

A Follow-up Study of Chronic Fatigue Syndrome in Children and Adolescents: Symptom Persistence and School Absenteeism

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ABSTRACT

This is a follow-up study of 28 young people aged between 7 and 17 meeting the Oxford criteria for the diagnosis of chronic fatigue syndrome treated in a specialist paediatric/psychiatric service. Retrospective case note analysis revealed a wide range and duration of symptoms together with high levels of school absenteeism prior to the diagnosis. The mean follow-up interval after discharge from the specialist service was 3 years and although most of the young people regarded themselves as fully recovered by this time, improvement was variable and about one third were still experiencing disabling symptoms. The illness had impacted on the education or career plans of all the young people to some extent with 15 experiencing difficulty returning to school. This article highlights the need for early recognition and diagnosis of chronic fatigue syndrome in young people and the importance of continuing paediatric support to reduce symptom persistence in the sensitive recovery period. Maintaining school attendance by close liaison between health and education services both before and after diagnosis and treatment is also vital if long-term morbidity is to be reduced.

KEYWORDS

children and adolescents, chronic fatigue syndrome, rehabilitation, school absenteeism, school refusal

Introduction

OUTCOMES IN CHRONIC fatigue syndrome (CFS) have been extensively studied in adults (BMJ Publishing Group, 2000; Joyce, Hotopf, & Wessely, 1997) but there has been little published research on outcomes in children. Follow-up studies that are available suggest that children and adolescents have better outcomes than adults and most will recover fully (Joyce et al., 1997; Rangel, Garralda, Levin, & Roberts, 2000). However, there are a number of limitations with published studies in children. The diagnostic criteria used are not always clear, cases are sampled from specialist clinics rather than the community, the reported length of follow-up is variable as are treatment approaches and outcome measures.

Rangel et al. (2000) described a mean duration of the worst symptoms as 17 months in 25 children with severe CFS from tertiary paediatric and psychiatric clinics in the UK who fulfilled the Oxford diagnostic criteria (see Table 1) for the diagnosis of CFS. At follow-up of a mean of 45.5 months two thirds had recovered and the mean duration of illness to recovery was 38 months.

A study of 58 children managed in a specialist paediatric clinic showed symptom duration of 1–36 months (Krilov, Fisher, Friedmen, Reitman, & Mandel, 1998). At follow-up of between 1 and 3 years, 43% had recovered and 52% improved. However, at presentation 50% of cases had experienced fatigue for 6 months or less and would not therefore have fulfilled either the Oxford (Sharpe, Archard, Banatvala, Borysiewicz, Clare, & David, 1991) or the United States Centers for Disease Control (CDC) diagnostic criteria (Fukuda, Straus, Hickie, Sharpe, Dobbins, & Komaroff, 1994).

A further study of 31 children from a paediatric infectious diseases clinic referred with at least 2 months of medically unexplained symptoms, including fatigue, showed 77% had returned to normal or improved at a mean follow-up interval of 17.5 months (Carter, Edwards, Kronenberger, et al., 1995). However again, neither the Oxford or CDC diagnostic criteria were applied to the case selection.

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Table 1. Oxford diagnostic criteria for diagnosis of chronic fatigue syndrome

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- A syndrome characterized by fatigue as the principal symptom;
 - a syndrome that has a definite onset (not lifelong);
 - the symptom of fatigue is severe, disabling, affecting physical and mental functioning and disproportionate to exertion;
 - the fatigue should have been present for a minimum of 6 months during which it was present for more than 50% of the time;
 - other symptoms may be present, particularly myalgia, mood and sleep disturbance.
- Exclusions
- Patients with established medical conditions known to produce chronic fatigue (e.g., severe anaemia). Such patients should be excluded whether the medical condition is diagnosed at presentation or only subsequently. All patients should have a history and physical examination performed by a competent physician;
 - patients with a current diagnosis of schizophrenia, manic depressive illness, eating disorder or proven organic brain disease. Other psychiatric disorders (including depressive illness, anxiety disorders and hyperventilation syndrome) are not necessarily reasons for exclusion.
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Source: Sharpe et al. (1991).

Feder, Dworkin, and Orkin's (1994) follow-up of 48 paediatric outpatients, with a history of fatigue for a mean of 7 months before assessment, demonstrated that 65% reported no symptoms and 26% were improved but continued to have symptoms at a mean of 3.8 years. However only 6 cases met the CDC diagnostic criteria as other cases had been accepted with a history of only 3 months' fatigue.

Follow-up of 23 children with CFS from an infectious diseases clinic found that 76% reported a definite improvement at 2 years but 38% continued to suffer some residual symptoms (Marshall, Gesser, Yamanishi, Ket, et al., 1991).

Smith, Mitchell, Corey, Gold, McCauley, Glover, and Tenover (1991) in a study of 15 adolescents meeting the Oxford diagnostic criteria at a specialist paediatric clinic with a mean symptom duration of 18 months showed 50% improved at follow-up which ranged from 13 to 32 months.

Common to all these studies is the long delay in recognition and treatment and the variable, often prolonged, course of recovery. Both Rangel et al. (2000) and Wright and Cottrell (1997) comment on the significant impact of these factors on the social, emotional and educational development at a crucial stage of children's and adolescent's lives. Rangel et al. note that lengthy social withdrawal and functional handicap is a key feature of CFS in childhood.

Due to the lack of clear conclusions from outcome research, there has been little in the way of evidence-based guidelines on the management of CFS in children and adolescents. Fierce controversy and debate have surrounded treatment approaches illustrated by arguments over active rehabilitation compared with rest. This has in part stemmed from an unhelpful polarization of views which separates physical and psychological mechanisms (Vereker, 1992). Many authors, including the joint report from the Royal Colleges of Physicians, Psychiatrist and General Practitioners (1996), emphasize the importance of a joint paediatric and psychological approach as offering the most helpful way forward (ACPP, 1999) especially as children and families may tend towards physical illness attributions and find psychological approaches (e.g., cognitive-behavioural therapy) less acceptable. This has been shown to be associated with a poorer prognosis in adults (Chalder, Power, & Wessely, 1996).

CFS is a common cause of long-term absenteeism from school and children with CFS

may have more time off school than other chronically ill children (Berg & Nursten, 1996; Marcovitch, 1997). In some young people there may be an overlap between CFS, somatization disorder and school refusal (Richards, 2000). Attempts to return to school are often a source of great anxiety to many young people who require carefully supported reintegration programmes (ACPP, 1999) to help them succeed, and there is still a persistent tendency to miss school even after recovery from CFS (Carter et al., 1995). Tillet, Glass, Reeve, and Burt (2000) drew attention to the vital importance of good liaison between health and education services in both early identification of CFS and in planning reintegration to school. They suggest that early case recognition would be aided by regular medical review of all children who have persistent or recurrent absences from school and that paediatric review of children receiving home tuition due to CFS is essential to monitor progress and ensure that appropriate rehabilitation is available.

Three of the 6 follow-up studies discussed earlier (Carter et al., 1995; Krilov et al., 1998; Rangel et al., 2000) make detailed comments about persistence of fatigue and other disabling symptoms or school attendance suggesting that insufficient importance has been attached to these factors in outcome research. Virtually no comment is made about the management of persistent symptoms or school absenteeism.

The aim of this study therefore is to describe more fully (a) the wide and varied range of symptomatology of severe CFS in children and adolescents, and (b) the long-term impact of severe CFS in terms of continuing symptoms, education and social functioning.

Method

The study was carried out at a specialist tertiary centre, Bursledon House, offering a 5-day assessment and treatment service for children and adolescents with a wide range of both physical and psychological disorders. Particular expertise has developed in the management of chronic fatigue and somatizing disorders. Children and adolescents with CFS are managed with an active rehabilitation programme by a multidisciplinary team including both a paediatrician and a psychiatrist. Further details of the programme are available (ACPP, 1999).

CFS is widely recognized to be a heterogeneous condition with a wide range of symptom severity. Young people in this study were more severely affected in terms of physical functioning and school attendance than many other young people with CFS who would be seen by a range of professionals in the community and not necessarily referred to a tertiary service.

A retrospective case note analysis of all children referred for outpatient or inpatient assessment between 1 January 1990 and 31 December 1997 was undertaken. Information on demographic details, presentation of illness, degree of dysfunction, treatment and short-term outcome were recorded. Patients were then invited to participate in a semi-structured home interview (available from the author on request) which was carried out by the principal investigator (AF) at a variable time interval after discharge from outpatient follow-up.

Analysis of results

The data set was described using summary statistics. Means and standard deviations were used for normally distributed data and medians and ranges for non-normally distributed data. Frequency counts were used for discrete data. Non-parametric analysis of variance technique was used when assumptions associated with parametric methods failed. The association between variables was explored using cross-tabulation and examined using the chi-squared test. Modeling binary outcome variables, that is, using a logistic regression

model, showed that children still experiencing symptoms were not seen earlier in the time interval between discharge from out-patient follow-up and the home interview.

Results

Fifty-six patients were identified from the discharge summaries and clinic letters as falling into a broad category including symptoms of fatigue, headache, muscle weakness, unexplained pain and anxiety related to school attendance. They had a range of diagnoses besides chronic fatigue such as somatizing disorder, separation anxiety and school refusal problems. The case notes were examined in detail by a child psychiatrist and paediatrician independent of the principal investigator. The strict Oxford criteria for the diagnosis of CFS were applied and 9 (16%) cases were rejected from the study as they failed to meet these; for example, patients who presented with disabling symptoms but in which fatigue was not predominant or significantly interfering with functioning. It was also recognized that those excluded or not meeting the Oxford criteria may represent a group of patients with less severe CFS or overlap with other diagnoses. Due to the heterogeneous nature of the condition, importance was attached to using the diagnostic criteria rigorously to ensure as pure a syndrome as possible. Of the remaining 47 cases who were approached, 9 (19%) refused consent, 7 (15%) did not reply and it was not possible to locate a further 3 (6%) patients. A final 28 (60%) patients agreed to participate in the home interview.

Demographic data

The study included 15 (54%) boys and 13 (46%) girls with a median age of 13.3 years (range 7.5 to 17.2) at the onset of symptoms. They came from predominantly two-parent families: 24 (86%) were living with both parents, 3 (11%) with a single parent and 1 (4%) with a step-parent. Fourteen (50%) were youngest children, 7 (25%) were middle, while 6 (21%) were first children.

Presenting symptomatology

Review of case records showed that children and adolescents had symptoms for a median duration of 8.5 months before their initial presentation to the specialist service (range: 2–35 months). Children and adolescents who did not reach the Oxford diagnostic criteria at initial clinical presentation because of a short duration of symptomatology were included in the study if they subsequently reached the criteria. A wide range of symptoms were recorded at the initial outpatient visit to the chronic fatigue assessment service (see Table 2).

The predominant symptoms were: Fatigue in all 28 (100%) cases, headaches in 27 (96%) and sleep disturbance in 21 (75%). Complaints of muscle pain, limb weakness, depression, daytime napping and loss of concentration were also common. Only 4 (14%) were normally physically active and the remaining 24 (86%) experienced some or great difficulty with mobility, that is, only managing short distances with support or being unable to walk short distances at all. Twenty-three (82%) children viewed their symptoms as fluctuating or deteriorating at the time of the initial appointment while 4 (14%) felt their symptoms were static and only 1 (4%) was improving. There were high levels of sleep disturbance with more than half napping during the daytime and just less than half experiencing delayed sleep phase, frequent waking and excessive sleep (Figure 1). The history given included symptoms of an acute infective illness prior to the onset of fatigue in 26 (93%) and there was evidence of infection from pathological investigations in 10 (36%), principally Epstein–Barr virus and adenovirus.

Table 2. Symptom frequency at initial paediatric presentation, N = 28

	Yes	% Yes
<i>Physical symptoms</i>		
Fatigue	28	100.0
Headache	27	96.4
Myalgia	16	57.2
Limb weakness	15	53.6
Pharyngitis	11	46.4
Arthralgia	12	42.9
Nausea	11	39.3
Abdominal pain	10	35.7
<i>Sleep disturbance</i>		
Daytime sleepiness	14	50.0
Frequent night waking	12	42.9
Excessive sleep phase	11	39.3
Early morning waking	5	17.9
<i>Other symptoms</i>		
Depression	16	57.2
Loss of concentration	11	39.3
Weight loss	9	32.1
Weight gain	5	17.9
Reduced activity	23	85.7
Snacking	12	42.9
Reduced appetite	11	39.3
Increased appetite	2	17.9

The children were missing considerable amounts of time from school. Eighteen (64%) had been away from school more than 50% of the term before the diagnosis was made. However, parents' reports of their children's academic abilities suggested that 21 (75%) children were functioning at an average or above average level, although this was not necessarily corroborated by schools.

A high proportion of families, 15 (54%) in all, had tried some form of alternative therapy prior to specialist referral and 8 families had made contact with or joined a self-help/support organization.

Management

All the children and young people taking part in the study were managed with an active rehabilitation approach. During treatment, there was also an emphasis on identifying illness-maintaining factors and offering both individual and family therapy where appropriate.

Twenty-four (86%) children were admitted to Bursledon House and 4 (14%) were managed as outpatients. These 4 outpatients were less functionally disabled and were managed at home with a less intensive but essentially very similar rehabilitation programme. For those children and adolescents admitted, there was a small school on site and teachers worked closely with the children's local schools to enable reintegration. The median length of stay was 4.5 weeks and ranged from 1 to 16 weeks. After discharge, only one young person required a subsequent readmission. The remainder were able to continue their rehabilitation programme at home with outpatient support. Seventeen (71%) children were seen for up to 6 months and the remaining 7 (29%) for a further 6 months or longer.

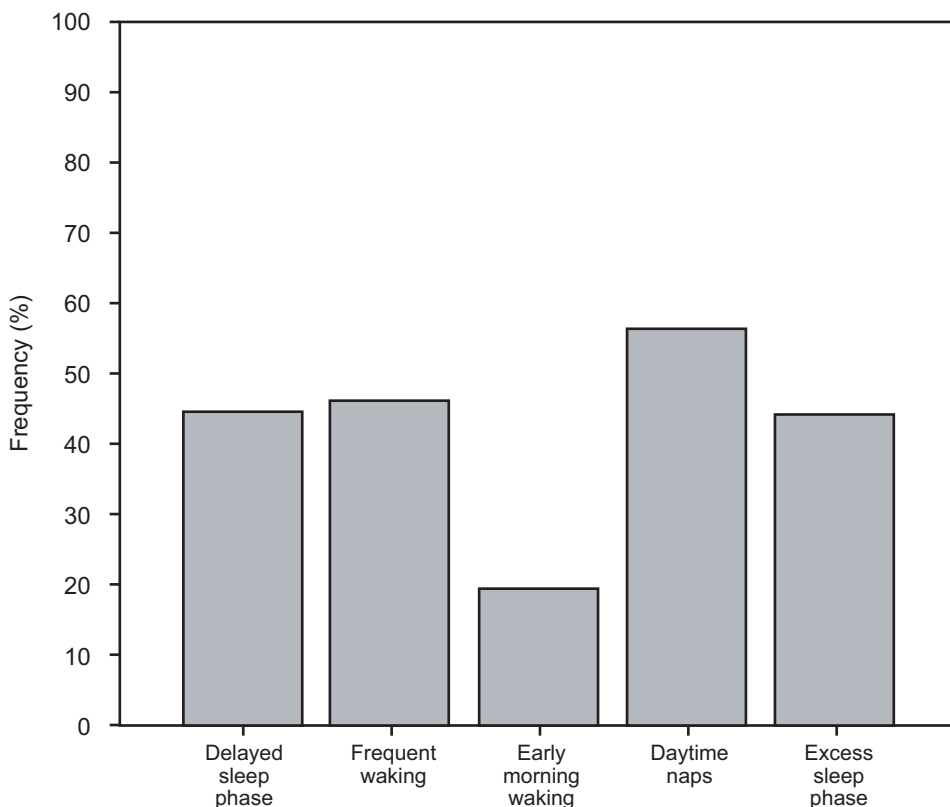


Figure 1. Bar chart showing characteristics of sleep disturbance.

During the period of study, 1990–1997, the importance of cognitive assessment of all children and adolescents with CFS was increasingly recognized as a means of identifying those young people with lower cognitive ability either overall or in certain subtests than assumed by parents and schools which may have led to higher expectations of academic performance than was possible. Assessment results were available on 17 of the 28 studied. Of these, three had a full-scale IQ > 120; 8 between 100–120 and 6 between 80–100.

Home interviews

These took place between January and March 1998 by which time all subjects had been discharged from follow-up. The mean time from discharge from the service to interview was 3 years and ranged from 1 to 5.5 years. The mean time spent with each young person was 65 minutes and 50% of the interviews were conducted with the young person only present, otherwise one or both parents were present. The mean age at the time of interview was 17.2 years (range 9.6–21.4 years).

Children and adolescents' perceptions of progress and recovery at the home interview

When asked a general question about how they perceived their recovery – ‘how would you rate your present health compared with your health before you were ill?’ – 7 (25%)

Table 3. Symptom frequency at 3 time points, N = 28

Symptom	Initial presentation		Discharge from FU		Home interview	
	Yes	% Yes	Yes	% Yes	Yes	% Yes
Headache	27	96.4	12	42.9	6	21.4
Fatigue	28	100	23	82.1	10	35.7
Myalgia	16	57.2	8	28.6	1	3.57
Depression	16	57.2	11	39.3	6	21.4
Sleep disturbance	21	75	11	39.3	6	21.4
Abdominal pain	10	35.7	5	17.9	3	10.7

reported a deterioration by the time of the home interview. The remaining 21 (75%) regarded their health as the same or better than before the onset of their illness. However, this contrasts greatly with the numbers of symptoms that they were still experiencing when specifically asked.

Symptom persistence

Symptoms were recorded at three time points: The initial paediatric assessment, discharge from Bursledon House or outpatient follow-up and the semistructured home interview which was at least 1 year after discharge (Figure 2 and Table 3). Comparison of those who were symptomatic with those who were asymptomatic at the time of the semistructured home interview showed no significant difference in the mean time intervals between discharge from Bursledon House or outpatient follow-up and the home interview. All the symptoms showed a clear trend of improvement over time but recovery from symptoms was variable with 10 (36%) still experiencing fatigue and 6 (21%) having headaches, depression or sleep disturbance. Depression is the only symptom that did not show improvement during the treatment period but had improved by the time of the home interview. There was no significant correlation between symptom persistence at interview, duration of the original inpatient or outpatient treatment and the ability of the child to reintegrate to school.

Educational status and relationship to symptoms at home interview

For all the children and adolescents, the symptoms of CFS had an impact on their education to some extent. At the time of the interview, 22 (79%) had returned to full-time education or employment and 6 (21%) were at school part time or having home tuition. However, of the 22 (79%) who had returned to full-time education or employment, 18 (64%) had taken up to 3 months to achieve this and a further 4 (14%) had taken more than 3 months. A graded return to school was required because of gradually improving symptoms, increasing confidence and the reestablishment of friendships. Twelve (43%) had home tuition at some stage following their discharge from Bursledon House. In spite of the fact that most had returned to full-time education, 15 (54%) had found this difficult or even very difficult (rated on a Likert scale of very easy to very difficult) and 19 (68%) felt that their illness had affected their education or career plans significantly.

The duration of symptoms from the onset of the illness to the initial OP appointment was examined to see if there was any association with whether the young person had expressed difficulty returning to school full time, part time or had home tuition by the time of the home interview. The 15 (54%) children and adolescents who had found it difficult returning to school had a median duration of symptoms of 12 months compared

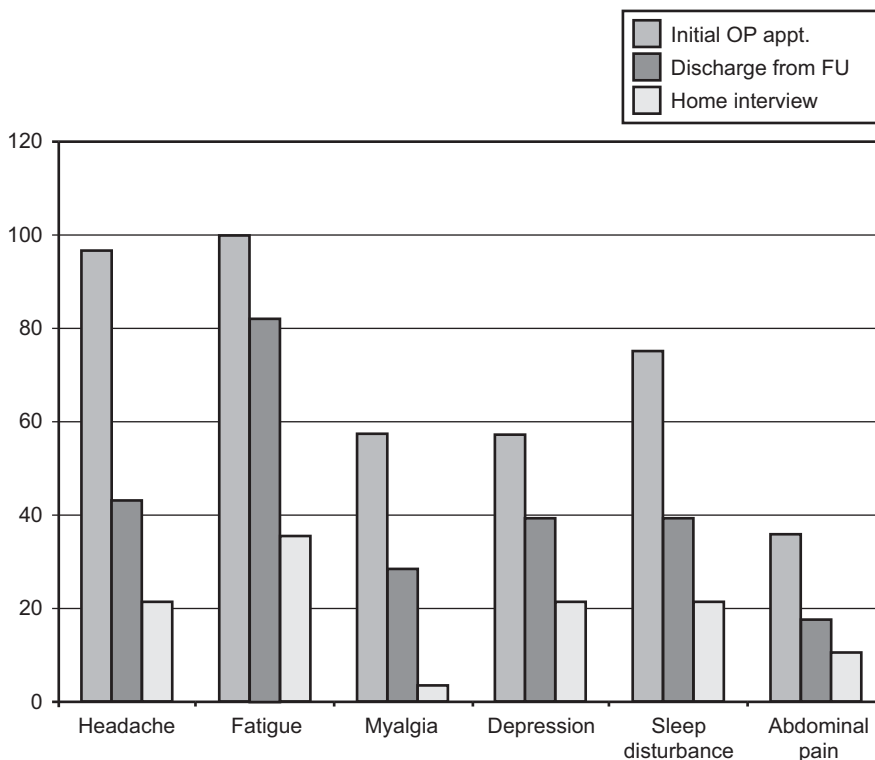


Figure 2. Percentage of symptoms at each time point.

with the 13 (46%) who expressed no difficulty returning to school who had a median duration of symptoms of only 5 months. This is not statistically significant but shows a trend, that is, those children and adolescents who expressed more difficulty returning to school tended to have a longer duration of symptoms prior to diagnosis or treatment.

Active management of school reintegration by means of careful and detailed planning of timetables with concentration on important subject areas, frequent reviews and liaison with teachers as part of the treatment programme was particularly important. Attention to careful reintroduction to subjects in which children had missed significant teaching, preparing peers for the child’s return, helping the child get about the school with heavy bags, and identifying a member of the staff who understood CFS and could support the child was also extremely helpful. Using this approach, 13 (46%) of the 18 (64%) poor attenders who missed more than 50% of school in the term before the diagnosis was made had managed to return to school full time by the home interview. Interestingly, of those who did not return to school full time, 5 (18%) out of 6 (21%) fell into the group of poor school attenders before the diagnosis was made. The symptom profile of these 6 children showed that 4 (14%) were experiencing either constant or fluctuating fatigue at the time of the home interview. Three (11%) had 3 or more symptoms in addition to fatigue and appeared to be a more disabled group.

The young person was asked to comment on various aspects of their lives that may have been affected by having CFS using yes/no/don’t know outcomes, that is, ‘if you had siblings, did your illness affect your relationship with them?’ and ‘how supportive were your school while you were ill?’. Whether the young person experienced difficulty

returning to school was not found to be statistically significantly associated with any of these variables as follows:

1. Special educational needs;
2. maintaining peer relationships;
3. history of teasing or bullying at school;
4. changes in the family;
5. whether the illness had affected relationships with siblings;
6. how supportive were family;
7. how supportive were friends;
8. how supportive were school/work;
9. membership of a CFS/ME organization;
10. trying alternative therapy.

Sources of help

Generally home and school were viewed by the young people as supportive with 19 (68%) feeling that school was helpful to them and 24 (86%) feeling that their families were supportive. Interestingly, after discharge a further 11 (39%) families had sought help from alternative medicine but only 9 (32%) out of 26 (93%) thought this had been helpful. Nine (32%) were members of CFS/ME self-help or support organizations. Belonging to a support organization or trying alternative therapy showed no significant correlation with return to normality after the illness.

All of the 17 (61%) who felt they had no difficulty readjusting to normal life after recovery from their illness had kept their old friends whereas of the 11 (39%) who found readjustment difficult only 6 (21%) had kept old friends and only 5 (18%) felt their friends had been supportive.

Discussion

This study illustrates that the persistence of symptoms and continuing school absenteeism are significant problems not widely acknowledged in previous follow-up studies.

Children were symptomatic for a median duration of 8.5 months before receiving specialist assessment and 18 (64%) had missed more than 50% of the school term before the diagnosis was made, confirming findings in previous outcome studies of delay in diagnosis and the serious impact on school attendance before the diagnosis was made. Most of the children came from intact families but this study is unusual in having more boys than girls. The mean age of onset of symptoms is largely similar to previous studies.

By the time of the home interview, although 21 (75%) regarded themselves as fully recovered, they described symptom persistence of fatigue and headache, depression and sleep disturbance. Of those who had returned to full-time school or employment, most felt their illness had a significant impact on their education or career plans and those who had most difficulty returning had experienced symptoms for longer before diagnosis. The importance of school absenteeism is noted by Rangel et al. (2000) but none of the other follow-up studies discuss the issues surrounding return to school during the recovery period.

The number of children and adolescents who regarded themselves as fully recovered by the home interview compares favorably with the two studies quoted previously which used the Oxford diagnostic criteria (Rangel et al., 2000; Smith et al., 1991).

Varying attention is drawn to symptom persistence in previous studies but the significance of their interference in recovery is only discussed in one study. The high levels of

sleep disturbance are of particular note. Previous research (Stores, Fry, & Crawford, 1998) shows that sleep in adolescents with CFS is far more disrupted by both brief and longer night-time waking compared with controls although, in contrast to our study, no increase in actual sleep time or delayed sleep phase was found. It has been suggested that night-time waking is associated with impairment of day-time performance, mood and behaviour and may be of importance in maintaining CFS symptoms of fatigue, low mood and physical complaints.

Although the sample size is larger than in many previous studies, all the cases are severely affected children and adolescents referred to a tertiary centre. The findings are therefore not necessarily applicable to the milder cases seen in the community by GPs or in general paediatric clinics. However, a strength of this study is the rigorous application of the Oxford criteria before inclusion compared to other studies, few of which have applied either the Oxford or CDC criteria. The variable follow-up intervals mean that children may have been interviewed at different stages of recovery, and the information they gave depended on the young person's own report of their symptoms and functioning over the follow-up period. Case inclusion was decided retrospectively from the case notes thus limiting the quantity and quality of information available. Poor sampling and case inclusion criteria were noted in some of the follow-up studies previously quoted and this would be addressed by a prospective study. It is not clear without further research how generalizable these findings are to young people with less severe or disabling CFS and it would be important to determine if significant symptom persistence and school absenteeism would still apply to a more mildly affected group at follow-up.

Nonetheless, this study reemphasizes the very chronic nature of CFS in children and adolescents with some still experiencing symptoms and poor school attendance or employment for up to 5 years after admission to a specialist service. Even though the majority of children in this study were discharged from outpatient follow-up by 6 months, their progress was by no means consistent. If discharge at about this time represents common practice, then children recovering from CFS are lost to specialized follow-up but will still be experiencing symptom persistence and possible unrecognized educational failure. Other researchers have commented on the intermittent progress of recovery with setbacks and fluctuating symptoms often triggered by minor infections, start of the school term and so on (Krillov et al., 1998). A more flexible approach, therefore, to outpatient follow-up (after the initial treatment plan has been implemented) with 3–6 monthly 'booster' treatments may be helpful at critical times to help maintain progress.

Although this sample is from a tertiary centre and the findings are not directly applicable to community samples, nearly all children and adolescents with CFS will be managed initially in the community. By the time they reach tertiary care they are likely to have well-established symptoms and dysfunction with all the subsequent sequelae. It is therefore vital to address earlier diagnosis and referral. This is obviously an important role for the school health service but greater GP awareness and prompt referral is the key. A simple management plan put in place by the GP or school health service to ensure that some education continues while awaiting a specialist assessment may reduce the length of time before eventual return to full-time education by ameliorating the effects of loss of contact with peers and falling behind educationally.

In this study, the young people who did not return to school full time after treatment were also the poor attenders before the diagnosis was made. It is of great importance that these children and adolescents are recognized quickly when absent from school for any length of time and actively managed in the community by good liaison between school, local CAMHS and parents with regular reviews and rapid response if attendance drops off with careful attention to specific problems. They may represent a subgroup

which has some features of chronic school refusal and need a more prompt but flexible approach to school reintegration after lengthy absence which aims, wherever possible, to maintain the child in school even on a very reduced timetable. This of course has implications for schools which may need to be flexible and creative in their response. It may be that someone in each health district with a special interest in CFS in children might raise their profile both to education and primary health care. The school health service would be well placed in this role.

It is interesting that the majority of young people thought their families were supportive through their illness in spite of the extreme frustration, disappointment and anxiety that many parents expressed. Most of the young people reported their friends to be supportive including those who had difficulty returning to school. Maintaining peer contact and support is likely to be a key factor in reducing isolation and rebuilding self-confidence after illness. The high number of children and families seeking alternative therapy prior to specialist referral is worthy of comment. This may represent disappointment or cynicism with medical interventions and attempts by families to find their own solutions, although most did not report alternative therapy as helpful.

The key messages from this study are the importance of early recognition, intervention and the need for longer and more effective follow-up with greater attention to symptom persistence. Early and close liaison with education to enable those children who have been unable to attend school to resume attendance as soon as possible is vital. Further research is needed to examine the impact of changes in these areas of management on the long-term prognosis of chronic fatigue syndrome in children.

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