with symptoms of inattention and hyperactivity. A possible solution could be individual training of GPs, community workers, and other professionals involved in primary care or at the community level, with focus on the bio-, psychosocial- and transactional model. However, healthcare professionals who assessed children with symptoms related to ADHD before the transition, and those who are still involved in diagnosing ADHD, already have (part of) this knowledge. Therefore, another solution could be to use their specific knowledge, by creating multidisciplinary consultation networks. Ideally, a team in primary care, consisting of physician

assistant mental health care, and a community worker, in combination with a doctor (GP, youth doctor, paediatrician working in primary care) should evaluate problems of the child and family. The physician assistant can score screening lists, and collect data from the school and sport club, and have a consultation targeting ADHD symptoms and possible impairment. The doctor does the medical history taking and the physical examination. Depending on the observed problem(s), other professionals like child & youth psychiatrists or psychologists, should be consulted as part of the triage. Paediatricians, or social paediatricians, could be specifically involved whenever there is a combination of complex medical history/problems and symptoms of inattention and/or hyperactivity and impulsivity. Although deploying more professionals during triage will increase healthcare costs, these extra costs will far be outbalanced by the prevention of over- and misdiagnosis of children. By investing in these multidisciplinary networks (both time and finances), (health)care professionals will learn from each other, and child evaluation will become increasingly interdisciplinary. Ideally, this will be a self-learning system, and consultation will eventually go faster, with fewer professionals needed. An added advantage is, that this flexible multidisciplinary consultative network can also be used for healthcare professionals only involved in the medical treatment ADHD or teachers.

Although not the scope of the studies in this thesis, it is important to realise that less involvement of paediatricians in ADHD care will eventually lead to loss of knowledge among paediatricians about ADHD. It is important to incorporate knowledge about ADHD in the paediatric traineeship. Recognizing a neurodevelopmental disorder as ADHD is possible through education, but also through (mandatory) internships in youth care, or child & youth psychiatry, as part of their traineeship. By exchanging with trainees in child & youth psychiatry, interdisciplinary thinking by paediatricians and child & youth psychiatrists is stimulated, and probably child & youth psychiatrists will also become more comfortable with physical examination.

### Environmental factors

No longitudinal association between recreational screen time, total sleep duration and ADHD was found. However, externalizing behaviour was associated with more screen time and/or less sleep at the age of two, without longitudinal association with ADHD at the age of 8 years. It is importance to carefully evaluate possible causes of behavioral symptoms at a young age, and not to confuse behavior with a full diagnosis. These findings also emphasize the importance of longitudinal research. Questions about screen time and sleep duration should always be included when assessing a child with symptoms of inattention, hyperactivity and impulsivity.

The pre- and early postnatal risk factors found to be associated with ADHD were maternal smoking, prenatal Body Mass index  $> 25 \text{ kg/m}^2$ , low maternal education level, marital discord, and no daily family routine. Maternal smoking and obesity are also associated with other health related problems, like premature birth, or wheezing in childhood. Low maternal education and marital discord may lead to (psycho) social stress. These findings underline the importance of (Dutch) preventive programs aimed at reducing these risk factors, whereby these programs may also provide secondary health benefits, like a decrease in ADHD. Given the nature of the risk factors, a combination of both personalized prevention and prevention on a group level is important. In the Netherlands a well-known program is 'De Rookvrije Generatie' (smoke-free generation), which focuses not only on the individual, but also focuses for example on smoke free public spaces. It is important that the government continues to pursue a discouraging policy towards smoking, to allow the next generation to grow up smoke free. A preventive program

called 'Kansrijke Start' (Solid Start), a government program aimed at vulnerable families, also has the potential to influence early risk factors. However, this program will only succeed, if it is supported by major governmental projects, such as poverty reduction, and equal opportunities for education for everyone. Research has started to study the ability of healthcare workers who encounter pregnant women, to recognize vulnerabilities, and to evaluate if they have barriers to talk about specific issues. These data will be useful to increase collaboration between the medical and psychosocial domain.

An association was found between ADHD and reduced scores on the construct Nurturance/Structure of general parenting. Especially the lower scores on the sub-constructs Scaffolding/Consistency and Autonomy Support provide a more specific direction for parent support. However, due to the study design it is not possible to determine the direction of the association, and the association between parenting and behavior should be studied in detail in new birth cohorts.

Children with ADHD are unique, versatile and have special characteristics. They deserve an assessment by experienced professional(s), as close to home as possible. This research has not produced a new screening tool, diagnostic method or treatment for ADHD. This study showed that one dimensional assessment of symptoms related to ADHD is not enough. Careful assessment of risk factors associated with ADHD is necessary, not only during a diagnostic process, but also through preventive programs. Transformation of youth care will only have the intended effect when professionals, municipalities and the government work together. This collaboration should be aimed at creating solutions in order to personalize ADHD care, in combination with joining forces to strengthen existing preventive programs.