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Maternal and Childhood Psychological Factors Predict Chronic Disabling Fatigue at Age 13 Years

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A B S T R A C T

Purpose: To investigate whether premorbid maternal and childhood psychological problems are risk factors for chronic disabling fatigue at age 13 years among children in the Avon Longitudinal Study of Parents and Children birth cohort.
Methods: Chronic disabling fatigue was defined as fatigue of at least 3-month, and up to 5-year, duration that prevented school attendance or hobbies/sport/leisure activities, and for which other causes were not identified. Maternal psychological factors were symptoms of anxiety and depression assessed up to eight times between pregnancy and age 6 years. We investigated critical periods for maternal effects and effects of paternal depression at three time points. Child psychological factors included internalizing and externalizing problems and upsetting life events occurring at age 7–8 years.
Results: Of 5,657 children, 110 (1.9%) had chronic disabling fatigue at age 13 years. Maternal anxiety (adjusted odds ratio [AOR], 1.19; 95% confidence interval [CI], 1.09–1.31 per episode), maternal depression (AOR, 1.24; CI, 1.11–1.39 per episode), child psychological problems (AOR, 1.19; CI, 1.00–1.41 per problem), and upsetting events (AOR, 1.22; CI, .99–1.58 per event) were associated with chronic disabling fatigue. Associations of child psychological problems and upsetting events were attenuated (AOR, 1.12; CI, .93–1.33 per problem; AOR, 1.19; CI, .94–1.52 per event) after further adjusting for maternal anxiety and depression.
Conclusions: Pediatricians need to be aware that children whose mothers experience anxiety and/or depression between pregnancy and child's age 6 years have an increased risk of developing chronic disabling fatigue in early adolescence. Conversely, clinicians need to be alert to fatigue in children whose mothers have longstanding anxiety and depression. These findings suggest the importance of family-based approaches to treatment.

IMPLICATIONS AND CONTRIBUTION

Children whose mothers experience anxiety and/or depression from pregnancy to child's age 6 years have an increased risk of developing chronic fatigue in early adolescence. Pediatricians treating children with chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) should consider family-based approaches. Maternal mood disorders are potentially modifiable factors, which merit further research in relation to pediatric CFS/ME.

Chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) is defined as fatigue lasting longer than 3 [1] or 6 [2] months and which "results in substantial reduction in previous levels of occupational, educational, social, or personal activities" [2] or "has resulted in a substantial reduction in activity level" [1]. The

Conflicts of Interest: The authors declare that they have no conflicts of interest.

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estimated prevalence of CFS/ME in children ranges from .1% to 2.4%, with population surveys generating higher estimates [3–9] than studies in primary [10] or secondary care [11].

Anxiety and depression are common in children with CFS/ME [12–14], but it is unclear whether these are risk factors for, or consequences of, pediatric CFS/ME [15]. Cohort studies have suggested that they are risk factors for chronic fatigue, but these studies were not sufficiently powered to investigate CFS/ME [9,16–18]. Mood disorders are common in mothers of children with CFS/ME who attend specialist services, but no study has explored whether this is a risk factor for, or secondary to, their child's illness [19–21].

Using data from the Avon Longitudinal Study of Parents and Children (ALSPAC) birth cohort, we reported an association between family adversity and chronic disabling fatigue at age 13 years, which suggested a particular effect of antenatal maternal psychopathology [5]. We used the term "chronic disabling fatigue" as a proxy for CFS/ME because children were not examined by a physician. Here, we use data from the same cohort to investigate associations of maternal anxiety and depression from pregnancy to age 6 years, and childhood psychological problems and stressful life events at age 7–8 years, with chronic disabling fatigue at age 13 years. We used repeated measures of maternal anxiety and depression to investigate whether observed effects occurred at critical periods or as a result of accumulated exposure over time.

Methods

Participants

ALSPAC is a population-based birth cohort designed to investigate a wide range of influences on the health and development of children [22]. Pregnant women residing in the former Avon Health Authority in South West United Kingdom who had an estimated date of delivery between 1 April 1991 and 31 December 1992 were invited to take part, resulting in a cohort of 14,541 pregnancies and 13,978 children alive at 12 months of age (excluding triplets and quads). The primary source of data for the present study was parent-completed questionnaires administered at four time points during the antenatal period and then at regular intervals after birth. The ALSPAC study Web site contains details of all the data that are available through a fully searchable data dictionary (www.bris.ac.uk/alspac/researchers/data-access/data-dictionary/).

Ethical approval

Ethical approval for this study was obtained from the ALSPAC Law and Ethics Committee and the Local Research Ethics Committees.

Outcome (chronic disabling fatigue)

Our method for defining chronic disabling fatigue as a binary outcome has been described previously [5]. We identified teenagers reported by their parent/carer to have "been feeling tired or lacking in energy" for "between 3 and 5 months" or "between 6 months and 5 years" and to have been absent from school "because of this tiredness or lack of energy" or for whom tiredness or lack of energy had "stopped him/her from playing, taking part in hobbies, sports, or other leisure activities," "quite a lot," or "a great deal." We excluded children affected by fatigue for "more than 5 years" to prevent overlap with exposures occurring at age 7–8 years. We excluded those whose mothers thought that the fatigue was caused by playing too much sport, who had probable comorbid depression (defined as a Short Moods and Feelings Questionnaire score, >10) [23], who snored often, or who had other illnesses that could cause fatigue (based on self-reported medication use).

Exposures

Maternal anxiety and depression. Mothers completed the Edinburgh Postnatal Depression Scale (EPDS) [24] and the Crown-Crisp Experiential Index (CCEI) [25] at eight time points: 18th and 32nd week of pregnancy, 8 weeks postpartum, and when the child was 8, 21, 33, 61, and 73 months old. EPDS scores were dichotomized at a cutoff of 12/13 to indicate probable depressive disorder [26]. The CCEI comprises depression, anxiety, and somatic symptoms subscales, which do not have standard cutoffs. We identified women having high levels of anxiety symptoms as being those who scored in the top 15% of the anxiety subscale at each time point.

Paternal depression. Fathers completed the EPDS at eight time points: 18th week of pregnancy and when the child was 8 and 21 months old. EPDS scores were dichotomized at a cutoff of 12/13.

Childhood psychological problems. Because DSM-4 psychiatric diagnoses have a very low prevalence among ALSPAC children aged 13 years and younger, we defined "childhood psychological problems" by dichotomizing responses to individual symptom questions in the Development and Well-Being Assessment (DAWBA, see www.dawba.com) self-report questionnaire from which DSM-4 diagnoses are derived (Supplementary Table A1) [27]. Symptoms are grouped according to the following psychological problems: separation anxiety, social fears, particular fears, general anxiety, sadness/depression, obsessions/compulsions, attention/activity problems, oppositional behavior, and conduct problems. This questionnaire was completed by parents when children were approximately 7.5 years old (median, 7.6 years; interquartile range [IQR], 7.6–7.7 years).

Upsetting events. Upsetting events questions were completed by parents when children were approximately 8.5 years old (median, 8.6 years; IQR, 8.6–8.8 years; Supplementary Table A2), referring to events that had occurred since the child's seventh birthday and asking whether the child had been "very upset," "quite upset," "a bit upset" or "was not upset" (if it had occurred). We included the following events: taken into care (state or foster care), physically hurt by someone, sexually abused, somebody in the family died, separated from mother, separated from father, changed care taker, separated from someone close, and lost best friend. These were scored dichotomously as having occurred (regardless of degree of upset) or not. We also included "started a new school" if the mother reported that the child had been quite or very upset.

Strengths and Difficulties Questionnaire. The Strengths and Difficulties Questionnaire (SDQ), a behavioral screening questionnaire for 4- to 16-year olds [28], was completed by the child's teacher at child age 8 years (median, 8.3 years; IQR, 8.1–8.6