Relationship between School Absenteeism and Depressive Symptoms among Adolescents with Juvenile Fibromyalgia

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Objective To describe school absences in adolescents with Juvenile Primary Fibromyalgia Syndrome (JPFS) and examine the relationship between school absenteeism, pain, psychiatric symptoms, and maternal pain history. Methods Adolescents with JPFS (N = 102; mean age 14.96 years) completed measures of pain and depressive symptoms, and completed a psychiatric interview. Parents provided information about the adolescents’ school absences, type of schooling, and parental pain history. School attendance reports were obtained directly from schools. Results Over 12% of adolescents with JPFS were homeschooled. Those enrolled in regular school missed 2.9 days per month on average, with one-third of participants missing more than 3 days per month. Pain and maternal pain history were not related to school absenteeism. However, depressive symptoms were significantly associated with school absences. Conclusion Many adolescents with JPFS experience difficulties with regular school attendance. Long-term risks associated with school absenteeism and the importance of addressing psychological factors are discussed.

Key words depressive symptoms; juvenile fibromyalgia; pediatric pain; school absences; school functioning.

Juvenile primary fibromyalgia syndrome (JPFS) is a poorly understood pediatric chronic pain condition affecting primarily girls and is typically first diagnosed in the adolescent years (Yunus & Masi, 1985). The cardinal symptoms of JPFS include widespread musculoskeletal pain of greater than 3 months duration, multiple painful tender points, disrupted sleep, chronic fatigue, and other associated features such as irritable bowel symptoms, lightheadedness/syncope, anxiety, and recurrent headaches. Previous research indicates that chronic pain in children has a negative impact on multiple domains of functioning, including the developmentally critical area of school functioning (Gauntlett-Gilbert & Eccleston, 2007; Konijnenberg et al., 2005; Logan, Simons, Stein, & Chastain, 2008;
Vetter, 2008). Within the broader domain of school functioning, difficulty with school attendance is an area that deserves special attention. Attending school is a key developmental expectation in the adolescent years, and longitudinal studies have shown that increased school absenteeism is a risk factor for school drop-out and multiple economic, marital, social, and psychiatric problems in adulthood (Kearney, 2008).

Patients with JPFS may be particularly vulnerable to school absenteeism because of their unremitting widespread pain, disrupted sleep, and chronic fatigue. At least two prior studies have indicated that school absenteeism might be a significant problem for patients with JPFS. Reid, Lang, & McGrath (1997) found that adolescents with JPFS missed an average of 22.6 (SD = 16.63) days of school in an academic year and Kashikar-Zuck, Vaught, Goldschneider, Graham, & Miller (2002) found that adolescents with JPFS reported missing 5.23 days (SD = 7.76; range = 0–30) in the last 30 days of school. Both these studies had relatively small sizes (<20 JPFS patients in each study) and a high level of variability in school absences, so it is not clear whether this level of absenteeism is commonly seen in adolescents with JPFS and why some adolescents attend school regularly despite their symptoms, while others miss a great deal of school. Despite anecdotal reports by parents of children seen in chronic pain clinics that their child is missing school due to the severity of their pain, research has shown that pain characteristics (including pain intensity and pain duration) are not significantly related to school functioning (Eccleston, Crombez, Scotford, Clinch, & Connell, 2004; Kashikar-Zuck et al., 2002; Logan & Curran, 2005) but that patient-related psychosocial factors and parent factors may in fact play a more important role.

Of the patient-related psychosocial factors, depressive symptoms are the most well-studied in pediatric chronic pain. Higher levels of depressive symptoms are consistently found to be related to overall functional disability (Gauntlett-Gilbert & Eccleston, 2007; Kashikar-Zuck et al., 2002; Logan et al., 2008; Reid et al., 1997) and Logan et al. (2008) found that depressive symptoms were significantly associated with impairment in many domains of school functioning, including school attendance. In a recent publication, it was observed that anxiety and attentional disorders are also relatively common psychiatric conditions in JPFS patients (Kashikar-Zuck et al., 2008b) but their association with school absenteeism is unknown. Anxiety and behavioral disorders are common psychiatric reasons for school absenteeism in children (Kearney, 2008) but their role in children with chronic pain have not been well studied.

Another potential psychosocial factor that may be associated with higher disability in pediatric pain patients is a parental history of chronic pain (Jamison & Walker, 1992; Kashikar-Zuck et al., 2008a; Lynch, Kashikar-Zuck, Goldschneider, & Jones, 2006; Schanberg, 2001; Schanberg, Keefe, Lefebvre, Kredich, & Gil, 1998). Maternal history of chronic pain, in particular, is commonly reported in adolescents with JPFS and a higher number of pain conditions reported by mothers was found to be associated with greater functional impairment among the adolescents (Kashikar-Zuck et al., 2008a). A family environment in which one or more parents suffer from chronic pain is thought to confer a risk for greater disability in the child in part due to social learning influences such as parent modeling of pain behavior or pain coping. For example, adolescents with JPFS who observe a parent being disabled from pain and staying home from work may have a greater likelihood of missing or avoiding school when they experience pain themselves. School absences have not been specifically examined in the context of parental pain history. Further research is warranted to better understand the potential role of the psychological factors mentioned above (such as depressive symptoms, presence of co-morbid psychiatric diagnosis) or parental pain history, in explaining the significant problem of school absenteeism in JPFS.

Studies on school functioning in pediatric chronic pain have typically utilized school absences as one of the primary indicators of impairment. However, an additional indicator of school disability that has not been adequately studied is whether or not the child is able to attend regular (full-time) school. High rates of homeschooling were documented in one study of children with chronic pain (Vetter, 2008), and in a clinical setting, several adolescents with JPFS anecdotally report being homeschooled due to their medical condition. This might include being enrolled in a formal homeschooling program, online or virtual schooling or a home-bound instruction program. Parents of these homeschooled patients typically cite the child's pain or fatigue as the reason that they are unable to handle regular school hours. They also mention conflicts with school authorities about appropriate accommodations for the child's disability as a reason for homeschooling.
A limitation of many of the studies thus far is that they excluded participants who were homeschooled (Mikkelsen, Salminen, & Kautiainen, 1997; Shapiro et al., 1995; Sturge, Garralda, Boissin, Dore, & Woo, 1997) or did not separately describe this subgroup. Therefore, little is known about the clinical and psychosocial characteristics of patients who elect to be homeschooled.

The objectives of this study were to address gaps in the literature by (1) describing school absences and homeschooling rates in children and adolescents with JPFS, (2) examining whether pain intensity, depressive symptoms and maternal pain history were associated with school absenteeism, (3) examining whether school absences significantly differed among patients with or without a diagnosis of an anxiety, depressive, or attentional disorder, and (4) describing the subset of JPFS patients who are homeschooled with respect to their pain intensity, depressive symptoms, and maternal pain history. Based upon past studies, it was anticipated that pain intensity would not be significantly associated with school absences in children and adolescents with JPFS. However, it was hypothesized that depressive symptoms and maternal history of chronic pain would be significantly associated with school absences. It was also expected that children and adolescents with JPFS who had a co-morbid psychiatric diagnosis would have significantly more school absences than those without. Given the lack of prior work in homeschooled pain patients, no specific hypotheses were made regarding characteristics of JPFS patients who were homeschooled versus those in regular school.

**Method**

**Participants**

The study sample consisted of 102 children and adolescents ages 11–18 years with JPFS and their parents (primarily mothers) from a larger sample of patients who were screened for participation in a clinical trial of cognitive-behavioral treatment for JPFS. Inclusion and exclusion criteria for the study, as well as a description of psychiatric diagnoses in a subset of this sample (N = 76) have been previously published (Kashikar-Zuck et al., 2008b). Briefly, participants were recruited from four pediatric rheumatology clinics in the Ohio and Kentucky region. Patients were eligible if they met Yunus and Masi criteria (Yunus & Masi, 1985) for juvenile fibromyalgia and had no other rheumatic disease (e.g., systemic lupus erythematosus, juvenile idiopathic arthritis). For this study, which was focused on school attendance difficulties related to JPFS, patients had to be enrolled in regular school or homeschooled because of their JPFS symptoms. One JPFS patient who was homeschooled due to personal beliefs and two patients who were in college were excluded from the sample.

**Procedure**

Written informed consent was obtained from parents and written and verbal assent were obtained from all participants prior to study participation. The study was approved by each hospital’s Institutional Review Board. Measures in this study were administered as part of a comprehensive baseline assessment for the treatment study. A research assistant mailed pain diaries with instructions to the participants prior to the assessment, and participants brought the completed diaries to the study visit. During the assessment, parents and children completed self-report questionnaires separately and a trained psychologist or psychology fellow conducted a standardized psychiatric interview. Upon completion, participants were given a gift coupon in appreciation for their time and effort.

**Measures**

**Demographic Information**

Parents completed a demographic information form. Items on the form included child’s gender, age, race/ethnicity, current grade in school, parents’ education levels, and socioeconomic status including annual household income and parents’ occupations. An index of socioeconomic status based upon occupational prestige was calculated for mothers and fathers (Nakao & Treas, 1992).

**Pain Intensity**

Daily pain diaries were mailed to participants along with instructions to begin diaries one week prior to the assessment. Diaries consisted of a 10-cm visual analog scale (VAS) anchored on the ends by “no pain” and “worst possible pain.” VAS scales have been validated for use in school age children and have been recommended for use in assessment of recurrent/chronic pain in children over 8 years of age (Stinson, Kavanagh, Yamada, Gill, & Stevens, 2006). Average pain intensity score based upon one week of daily diaries was calculated. While pain intensity might fluctuate in JPFS, the pain experience in fibromyalgia tends to be chronic (as compared to recurrent pain conditions such as headaches or abdominal pain where individuals may have several days of no pain). Therefore,
a one week time frame is considered sufficient to capture pain intensity in JPFS patients.

Depressive Symptoms
Participants completed the Children’s Depression Inventory (CDI). The CDI is a 24-item index of depressive symptoms that has been validated for use in children ages 7–17 years (Kovacs, 1992). It has strong psychometric properties and is frequently used in pediatric pain research (Conte, Walco, & Kimura, 2003; Eccleston et al., 2004; Kashikar-Zuck, Goldschneider, Powers, Vaught, & Hershey, 2001). Respondents select one of three statements for each item. A total raw score and age- and gender-normed T-scores can be calculated. The total raw scores were used for analyses because the full range of scores can be utilized (unlike T-scores which are truncated with a minimum T-score of 35).

Psychiatric Diagnoses
The Kiddie schedule for affective disorders and schizophrenia (K-SADS-PL) (Chambers et al., 1985; Kaufman et al., 1997), a semi-structured psychiatric interview, was used to arrive at diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV). Adolescents received a complete assessment of DSM-IV psychiatric disorders as described in detail in a previous publication (Kashikar-Zuck et al., 2008b). For the purpose of this study, adolescents were categorized into whether or not they had a current anxiety disorder (panic disorder, agoraphobia, specific phobia, social phobia, obsessive–compulsive disorder, post traumatic stress disorder, generalized anxiety disorder, or separation anxiety disorder), a depressive disorder (major depressive disorder, dysthymic disorder, depressive disorder NOS), or an attentional disorder [attention deficit hyperactive disorder (ADHD) inattentive type, ADHD hyperactive type, ADHD combined type, or ADHD NOS].

Maternal Pain History
The parent pain history questionnaire, a measure used in prior pediatric pain studies (Lester, Lefebvre, & Keefe, 1994; Schanberg et al., 1998), was used to obtain maternal pain history. The parent pain history form contains a list of a variety of pain conditions on which the respondent indicates whether or not they suffered from each type of pain and whether or not they received treatment for that condition. The total number of pain conditions was calculated using this questionnaire.

School Attendance and Type of Schooling
School attendance data were obtained by parent report as well as directly from school records to ensure that the information was reliable and accurate. Information about the reasons for each school absence was not available and all school absences were counted (including days that may have been missed for doctor’s visits or for reasons unrelated to JPFS symptoms). Late starts (tardy days) were not counted unless they were denoted as a “half-day absence” on school reports. Average number of school days missed per month was calculated by dividing the total number of days missed since the first day of school by the number of months the child had been in school for the academic year. School attendance records were obtained directly from the school by faxing a request along with a permission form signed by the participant’s parent. Parents reported on the type of schooling: regular school or homeschooled (defined as full-time homeschooling, home-bound, or internet-based home program) and reason for homeschooling. Although we recognize that the category of “homeschooling” combines several types of options, all preclude attendance in regular school with its associated expectations of consistent attendance, sitting in class for long periods, and daily interaction with teachers and peers. The rationale for combining homeschooling options is that—aside from academic expectations, successful navigation of the demands and expectations in regular school is an important developmental activity for school-age children and adolescents, which is missing for those who are not in the regular school environment. Of note, children were aware that their attendance information was being gathered from their school and parents. However, in this study, information was gathered for the months prior to their study enrollment and therefore school absenteeism rates were not affected by their knowledge that attendance data would be examined.

Statistical Analysis
Data were entered and analyzed using SPSS Version 15 statistical software (SPSS, Chicago, IL). Descriptive information about school absences, rates of homeschooling, pain intensity, pain duration, depressive symptoms, and psychiatric status were computed. The relationship between potential confounding variables (age, socioeconomic index, and pain duration) with school absences depressive symptoms were first examined. Age, socioeconomic index and pain duration were not found to be significantly related to depressive symptoms or school
absences. Therefore, these variables were not used as covariates in further analyses. Next, a multiple regression analysis was conducted to analyze whether pain intensity, depressive symptoms and/or maternal history of chronic pain were associated with school absences (parent report) in adolescents attending regular school. Pain intensity was entered in the first step of the regression analyses, followed by depressive symptoms and maternal pain history, in order to examine the effects of the latter variables after accounting for pain intensity. The role of depressive symptoms was further explored by comparing adolescents with high versus low levels of school absences (based upon a median split of the distribution of school absences) using an independent samples t-test. Finally, t-tests were conducted to compare parent report of school absences in adolescents with and without a diagnosis of anxiety disorder, mood disorder, and attention deficit disorder.

Results

Demographics

There were a total of 102 adolescent JPFS participants in the study. The majority of them were female (87.3%) and Caucasian (85.3%) with a mean age of 14.96 (SD = 1.82). Over two-thirds of the adolescents were in high school (68.6%) with the remaining in middle school. Most of the parents who participated were mothers (91.8%). The average socioeconomic index was 40.40 for mothers and 53.65 for fathers, which is equivalent to clerical retail sales and lower to mid-level manager, respectively.

Attendance Rates

Of the 89 school attendance reports requested directly from schools, 82 reports were returned (92%). As shown in Table I, the average number of school days missed per month was 2.88 days per school report and 2.90 days per parent report (Pearson r = .880), which indicates a high level of concordance between school and parent report. As noted in prior studies, there was a great deal of variability in school absences (SD = 2.89 days per month; range = 0–15.35) and the distribution of school absences was positively skewed with about two-thirds of the adolescents (68.8%) missing three days or less of school per month, and about one third missing more than 3 days of school per month.

Homeschooling

Thirteen participants (12.7%) were homeschooled or enrolled in home-based instruction due to their fibromyalgia symptoms. In comparison, the national rate for

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regular school (n = 89)</th>
<th>Home school (n = 13)</th>
<th>Total (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average pain intensity (0–10 VAS)</td>
<td>5.20 ± 1.98</td>
<td>5.20 ± 2.11</td>
<td>5.20 ± 1.99</td>
</tr>
<tr>
<td>Pain duration (in months)</td>
<td>35.33 ± 27.00</td>
<td>38.76 ± 34.01</td>
<td>35.77 ± 27.83</td>
</tr>
<tr>
<td>CDI total raw score (0–81)</td>
<td>12.65 ± 7.08</td>
<td>15.85 ± 8.55</td>
<td>13.07 ± 7.32</td>
</tr>
<tr>
<td>CDI T-score</td>
<td>54.37 ± 11.02</td>
<td>59.69 ± 13.67</td>
<td>55.07 ± 11.47</td>
</tr>
<tr>
<td>School days missed each month (school report)</td>
<td>2.88 ± 2.84</td>
<td>2.52 ± 3.14</td>
<td>2.83 ± 2.89</td>
</tr>
<tr>
<td>School days missed each month (parent report)</td>
<td>2.90 ± 2.87</td>
<td>5.00 ± 3.16</td>
<td>5.06 ± 2.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depression disorders</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>71 (82.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>15 (17.4)</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>No</td>
<td>41 (47.7)</td>
</tr>
<tr>
<td>Yes</td>
<td>45 (52.3)</td>
</tr>
<tr>
<td>Attentional deficit hyperactivity disorder</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>No</td>
<td>65 (75.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>21 (24.4)</td>
</tr>
</tbody>
</table>

Table I. Descriptive Data on Pain, Depressive Symptoms, School Absences, Psychological Diagnoses, and Parental Pain History
homeschooling in the general population is 2.2% (Statistics, 2006).

Pain, Depressive Symptoms and Maternal Pain History

Average pain duration for the sample was 35.77 months, or nearly 3 years. Pain intensity levels were in the moderate range with an average VAS of 5.20. On average, self-report of depressive symptoms on the CDI were in the mildly elevated range compared to age and gender norms, but 25% of the sample scored above the clinical cut-off (T-score = 65) for depressive symptoms. As shown in Table I, pain duration and pain intensity did not appear to differ between adolescents in regular school versus homeschool. The homeschooled adolescents appeared to have slightly higher CDI scores, but statistical analyses were not possible due to the small number of homeschooled participants. Mothers of adolescents with JPFS reported suffering from an average of 5 pain conditions themselves.

Psychiatric Diagnoses

Findings from the KSADS interview were consistent with our prior published data on a subset of this clinical trial sample showing that anxiety disorders are widely prevalent in JPFS with over half the sample meeting the DSM-IV criteria for one or more anxiety disorders. About 24% of adolescents met criteria for an attentional disorder and 19% met criteria for a depressive disorder (Table I). It should be noted that fewer participants met diagnostic criteria for depressive disorder on the clinical interview than those scoring above the clinical cut-off on the CDI (19% versus 25% of the sample). The overlap between the two groups was substantial but not identical with 65% of those meeting diagnostic criteria for depressive disorder also scoring above the CDI cut-off.

Factors Related to School Attendance

Results of the regression analysis (Table II) indicated that neither pain intensity nor maternal pain history were significantly related to school absences. However, greater depressive symptoms by adolescent self-report on the CDI were significantly related to higher rates of school absences. Due to skewness in the distribution of school absences, we compared adolescents with a high level of school absences (above the median of 2 days per month) with a low level of school absences (below the median) on depressive symptoms. Consistent with the results of the regression analysis, the group with a high level of school absences reported significantly greater depressive symptoms (t = −2.11; p = .03) on the CDI. In contrast to the significant differences based on depressive symptoms on the CDI, adolescents who met criteria for a diagnosis of depressive disorder based upon psychiatric interview were not found to have significantly higher school absences than those who did not (t = −.98; p = .33). Adolescents with anxiety or attentional disorders also did not have significantly greater school absences than those without these diagnoses (t = −.62; p = .53 and t = .52; p = .61, respectively). Given the inconsistent findings on the CDI self-report data on depressive symptoms and diagnosis of depressive disorders based upon clinical interview, we further explored the CDI data by comparing adolescents with scores above the clinical cut-off for depressive symptoms (T-score > 65) and those below the cut-off. Results were similar to the regression analysis that is, adolescents who scored above the clinical cut-off for depressive symptoms had significantly greater school absences than those below the cut-off (mean of 4.4 absences per month versus 2.4; p < .05) but still discrepant with the psychiatric interview data.

Discussion

This study supports and extends the findings of past research documenting the problem of school absenteeism in children and adolescents with JPFS. The rate of home schooling (12.7%) was found to be higher than the national average of about 2%, and the average number of school absences for JPFS patients who attended regular school was nearly 3 days per month (which is about 27 days in a 9-month school year). In comparison, the regional data for school absences (Kentucky, 2008; Ohio, 2008) obtained from the state report cards of districts in the Ohio and Kentucky region indicate average school attendance in the 95% range (or about 9 days of absences...
in the entire school year). The current study likely presents the most robust estimates of school absences among clinically referred adolescents with JPFS compared to the research literature so far because of the larger sample size (over 100 patients), inclusion of patients from four different pediatric rheumatology clinics, and the fact that data were gathered for the entire duration of the current school year with confirmation from school attendance records. The implications of missing nearly a month out of the school year, especially in the high school years, cannot be underestimated because the academic curriculum is typically more demanding in high school and adolescents often report that they have trouble keeping up with assignments and homework. As might be expected, parents are often concerned about their child’s grades and school performance, and schoolwork can become a potential source of exacerbated familial stress.

The long-term implications of early school absenteeism are potentially of concern with regard to future career options. Preliminary findings from a follow-up study (Kashikar-Zuck et al., manuscript under review) showed that adolescents with JPFS were somewhat less likely to go to college in the early adult years than their same age and gender-matched healthy control classmates (39.6% of JPFS versus 55.8% of healthy controls). More longitudinal research is needed to examine whether difficulties with attending school or homeschooling due to pain-related factors is associated with longer term effects on college and/or occupational outcomes in JPFS as well as other chronic pain conditions.

As reported in other studies in pediatric chronic pain, results of this study indicated that pain intensity does not appear to be associated with school absences in children and adolescents with JPFS. The consistent findings in the literature that pain characteristics bear little to no relationship with ability to participate in routine activities, such as going to school, strongly suggest that the presence of other factors might explain pain-related disability. Clinical impressions and past studies (Kearney, 2008) suggest that psychiatric comorbidity may play a role in school absenteeism in adolescents and the current study confirmed that a number of JPFS patients meet criteria for a psychiatric condition. However, a current diagnosis of depressive disorder, anxiety disorder, or attentional disorder was not found to be associated with number of school absences in JPFS patients. Rather, higher levels of self-reported depressive symptoms on the CDI were significantly associated with more school absences. However, the amount of variance explained by depressive symptoms was modest, and the lack of significant effect of having a diagnosis of depressive disorder was a new finding. This lack of correspondence may be because the psychiatric interview is an in-depth assessment conducted by a clinician with both child and parent, and may provide a more stringent standard for clinical depression, resulting in fewer participants who were classified as having a current mood disorder. Nevertheless, elevated depressive symptoms on the CDI (regardless of whether or not a clinical diagnosis was present) seemed to be consistently associated with more school absences. Along with depressive symptoms, there may be additional factors not assessed in this study (such as peer and familial relationships, and coping factors such as catastrophizing about pain) that may affect school absenteeism.

Study results provided new information about the characteristics of adolescents with JPFS who were homeschooled. Although the relatively small number of homeschooled patients precluded statistical analyses, there did not appear to be any evidence of differences in pain severity and depressive symptoms between those who were homeschooled compared to those who were enrolled in regular school. Findings from another recent study in pediatric chronic pain indicated that children who were allowed accommodations in school (such as being sent to the nurse’s office, sent home when in pain, reduced workload or hours in school, extensions on assignments) had higher levels of school impairment and their grades were no higher than those who were not provided with accommodations (Logan et al., 2008). Contrary to expectations, maternal pain history was not associated with school absenteeism. This study did not specifically assess coping with pain symptoms in parents with a positive pain history; thus, this is an interesting area for further investigation.

The results of this study should be interpreted with caution because it cannot be assumed that depressive symptoms were causally related to greater school absenteeism. However, our findings are in concordance with research indicating that depressive symptoms are one of the most common psychiatric conditions linked to school absenteeism (Kearney, 2008). Moreover, past research has shown that pain and related conditions such as fatigue, headaches, irritable bowel, dysmenorrhea, and sleep problems are also cited as being some of most common medical reasons associated with school absenteeism (Kearney, 2008). Therefore, it would seem that adolescent patients who have pain as well as increased depressive symptoms would be at added risk. Addressing psychological issues
related to school attendance in JPFS is an important goal because it may lead to a vicious cycle of school avoidance.

One limitation of this study was that specific information about the reasons for school absences was not collected. Therefore, the absences could be due to pain, other physical symptoms, medical appointments, or other reasons. Other limitations are the lack of a comparison group and the small sample size of homeschooled adolescents. Finally, the results are generalizable only to JPFS patients seen in tertiary care pediatric rheumatology settings, and may not be as applicable to those seen in primary care or those who do not seek treatment.

Despite the limitations, this study found that difficulty with school attendance can be a significant problem in clinically referred adolescents with JPFS and depressive symptoms were significantly associated with school absences. The findings highlight the need for a greater focus on reducing school absenteeism in adolescents with JPFS. Behavioral and cognitive-behavioral treatments should consider including a greater focus on comprehensive planning and implementation of strategies to address school absenteeism. More longitudinal research into the long-term implications of early school-related disability is needed, as well as research on peer and family factors that can maintain or exacerbate school problems.

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