Social and Emotional Impairment in Children and Adolescents with ADHD and the Impact on Quality of Life

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Abstract

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This review provides an overview as to how the social and emotional impairments involved in Atten- tion-Deficit/Hyperactivity Disorder affect the quality of life of patients and their families. A model of three categories into which the emotional difficulties fall, and how they impair quality of life, is also presented. Ó 2010 Society for Adolescent Medicine. All rights reserved.

ADHD; Social impairment; Emotional impairment; Quality of life

This review is based on a search of the published data relating to these topics. Several electronic databases (e.g., PubMed, Medline) were searched. Furthermore, textbooks on ADHD and related topics [8,9,13,35,36] were reviewed. The relevant publications were carefully studied for informa- tion relating to social and emotional impairment in children with ADHD and its effect on QoL.

This review begins with a discussion of the social impair- ment involved in ADHD, followed by a discussion of emotional impairment. Then a new model is introduced ex- plaining how deficits in executive function and self-regula- tion result in impairment of emotional well-being. Three categories by which the social and emotional problems can be classified are defined: (a) the problems inherent in the disorder, (b) those related to comorbidity, (c) and those secondary to the impact of these two factors on the social environment. Then, the topic of transition from childhood to adolescence (and adulthood) is addressed and the impact of social and emotional impairment on quality of life is discussed. The review closes with clinical implications and conclusions.

Social Impairment

The social impairments associated with ADHD have been investigated with various questionnaires, sociometric assess- ments, and videotaped interactions [19]. Children and adoles- cents with ADHD are known to have poorer social and communication skills than children and adolescents without ADHD [37]. The social difficulties tend to be even greater if comorbid disorders such as oppositional defiant disorder (ODD) or conduct disorder (CD) are present, which is the case in approximately 60% of these individuals [38–40]. Children and adolescents with ADHD and comorbid ODD tend to have more severe ADHD symptoms, peer problems, and family distress as compared with children with ADHD alone [41].

Social impairment within the family

Relationships and activities within the family can be impaired [17,42], and in some cases family relationships can break down, bringing additional social and financial diffi- culties [25], causing children to feel sad or show oppositional or aggressive behavior [31].

The relationship between parents and children with ADHD is associated with more conflicts and is considerably more stressful than the parent-child relationship in families without a family member affected by ADHD [13,42]. Parental stress is worsened by the presence of ODD or CD [13]. Although parents may often be commanding and hostile, adolescents with ADHD tend to be less responsive, more hostile, and more avoidant toward their parents. Parents

may be more lax in their discipline of adolescents on some occasions, whereas being very harsh on others. Conflicts between adolescents and their parents are more likely to arise regarding friends, school, appearance, chores, driving, alcohol, tobacco and drug use, leisure time activities, bedtime, and even the type of music that is heard and the volume at which it is played[13]. Interestingly, there is some support for the hypothesis that moderate noise facili- tates cognitive performance [43].

Social impairment with peers

Children and adolescents with ADHD have problems with peer relationships [44,45], lack friendships [46], or have limi- tations in their activities with friends if they do have friends [17]. More than half of these children and adolescents have serious problems with peer relationships. These problems are a result of the children’s and adolescents’ inability to effectively participate in social exchanges such as sharing, cooperating, and turn taking [13]. Children and adolescents with ADHD often interact with their peers in a self-centered, impulsive, intrusive, commanding, and hostile behavior. As a result, up to 70% of these children with ADHD may have no close friends by third grade, especially if they have comor- bid ODD or CD. Adolescents with ADHD also usually demonstrate less sharing, cooperation, or turn-taking [13]. They tend to be more intrusive, disruptive of ongoing social interactions of others, or will show off and clown around more in social settings. They also tend to express their anger and frustration, especially when provoked, more than others and show reduced empathy and guilt.

Children and adolescents with ADHD are rated lower on social preference, are less well liked, are more often rejected, are more likely to be designated ‘‘non-friends’’ by their peers, and have fewer reciprocal friends [47]. A particularly impor- tant aspect of peer relationships is the presence of reciprocal friendships [19]. Such friendships seem to be fairly indepen- dent of acceptance or rejection by peers [46] and are impor- tant for the well-being and psychosocial adjustment of the individual [47–49].

Children with ADHD are more likely to affiliate with deviant peer groups if social rejection continues into adoles- cence [13]. The social problems are most serious in the subgroup of adolescents with ADHD and comorbid ODD or CD. These adolescents are more likely to be bullied and to become bullies themselves. They are more likely to be beaten up or assaulted with a weapon by late adolescence [13]. Girls have an increased risk of being sexually abused [8,13].

Although adolescents with ADHD do not have a higher incidence of sexual disorders, they do begin sexual activity at an earlier age [13]. They have more sexual partners and spend less time with each partner. They have more casual sex outside a relationship and are less likely to use contracep- tion. As a result, boys and girls with ADHD are at greater risk of being involved in teenage pregnancies, and the ratio for the

number of births before the age of 20 years is markedly greater (37:1). Adolescents with ADHD also have a four times higher risk for sexually transmitted diseases and show riskier sexual behavior in general than do adolescents without ADHD [13].

Emotional Impairment

The emotional impairments of children and adolescents with ADHD may include poor self-regulation of emotion, greater excessive emotional expression, especially anger and aggression, greater problems coping with frustration, reduced empathy, and decreased arousal to stimulation [13]. In the United States, more than one-third of children with ADHD were reported to have high levels of emotional difficulties [30]. A study from Europe clearly showed that children and adolescents with ADHD have more emotional problems as measured by the Strengths and Difficulties Questionnaire than children and adolescents without ADHD [44,45]. Boys with ADHD and comorbid ODD or CD have, in particular, been reported to suffer from impaired regulation of negative emotions [50–52].

However, ADHD not only has a negative effect on the emotional well-being of the affected child or adolescent, but affects the family as a whole [13]. The presence of a child or adolescent with ADHD in the family results in increased disturbance in family and marital functioning [25].

ADHD is known to be related to poor self-esteem, both in children and adolescents as well as in young adults, particularly in the subset that is at risk for major depression [16–18,26,53–55]. Self-esteem can be defined as a person’s positive or negative attitude toward himself or herself [35] and has been considered a central construct in psychological theory, with ‘‘self-competence’’ and ‘‘self-liking’’ as consti- tutive dimensions of self-esteem [56,57]. Children and adolescents with ADHD are said to have poorer self-percep- tion [37]. A distorted sense of self and disruption of the normal development of self have been reported by adolescents with ADHD [58]. A number of concepts related to self-esteem have been identified: self-confidence, self-depreciation [59], self-concept, self-perception, self- image, self-worth [60], and (global) academic and social self-esteem [54]. Genetic and environmental determinants of self-esteem have also been investigated [61,62], but no specific determinants of low self-esteem have been identified.

Anxiety or depression are also common comorbid disor- ders of ADHD [17,63–69]. Children with anxiety disorder tend to worry excessively about their competence or the quality of their performance, they may be tense and chroni- cally anxious, quick to panic and in constant need of reassur- ance, or they may be extremely shy and socially phobic, avoiding interactions with unfamiliar persons [1,10]. Adoles- cents with ADHD and comorbid anxiety may present a complicated clinical picture[10]. Children and adolescents with (comorbid) depression may be profoundly unhappy,

with weeks and months of being unable to find any real pleasure, even in activities that were once enjoyable [10]. The unhappiness may manifest as a persistently irritable mood. Dysthymia may be present in adolescents. Symptoms such as hypersomnia or hyposomnia, excessive or insuffi- cient appetite, marked loss of energy, and feelings of worth- lessness may indicate the presence of comorbid major depression [1,10].

The emotional difficulties associated with ADHD can be classified as falling into the following three categories:

Emotion dysregulation inherent in the disorder

ADHD may involve significant disruption to the brain’s executive functioning (EF) system which is believed to underlie the human capacity for self-organization and goal-directed actions, or self-regulation [13]. Among the commonly recognized components of the EF system are inhibition, working memory (verbal and nonverbal), gener- ativity (fluency, goal-directed inventiveness), and self- regulation of emotion [13]. Individuals with ADHD are less able to moderate or otherwise manipulate or suppress the emotional reactions they experience. Consequently, they are likely to show more impulsive and hence more extreme or severe emotional reactions toward events than do others of their age. This emotional dysregulation has been considered an important part of the conceptualization of ADHD [13]. Research shows that the difficulties with emotional control load on the same dimension with the hyperactive and impulsive symptoms, and likely arise from the poor inhibitory capacity involved in ADHD [8,70].

Comorbidity with other psychiatric disorders

Other psychiatric disorders are often associated with child and adult ADHD, many of which involve difficulties with emotion. For instance, most of the children with ADHD are likely to develop ODD, which involves difficulties with the expression of anger, hostility, frustration, and aggression toward others, especially to authorities such as parents, besides problems such as disobedience. Likewise, 25% or more of children with ADHD may also develop CD [13]. Among a subset of these patients, childhood psychopathy or the presence of callousness, lack of emotion, low empathy for others, and little if any guilt associated with transgressions are likely to occur [13,71,72]. Children and adults with ADHD are also more likely to develop dysthymia, major depressive disorder, and various anxiety disorders, all of which involve difficulties with emotion. The reasons for such high comorbidity with other disorders are several [64] and may include a common etiology, such as shared genetic risks or exposure to repeated social stressors. These disorders may arise from separate sources beyond the deficit in emotional self-regulation [13].

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Secondary emotional consequences from the impairments arising from the effect of ADHD and the comorbid disorders on the social environment

ADHD is often associated with significant difficulties in adaptive functioning, particularly in educational, family, community, and other social settings that radiate into other domains by adulthood (occupation, marital functioning, driving, money management, etc.) [8]. Experiences such as academic failure, peer rejection, family conflict, parental hostility, accidental injuries, poor occupational achievement, marital strife, or loss of driving license, can all result in emotional consequences. These emotional consequences add to the emotional problems that are part of ADHD and/ or possible comorbid disorders already [13].

Keeping these three categories in mind may be useful for subsequent research and clinical management of these emotional problems. They can be useful in devising specific interventions for the various emotional problems and may offer a new perspective on the area of emotional impairment in patients with ADHD.

Transition to Adolescence and Adulthood

Transition to adolescence is associated with a number of issues that affect the adolescent’s body, behavior, and social interactions [13]. This transition touches upon most areas of the adolescent’s daily life and involves an increase in physical size and maturation (including neurological and sexual matu- ration), the desire to individuate from parents, with a resulting decrease in the influence of parents on the adolescent’s behavior, an increase in the time spent away from home, an increase in the number of life activities to which the adoles- cent must adapt (interaction with peers, sexuality, driving, community activities, earning money, coming to terms with drug use and crime), and greater involvement with peers [13]. Most of these issues are adversely affected by the delay in self-regulation that is usually associated with ADHD. Impaired self-esteem and sociability in adolescents is often the result [73].

Many studies have shown that the symptoms of ADHD change during adolescence and development into adulthood [12,74,75]. Hyperactivity, for example, although still present, may become much less prominent during this age period [76], whereas attention-deficit, distractibility, and disorganization persist and may even become more common or at least more impairing[9,10]. Thus, hyperactivity declines more steeply than does inattention and deficits in EF related to inat- tention [13]. Motor restlessness may become a more internal- ized subjective sense of feeling a need to be busy all the time. Symptoms of inattention and impaired EF have a greater effect on school functioning than the symptoms of hyperac- tivity and impulsivity. This trend increases with age. Impul- sivity is more related to functional impairment in non-academic domains and may be associated with the devel- opment of ODD, drug experimentation, speeding while

driving, engaging in risky sexual behavior, taking on dares from peers, impulsive verbal behavior, and reactive aggres- sion[13]. However, inattention can result in further impair- ments: poor attention to traffic density and speed limits while in community traffic settings, greater risk for pedestrian or cycling accidents, greater car crash risk, accelerated use of nicotine, poor follow-through on chores and other responsi- bilities at home, poorer work performance in employment settings, and inattention to the needs and comments of others during social activities [13]. Likewise, the deficits in EF also have a negative effect on the development of adolescents with ADHD. The poor working memory may result in less follow through on commitments and promises to others and may result in comprehension deficits when reading, listening, or viewing, especially in school or work settings. Impaired plan- ning, anticipation, and preparatory behavior are likely to result in the adolescent not being ready for the future as it arrives [13]. Future rewards are less valued, and so the adoles- cent shows poor delay of gratification and does not persist toward future goals. Poor inhibition results in poor regulation of emotions, with deficient control of anger and frustration being the most impairing problems in this respect [13]. Furthermore, EF deficits result in decreased fluency, i.e. the rapid assembly of ideas into coherent verbal reports and behavior [13]. Thus, a broad range of problems related to reward dysfunction, delay aversion, timing dysfunction, and motivation plays an important role in the context of EF [77,78].

Impact on Quality of Life

The terms Quality of Life (QoL) and Health-Related Quality of Life are associated with considerable conceptual challenges[79]. The medical perspective on QoL has resulted in a broad range of definitions that reflect various aspects of physical and/or mental health. Following one of many possible definitions, QoL can be thought of as a multidimen- sional concept that reflects a number of subjective physical, social, and psychological aspects of health and is distinct from symptoms of the disorder and objective functional outcomes [80]. More specifically, the term QoL describes an individual’s subjective perception of their situation in life as evidenced by their physical, psychological, and social functioning [81]. Thus, QoL closely depends on the subjec- tively perceived impact of the disorder (and of the respective treatment) on the level of physical, psychological and social functioning [82,83].

Most definitions and measures of QoL include physical, psychological, and social domains, although similar domains are often labeled differently. Although there is general agree- ment over these three major domains, they have been subdi- vided in many different ways, resulting in the development of a broad range of questionnaires and psychometric instru- ments that, however, are difficult to compare [79]. Despite these methodological difficulties, several ‘‘generic’’ QoL instruments can be used to study QoL in children and

adolescents with psychiatric disorders. Such instruments include the Child Health Questionnaire [84], the Pediatric Quality of Life Inventory [24,85], the Child Health and Illness Profile [86,87]), or the KIDSCREEN-27 [88]. An interesting recent instrument is the International Classifica- tion of Functioning, Disease, and Health which was devel- oped by the World Health Organization to assess the degree of disability caused by disease or disorder [89]. The International Classification of Functioning, Disease, and Health has been used to assess the level of functioning in children and adolescents with ADHD[90].

Thus, QoL has become an increasingly important measure of outcome in child and adolescent mental health research and clinical practice [81]. There is broad agreement among researchers and clinicians based on research findings that ADHD is associated with significant impairment of psycho- social functioning that goes beyond the core symptoms of attention-deficit, hyperactivity, and impulsivity [19–21], an example for which are children with ADHD who are restricted in their school work or other daily activities as a result of the behavioral and emotional problems [17]. These and other impairments generally have a considerable effect on the patient’s emotional and social well-being as well as the quality of life (QoL) [17,25–30,91,92]. Deficits in emotional stress regulation also seem to have a direct effect on QoL [92]. ADHD has a comparable overall effect on QoL in comparison with other psychiatric disorders or severe physical disorders [81].

There is increasing evidence that QoL improves with effective treatment [81]. For example, the QoL of children and adolescents with ADHD has been shown to improve over time when on medication [16,18,93–99]. More specifi- cally, a number of studies have shown the improvement of self-esteem in children and adolescents with treatment for ADHD. One such study showed significantly greater short- term improvements of self-esteem in a sample treated with atomoxetine [16], whereas another study showed improve- ments of self-esteem in the long-term [18]. In these two studies, self-esteem was measured using the Child Health Questionnaire. Obviously, self-esteem was seen to be closely related to the concept of QoL.

Clinical Implications and Conclusions

Both ADHD and related disruptive behavior disorders such as ODD and CD have been investigated from dimen- sional as well as categorical perspectives. Both types of exter- nalizing behavior patterns may be related in fundamental ways to the problem of inhibitory control as well as to behav- ioral and emotional dysregulation [100]. The ability to control emotion seems to involve interactions between pre-frontal and cingulate regions of the cortex as well as subcortical regions of the brain[101,102].

Many subjects with ADHD have deficits in terms of EF as assessed by rating scales. It is therefore likely that some of the emotional dysregulation seen in ADHD arises from this

central problem with EF and especially those components involved in emotional inhibition and emotional and motiva- tional self-regulation. In turn, some problems with emotional regulation seem to be present only in subjects with ADHD who are also extremely aggressive or psychopathic. This can be taken as evidence for a possible disconnection between the EF deficits that involve emotional self-regulation and emotional difficulties associated with some comorbid disorders. A deficit in inhibitory control is the focus of another widely recognized psychopathological model for ADHD [13]. This deficit is seen to be the underlying symptom of broader deficits in EF, which then result in the broad range of dysfunctional behavior in ADHD. This model proposes a link between response inhibition and four other distinct EFs that depend on inhibitory control: (a) working memory, (b) verbal working memory, (c) self-regulation of affect/motivation/arousal, and (d) behavioral analysis and synthesis (reconstitution). These four functions serve to bring behavior under the control of internally represented informa- tion and allow self-directed actions to goals specifically, and the anticipated future more generally. Thus, the four func- tions along with inhibition facilitate greater goal-oriented action and persistence on tasks. The deficit in inhibitory control impairs self-regulation of emotions and also explains the cognitive difficulties that children and adolescents with ADHD have [13]. This model characterizes a considerable proportion of individuals with ADHD, especially those with the combined type [103].

A third source of emotional difficulties in ADHD cases arises from the consequences of ADHD and the impairments it produces in significant domains of major life activities. Demoralization, learned helplessness, low self-esteem, fear and anxiety, increased frustration, and other emotional prob- lems can arise as a result of the adverse effect ADHD is likely to have on daily adaptive functioning and social, educational, and occupational success among other domains.

In the face of the multiple problems associated with ADHD, the importance of treating the disorder effectively and as early as possible is evident. A broad range of effective therapeutic options, including counseling and parent training, psychotherapeutic approaches such as behavioral therapy, as well as pharmacotherapy, with a range of stimu- lant and nonstimulant medications, is available [13]. Among the available nonpharmacological treatment options, educa- tion of parents, other family members, and teachers about the disorder; parent training in effective behavior manage- ment methods; classroom behavior modification methods; and special education placement are those interventions that have the greatest promise for treating children and adolescents with ADHD [104]. Psychosocial interventions that have been shown to be effective in managing ADHD in adolescents include Behavioral Parent Training, teacher training in classroom behavior management, Summer Treat- ment Program, and contingency management methods applied in classrooms and other settings such as summer camp [105]. Furthermore, there are reasons to be optimistic

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about Cognitive Behavioral Therapy being more effective in adolescents than in children with ADHD [105]. Interventions for ADHD will be most helpful when they assist with the performance of a particular behavior at the place and time of performance in the natural environment where and when such behavior is usually performed [104]. Consequently, it is important to provide assistance with the time, timing, and timeliness of behavior. To be effective in altering eventual prognosis, treatment must be maintained over extended time (months to years), with interventions occurring periodically in the long term [104].

Any psychosocial treatment option should be a part of a multimodal treatment plan that will often include medica- tion [106]. This perspective is supported by the Multimodal Treatment Study of Children with ADHD which investigated the long-term effectiveness of ADHD interventions (medica- tion, behavior modification) alone or in combination, as compared with standard community care [107,108]. Medica- tion (either alone or in combination with behavior modifica- tion) was shown to be superior to behavior modification alone or standard community care. The study also suggested that combination treatment is superior to behavior modifica- tion alone or standard community care in terms of outcomes that go beyond core symptoms of ADHD, such as opposi- tional or aggressive behavior, internalizing symptoms, social skills, parent-child relations, and academic achievement [107,108]. In summary, the Multimodal Treatment Study of Children with ADHD shows that medication alone may be the best treatment option [105]. For those adolescents, however, who suffer from ADHD with comorbid opposi- tional symptoms, poor social functioning, and negative or ineffective parenting, a combination of medication (in this case methylphenidate) and behavior modification seems the best treatment option [105]. Another study, however, re- vealed no advantage of a combination of behavior modifica- tion and methylphenidate over methylphenidate alone in terms of academic performance or emotional state [93].

Both the stimulant methylphenidate [109–111] and the nonstimulant atomoxetine [36,112,113] have been shown to be effective in treating core symptoms of ADHD in both children and adolescents. The long-acting medications and formulations (both stimulant and nonstimulant) have become increasingly widely used [114]. Academic achievement and the emotional well-being have been shown to improve with methylphenidate treatment [93], and both stimulants and atomoxetine have been shown to improve the QoL in chil- dren and adolescents with ADHD [81,97–99,115–117]. Mixed amphetamine salts, known to be effective in children and adolescents [118], have been shown to improve the QoL in adults with ADHD [119]. These findings are encouraging and suggest that QoL outcomes should be included as a matter of course in future medication studies [81].

Selecting the right medication for a particular patient is the task of the clinician treating the patient. However, in light of the differences between the various medications in terms of efficacy profile, mode of action, or tolerability profile, these

differences should be considered when planning pharmaco- logical treatment. Although stimulants may be particularly effective in treating situational impairments (e.g. difficulties with sustaining attention at school) [120], the nonstimulant atomoxetine may be especially helpful in terms of improving various situations outside the school setting (e.g. interactions with family members or peers) [117]. By selecting the right medication, the physician can optimize the treatment of chil- dren and adolescents with ADHD by finding the medication that is most likely to meet the needs of the individual patient. Although the long-term outcome of treatment with different medications has been questioned [121–123], the long acting medications for ADHD remain promising treatment options in this respect [114,124].

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