Functional Somatic Symptoms and Consultation Patterns in 5- to 7-Year-Olds

OBJECTIVE: To investigate the frequency of and factors linked to medical consultation for functional somatic symptoms (FSS) among 5- to 7-year-old children.

METHODS: We assessed 1327 children from the Copenhagen Child Cohort 2000 for FSS at ages 5 to 7 years. Register data on past health care use in general practice were compared between children with and those without parent-reported medical consultation for FSS at the age of 5 to 7 years: respective consulters (n = 96) and nonconsulters (n = 211) and children without FSS (n = 1019). Degree of parental worries about the child's symptoms and parent-reported symptom characteristics and associated impacts were compared between consulters and nonconsulters.

RESULTS: Among 308 children with FSS, 31.1% were consulters. Being a consulter was significantly associated with multisymptomatic presentation, parental worries about the symptoms, symptom impact, and a higher past health care use in general practice. Multiple logistic regression analysis controlled for gender, comorbid physical disease, and symptom severity revealed that the number of face-to-face contacts in general practice during the child's first 4 years of life predicted being an consulter for FSS at 5 to 7 years (odds ratio 1.03, 95% confidence interval 1.00–1.06; odds ratio interpreted per unit change in number of contacts).

CONCLUSIONS: This study adds to our understanding of health care use for FSS in childhood by highlighting the influence of parents’ early consultation patterns with their child and the influence of parental perceptions of their child’s health and FSS-related impact on pediatric health care use for FSS. Management of health care use in children with FSS should address these aspects. Pediatrics 2013;132:e459–e467
Medically unexplained or functional somatic symptoms (FSS) are common among young people and account for ~10% to 15% of visits in medical services. According to their symptoms, these children may undergo many investigations and treatment approaches, which can influence their well-being and constitute a large cost burden on society. Still, research on consultation patterns for pediatric FSS remains scarce. The prevailing research data indicate that even though many parents cope with their child's symptoms without resorting to medical care, children's use of general practitioner services has increased in particular in North European countries. Suggested explanations for this trend include higher parental awareness and increases in both chronic disease and FSS among children in general. Because patterns of health care use may be established early in life, it is important to obtain knowledge on determinants of medical help-seeking behavior for FSS in childhood to prevent unnecessary hospitalization and treatment.

Factors other than a child's health status, such as age and gender, socioeconomic status, ethnicity, parent's mental health, and parental use of health services, have been demonstrated to influence children's health care use. In addition, longitudinal research has found a child's past health care use to be a strong predictor for future health care use. Finally, a few studies addressing health care use in relation to chronic benign (ie, medically unexplained) pain in childhood and adolescence have found pain severity and related impairment to be important factors linked to the use of medical services.

In a previous study, we identified a pattern of FSS associated with significant impairment and distress in children as young as 5 to 7 years. The purposes of the current study were to investigate health care use in these children during their first 4 years of life and to explore factors linked to medical help seeking. We focused on health care use in general practice because, in many countries, the general practitioner acts as a gatekeeper whom individuals have to consult to be referred to more specialized medical care. We hypothesized that (1) the use of health care in general practice early in life would predict the child's consultation patterns for FSS at the age of 5 to 7 years and (2) important factors linked to medical consultation for FSS at the age of 5 to 7 years would be FSS severity and related impairment and parental worries about the child's symptoms.

METHODS

Study Population

We studied a subsample of children from the Danish cohort: the Copenhagen Child Cohort 2000 (CCC2000). This is a general population birth cohort that totals 6090 children born in the former county of Copenhagen in 2000. The cohort has been followed prospectively since birth.

The analyses in the current study included 1327 children from a random sample (N = 3000) drawn from the cohort at baseline of whom 308 children (22.5%) were assessed to have ≥1 FSS at the age of 5 to 7 years (Fig 1).

Baseline Variables

An overview of the data collection is given in Fig 1. Data on sociodemographic and early child factors were obtained from Danish national registers covering the entire Danish population. Information on early child factors, such as continuous data (subsequently categorized according to clinically relevant cutpoints) on birth weight and gestational age, on parental worries about the child's symptoms.

**FIGURE 1**

Flowchart of study population and data collection showing the attrition and various time points and sources for data collection.
parity, parental age, ethnicity, and whether the parents were living together at the time of the child's birth, was obtained from the Medical Birth Register. Information on maternal education, family size, and annual household income (dichotomized as the upper quartile versus the 3 lower quartiles) was obtained from the Danish Integrated Database for Labor Market Research. The variable “Social level of living area” was based on information from the Danish Central Civil Registration System regarding the municipality in which the child was born. “Serious physical disease first year of living” was constructed based on data from the Danish National Patient Register regarding hospitalizations within the first 12 months of life with International Classifications of Disease, 10th Revision discharge diagnoses of serious physical diseases, including severe infections, congenital diseases of the heart and lungs, renal and metabolic disorders, etc.

Parental Mental Health Problems
Data on the parent’s psychiatric illness were obtained from the Danish National Psychiatric Central Register, which holds information on all contacts to public psychiatric hospitals. The variables on parental psychiatric disorders during the child's first 4 years of life were constructed on the basis of data on the mother, respectively the father, being diagnosed with an International Classifications of Disease, 10th Revision diagnosis of a mental disorder (F00–F99) during this period.

Health Care Use in General Practice
Information on the child’s health care use in general practice was obtained from the Danish National Health Service and measured as the total costs in euros and the total number of face-to-face contacts during the first 4 years of life. More than 98% of Danish citizens are registered with a general practitioner and receive free medical care. For reasons of accounting, the National Health Service receives electronic information on all general practice contacts. On average, Danish children visit their general practitioner 16 times during their first 4 years of life.54

FSS
The Soma Assessment Interview (SAI) was used to assess FSS as part of a 5- to 7-year follow-up of the children in the CCC2000 (for a detailed description, see Rask et al). The SAI is a comprehensive parent interview used to assess the 1-year prevalence of FSS in 5- to 10-year-old children. It has 5 sections that cover items regarding the child’s (1) physical health; (2) physical complaints; (3) duration and impact of possible unexplained physical symptoms, use of pain killers, and number of physician's visits during the past year due to these symptoms; (4) health anxiety symptoms with 3 items concerning the child having excessive worries about its health, displaying a tendency to complain about physical symptoms, and/or being difficult to reassure when having these worries/physical symptoms; and, finally, (5) open-ended questions to get the parents to describe possible unexplained physical complaints in their own words. A skip rule is incorporated so that section 3 and section 5 are skipped if no unexplained physical complaints have been reported during the past year.

The SAI interview was administered by a lay interviewer, and all the obtained data were subsequently reviewed by a clinical assessor (ie, a physician) who made the final assessment of FSS. Agreement on classification of FSS among assessors was good (κ = .82).

The variables “Parental perceived general health of the child,” “Family burden of the child's FSS,” and “Parental worries about the child's FSS” were based on specific SAI items (for details, see Table 1).

Outcome Variable
The outcome variable, categorized as “Consulter” and “Nonconsulter”, respectively, was constructed based on information obtained at the 5- to 7-year follow-up by the SAI regarding parent-reported physician’s visits due to FSS during the past year. “Consulter” was defined as children with ≥1 parent-reported physician’s visit due to FSS, whereas “Nonconsulter” was defined as children with FSS but without parent-reported physician’s visits due to the symptoms.

Statistical Analyses
Analyses were carried out by using Stata 12 software (Stata Corp, College Station, TX). Attrition analyses were based on the whole random sample (N = 3000) (Fig 1).

Comparison of the use of health care in general practice during the first 4 years of life involved the whole study population (N = 1327), whereas factors associated with medical consultation for FSS were studied in the subsample of children assessed with FSS at the age of 5 to 7 years (N = 308) (Fig 1).

Descriptive statistics were used to analyze sample characteristics. Differences were tested by χ² tests for categorical variables and by Wilcoxon-Mann-Whitney tests for continuous variables. In these univariate analyses, a relatively conservative criterion of P < .01 (2-sided) was adopted owing to multiple comparisons.

We performed a multiple logistic regression analysis to test the effect of previous use of general practice services on being a consulter for FSS at the age of 5 to 7 years assuming a simple linear relation on a logit scale. To avoid overfitting, only 3 additional explanatory variables were included in this model. These 3 variables (gender, comorbidity chronic physical disease, and the child presenting multisymptomatic FSS) were chosen a priori based on the literature on important determinants of health care use.
in children with chronic benign pain, thereby excluding other potential important explanatory variables such as socioeconomic status, parental psychopathology, and ethnicity. In this analysis, a P value of <.05 was considered significant.

**Ethics**

The study was approved by the Scientific Ethics Committee of Copenhagen County (KA-05103) and the Danish Data Protection Agency. All parents of participating children gave written informed consent.

**RESULTS**

Data on a cohort child’s use of health care in general practice during the first 4 years of life were available for 99.7% of the 3000 randomly sampled children. FSS data were collected on 1327 children (45.6% of the eligible children at the 5- to 7-year follow-up). The attrition with regard to child health variables and previous use of health care in general practice was not statistically significantly skewed except for birth weight (Table 2).

The median age of the study population (ie, the 1327 children) was 6.1 years, and the gender ratio was 1:1 (data not shown). The overall prevalence of parent-reported chronic physical diseases was 10.0% (n = 133).

In total, 23.2% of the children were assessed to have FSS (308/1327) and among these the prevalence of chronic physical diseases was 10.1% and highest among consulters (Table 3). Data on physician’s visits due to FSS were missing for 1 child, which left a subsample of 307 children for analysis of factors associated with medical consultation for FSS at the age of 5 to 7 years (Fig 1). The frequency of consulters among children with FSS was 31.3% (96/307).

**Differences Between Consulters and Nonconsulters**

Children with parent-reported physician’s visits due to FSS during the past year, here called “consulters” (n = 96), significantly more often had 2 non-Danish parents than did “nonconsulters” (n = 211) (Table 3). In terms of FSS characteristics and impact, consulters significantly more often had multiple symptoms and associated distress and a higher frequency of kindergarten or school absenteeism due to their symptoms than did nonconsulters (Table 1). Family burden and parental worries about the child’s FSS were also reported significantly more often in consulters than nonconsulters, and a non-significant tendency pointed to a longer duration of FSS.

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**TABLE 1 Impact and Characteristics of FSS in Relation to Consultation for FSS**

<table>
<thead>
<tr>
<th>Duration of FSS, No. (%)</th>
<th>Total (N = 307)</th>
<th>Consultants (n = 96)</th>
<th>Nonconsulters (n = 211)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3 mo</td>
<td>76 (24.8)</td>
<td>16 (31.3)</td>
<td>60 (28.4)</td>
<td>.040</td>
</tr>
<tr>
<td>3–5 mo</td>
<td>52 (17.0)</td>
<td>14 (14.7)</td>
<td>38 (18.0)</td>
<td></td>
</tr>
<tr>
<td>≥6 mo</td>
<td>178 (58.2)</td>
<td>65 (68.4)</td>
<td>113 (53.6)</td>
<td></td>
</tr>
</tbody>
</table>

**Multisymptomatic FSS, No. (%)**

- **Yes**
  - 124 (40.4)
  - 52 (54.2)
  - 72 (34.1)
  - .001
- **No**
  - 138 (45.4)
  - 44 (45.8)
  - 139 (65.9)

**Use of painkillers, No. (%)**

- **Yes**
  - 69 (22.5)
  - 27 (28.1)
  - 42 (19.9)
  - .10
- **No**
  - 238 (77.5)
  - 69 (71.9)
  - 169 (80.1)

**Distressed child, No. (%)**

- **Not at all**
  - 123 (40.5)
  - 23 (24.2)
  - 100 (47.9)
  - <.001
- **A little**
  - 138 (45.4)
  - 47 (49.5)
  - 91 (43.5)
- **Quite a lot**
  - 26 (8.6)
  - 13 (13.7)
  - 13 (6.2)
- **A lot**
  - 17 (5.6)
  - 12 (12.6)
  - 5 (2.4)

**Kindergarten/school absenteeism, No. (%)**

- **Not relevant**
  - 25 (8.2)
  - 5 (5.2)
  - 20 (9.5)
  - <.001
- **Yes, 1–6 d**
  - 230 (75.2)
  - 60 (62.5)
  - 170 (81.0)
- **Yes, ≥7 d**
  - 41 (13.4)
  - 24 (25.0)
  - 17 (8.1)

**Health anxiety symptoms, No. (%)**

- **No**
  - 202 (66.0)
  - 55 (57.3)
  - 147 (70.0)
  - .029
- **Yes**
  - 104 (44.0)
  - 41 (42.7)
  - 63 (30.0)

**Family burden, No. (%)**

- **Not at all**
  - 253 (83.2)
  - 64 (67.4)
  - 189 (90.4)
  - <.001
- **A little**
  - 13 (1.8)
  - 4 (4.2)
  - 2 (1.0)
- **Quite a lot**
  - 6 (2.0)
  - 4 (4.2)
  - 2 (1.0)
- **A lot**
  - 3 (1.0)
  - 3 (3.2)
  - 0 (0.0)

**Parental worries about child’s FSS, No. (%)**

- **Not at all**
  - 160 (52.1)
  - 22 (22.9)
  - 138 (65.4)
  - <.001
- **A little**
  - 96 (31.3)
  - 37 (38.5)
  - 59 (28.0)
- **Quite a lot**
  - 34 (11.1)
  - 24 (25.0)
  - 10 (4.7)
- **A lot**
  - 17 (5.5)
  - 13 (13.5)
  - 4 (1.9)

**Parent-perceived overall health of the child, No. (%)**

- **Bad**
  - 1 (1.0)
  - 1 (1.0)
  - 0 (0.0)
  - .001
- **Poor**
  - 12 (4.0)
  - 8 (8.4)
  - 4 (1.9)
- **Good**
  - 10 (3.2)
  - 20 (21.1)
  - 20 (9.6)
- **Very good**
  - 29 (9.6)
  - 32 (33.7)
  - 104 (50.0)
- **Excellent**
  - 91 (30.0)
  - 9 (9.7)
  - 80 (38.5)

All items listed were derived from the parental interview: SAI.
* Either Wilcoxon-Mann-Whitney test or χ² test performed.
duration of symptoms and concurrent health anxiety symptoms in consulters as well. Single specific symptoms like abdominal pain, headache, and pain in the arms or legs were not significantly associated with being a consulter (33.9% vs 25.9% and 22.9%, respectively; Fisher’s exact test; \( P = .243 \)).

**DISCUSSION**

Health care use in general practice early in life and factors linked to medical consultation due to FSS at the age of 5 to 7 years were investigated by using combined prospective and cross-sectional data on a population-based sample of 1327 children. In total, 31.3% of parents of children with FSS reported that they had consulted general practice because of their child’s FSS. This percentage corresponds to percentages reported in other population-based studies on children and adolescents with chronic benign (ie, functional) pain.14,30 Three patterns of factors associated with medical consultations due to FSS in children aged 5 to 7 years were seen.

In multivariate analyses adjusting for gender, chronic physical disease, and multisymptomatic presentation of FSS, the previous number of face-to-face contacts remained a statistically significant predictor for being a consulter (Table 4). Translating this into a concrete example for a difference of 10 face-to-face contacts in general practice during the first 4 years of life, then, the odds ratio (OR) for being a consulter for FSS at the age of 5 to 7 years would be 1.32 (95% confidence interval [CI] 1.01–1.74).

Multisymptomatic FSS, as expected, also turned out to be a strong explanatory variable for medical consultation (adjusted OR 2.20, 95% CI 1.34–3.62).

**Previous Use of Health Care in General Practice**

The previous number of face-to-face contacts in general practice, but not the total costs, during a cohort child’s first 4 years of life was significantly higher among consulters than among nonconsulters (Fig 2).

**TABLE 2 Characteristics of Participants and Nonparticipants in the Random Sample Study of FSS for Children Aged 5-7 y**

<table>
<thead>
<tr>
<th>Total Random Sample (N = 3000)</th>
<th>Participants (n = 1327)</th>
<th>Nonparticipants (n = 1673)</th>
<th>( P^{a} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>1522 (50.7)</td>
<td>660 (49.7)</td>
<td>862 (51.5)</td>
</tr>
<tr>
<td>Girls</td>
<td>1478 (49.3)</td>
<td>667 (50.3)</td>
<td>811 (48.5)</td>
</tr>
<tr>
<td>Birth weight, kg (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1.5</td>
<td>23 (0.8)</td>
<td>8 (0.6)</td>
<td>15 (0.9)</td>
</tr>
<tr>
<td>1.5–2.5</td>
<td>123 (4.2)</td>
<td>44 (3.4)</td>
<td>79 (4.8)</td>
</tr>
<tr>
<td>2.5–4.5</td>
<td>2718 (92.6)</td>
<td>1192 (92.3)</td>
<td>1526 (92.9)</td>
</tr>
<tr>
<td>&gt;4.5</td>
<td>72 (2.4)</td>
<td>47 (3.7)</td>
<td>25 (1.5)</td>
</tr>
<tr>
<td>Missing</td>
<td>64 Missing</td>
<td>Missing 36</td>
<td>Missing 28</td>
</tr>
<tr>
<td>Gestational age, wk (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;32</td>
<td>26 (0.9)</td>
<td>12 (0.9)</td>
<td>14 (0.8)</td>
</tr>
<tr>
<td>32–36</td>
<td>150 (5.1)</td>
<td>55 (4.2)</td>
<td>95 (5.7)</td>
</tr>
<tr>
<td>( \geq ) 37</td>
<td>2789 (94.0)</td>
<td>1236 (94.9)</td>
<td>1553 (94.3)</td>
</tr>
<tr>
<td>Missing</td>
<td>35 Missing</td>
<td>Missing 24</td>
<td>Missing 11</td>
</tr>
<tr>
<td>Apgar score, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–3</td>
<td>4 (0.1)</td>
<td>3 (0.2)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>4–6</td>
<td>18 (0.6)</td>
<td>9 (0.7)</td>
<td>9 (0.5)</td>
</tr>
<tr>
<td>7–10</td>
<td>2824 (99.3)</td>
<td>1264 (99.1)</td>
<td>1640 (99.4)</td>
</tr>
<tr>
<td>Missing</td>
<td>54 Missing</td>
<td>Missing 51</td>
<td>Missing 25</td>
</tr>
<tr>
<td>Birth complications, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>286 (9.5)</td>
<td>126 (9.5)</td>
<td>160 (9.6)</td>
</tr>
<tr>
<td>No</td>
<td>2714 (90.5)</td>
<td>1201 (90.5)</td>
<td>1513 (90.4)</td>
</tr>
<tr>
<td>Congenital disorder, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61 (2.0)</td>
<td>25 (1.9)</td>
<td>36 (2.2)</td>
</tr>
<tr>
<td>No</td>
<td>2838 (98.0)</td>
<td>1302 (98.1)</td>
<td>1637 (97.8)</td>
</tr>
<tr>
<td>Severe physical disease 0–1 y of age, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>432 (14.4)</td>
<td>183 (13.8)</td>
<td>249 (14.9)</td>
</tr>
<tr>
<td>No</td>
<td>2568 (85.6)</td>
<td>1144 (86.2)</td>
<td>1424 (85.1)</td>
</tr>
<tr>
<td>General practice cost in € within 0–4 y of age, median (25–75 percentiles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–4</td>
<td>553, (381–730); Missing 10</td>
<td>535, (383–722); Missing 10</td>
<td>532, (379–739); Missing 10</td>
</tr>
<tr>
<td>Face-to-face contacts in general practice 0–4 y of age, median (25–75 percentiles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–4</td>
<td>17, (11–24); Missing 14</td>
<td>16, (11–24); Missing 1</td>
<td>17, (11–25); Missing 13</td>
</tr>
</tbody>
</table>

\( ^{a} \) Either Wilcoxon-Mann-Whitney test or \( \chi^{2} \) test performed.

\( ^{b} \) Including hospitalization for systemic infections, meningitis, otitis media, intestinal infections, diseases of heart and lungs, renal and metabolic disorders, etc.

**ARTICLE**

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First, consultants more often had parents who both were not native Danish compared with nonconsulters. This may be explained by cultural differences with regard to medical consultation patterns. However, reservation to this conclusion is needed due to the small number of cases.

Second, FSS characteristics were associated with medical consultation: multsymptomatic presentation and the symptoms with ensuing impact on different aspects of life (eg, child distress, school/kindergarten absenteeism, and family burden). This finding is

### TABLE 3
Characteristics of Children Having Medical Consultations Due to FSS for Children Aged 5–7 y Compared With Nonconsulters

<table>
<thead>
<tr>
<th>Total (N = 307)</th>
<th>Consulters (n = 96)</th>
<th>Nonconsulters (n = 211)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>123 (40.1)</td>
<td>38 (39.6)</td>
<td>85 (40.3)</td>
</tr>
<tr>
<td>Girls</td>
<td>184 (59.9)</td>
<td>58 (60.4)</td>
<td>126 (59.7)</td>
</tr>
<tr>
<td><strong>Ethnicity, No. of Danish parents (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>260 (84.7)</td>
<td>81 (84.4)</td>
<td>179 (84.8)</td>
</tr>
<tr>
<td>1</td>
<td>33 (10.8)</td>
<td>6 (6.3)</td>
<td>27 (12.6)</td>
</tr>
<tr>
<td>0</td>
<td>14 (4.6)</td>
<td>9 (9.4)</td>
<td>5 (2.4)</td>
</tr>
<tr>
<td><strong>Mother’s age at time of birth, median y (interquartile range)</strong></td>
<td>31.3 (27.8–33.9)</td>
<td>30.6 (27.4–32.9)</td>
<td>31.6 (27.9–34.2)</td>
</tr>
<tr>
<td><strong>Father’s age at time of birth, median y (interquartile range)</strong></td>
<td>32.7 (29.5–36.2)</td>
<td>33.2 (29.8–36.7)</td>
<td>32.5 (29.5–35.8)</td>
</tr>
<tr>
<td><strong>Mother’s educational level at time of birth, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>28 (9.5)</td>
<td>8 (8.9)</td>
<td>20 (9.9)</td>
</tr>
<tr>
<td>Secondary</td>
<td>159 (54.3)</td>
<td>51 (54.7)</td>
<td>108 (53.2)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>106 (37.2)</td>
<td>31 (34.4)</td>
<td>75 (36.9)</td>
</tr>
<tr>
<td>Missing</td>
<td>14</td>
<td>Missing 6</td>
<td>Missing 8</td>
</tr>
<tr>
<td><strong>Parity, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>128 (45.1)</td>
<td>34 (41.0)</td>
<td>94 (46.8)</td>
</tr>
<tr>
<td>2</td>
<td>117 (41.2)</td>
<td>38 (45.8)</td>
<td>79 (37.9)</td>
</tr>
<tr>
<td>3</td>
<td>30 (10.6)</td>
<td>9 (9.8)</td>
<td>22 (10.8)</td>
</tr>
<tr>
<td>≥4</td>
<td>9 (3.1)</td>
<td>3 (3.6)</td>
<td>6 (3.0)</td>
</tr>
<tr>
<td>Missing</td>
<td>23</td>
<td>Missing 13</td>
<td>Missing 10</td>
</tr>
<tr>
<td><strong>Social level of living area at time of birth, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>79 (25.7)</td>
<td>18 (18.8)</td>
<td>61 (28.9)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>106 (35.2)</td>
<td>42 (43.8)</td>
<td>66 (31.3)</td>
</tr>
<tr>
<td>Low</td>
<td>120 (39.1)</td>
<td>36 (37.5)</td>
<td>84 (39.8)</td>
</tr>
<tr>
<td><strong>Parents living together at time of birth, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>292 (95.1)</td>
<td>92 (95.8)</td>
<td>200 (94.8)</td>
</tr>
<tr>
<td>No</td>
<td>15 (4.9)</td>
<td>4 (4.2)</td>
<td>11 (5.2)</td>
</tr>
<tr>
<td><strong>Annual household income, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>101 (33.3)</td>
<td>25 (26.3)</td>
<td>76 (36.5)</td>
</tr>
<tr>
<td>Lower</td>
<td>202 (66.7)</td>
<td>70 (73.7)</td>
<td>132 (63.5)</td>
</tr>
<tr>
<td>Missing</td>
<td>4</td>
<td>Missing 1</td>
<td>Missing 3</td>
</tr>
<tr>
<td><strong>Family size per year 2001, No. of children (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>141 (46.1)</td>
<td>47 (49.0)</td>
<td>94 (44.8)</td>
</tr>
<tr>
<td>2</td>
<td>125 (40.2)</td>
<td>39 (40.6)</td>
<td>84 (40.0)</td>
</tr>
<tr>
<td>≥3</td>
<td>42 (13.7)</td>
<td>10 (10.4)</td>
<td>32 (15.2)</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maternal psychiatric disorder 0–4 y of child’s life, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>296 (96.4)</td>
<td>93 (96.9)</td>
<td>203 (96.2)</td>
</tr>
<tr>
<td>Yes</td>
<td>11 (3.6)</td>
<td>3 (3.1)</td>
<td>8 (3.8)</td>
</tr>
<tr>
<td><strong>Paternal psychiatric disorder 0–4 y of child’s life, No. (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>292 (98.0)</td>
<td>92 (96.8)</td>
<td>200 (94.5)</td>
</tr>
<tr>
<td>Yes</td>
<td>6 (2.0)</td>
<td>3 (3.2)</td>
<td>3 (1.5)</td>
</tr>
<tr>
<td>Missing</td>
<td>9</td>
<td>Missing 1</td>
<td>Missing 8</td>
</tr>
<tr>
<td><strong>Serious physical disease 0–1 y of life,</strong> No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>267 (87.0)</td>
<td>81 (84.4)</td>
<td>186 (88.1)</td>
</tr>
<tr>
<td>Yes</td>
<td>40 (13.0)</td>
<td>15 (15.6)</td>
<td>25 (11.9)</td>
</tr>
<tr>
<td><strong>Chronic physical disease,</strong> No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>276 (89.9)</td>
<td>82 (85.4)</td>
<td>194 (91.9)</td>
</tr>
<tr>
<td>Yes</td>
<td>31 (10.1)</td>
<td>14 (14.6)</td>
<td>17 (8.1)</td>
</tr>
</tbody>
</table>

All variables except “Chronic physical disease” are based on register data.
* Either Wilcoxon-Mann-Whitney test or x² test performed.
* The sum of disposal household income in years 2000 and 2001 calculated for the entire cohort, dichotomized as the upper quartile versus the 3 lower quartiles.
* Including hospitalization for systemic infections, meningitis, otitis media, intestinal infections, diseases of heart and lungs, renal and metabolic disorders, etc.
* Report of child having ≥1 of 9 different diseases on a predefined list in the SAI: asthma, heart disease, epilepsy, rheumatic disease, kidney disease, diabetes, severe vision/hearing problem, disorders affecting the function of nerves and muscles, and other serious physical disease or handicap.
in accordance with results from studies of adults with FSS and corroborate the understanding of FSS as a spectrum of symptoms ranging from mild self-limiting problems to severe and disabling disorders. As the number and severity of symptoms increase, so do the disability and the associated use of health care. Furthermore, the results replicate findings from a study on children and adolescents with chronic benign pain in which various pain characteristics, school absenteeism, and disability were important factors linked to health care use. Third, a higher health care use in general practice early in life predicted consultation for FSS at the age of 5 to 7 years, even after adjustment for other potential explanatory factors such as gender, physical comorbidity, and symptom severity. Symptom severity, assessed in terms of multisymptomatic presentation, also turned out to be a strong predictor for medical consultation, whereas gender and comorbid physical disease did not. Inconsistent findings on the influence of gender on children’s health care use have been reported. Our findings correspond to the results from another Nordic study, in which a gender difference on children’s health care use in general practice was found in Iceland and Sweden (girls having a higher utilization than boys) but not in Norway, Finland, and Denmark. Regarding the negative finding of physical comorbidity as an explanatory factor, this could be explained by the small case number. Also, owing to the number of cases, we were unable to perform more sophisticated analyses (eg, on the possible interaction between the presence of a chronic physical disease and high use of health care early in life or to include other potentially important explanatory variables such as parental psychopathology and ethnicity). However, overall our results are in accordance with the results from prospective studies indicating that children’s past use of health care is an important predictor of future use of health care. This points to stability in a health care-seeking behavior with frequent attendance beginning in early childhood. Nonconsulters with FSS were more similar to children without FSS in terms of their previous use of health care, which invites the hypothesis that families consulting a physician because of their child’s FSS are in particular need of enhanced care in general practice. Parental psychopathology has been found to be associated with increased health care use among children. We found no significant association between parental psychiatric illness and the child’s consultation pattern due to FSS. However, our measure of parental psychopathology was hospital register-based diagnoses, and parents with less severe mental problems not exceeding the threshold of psychiatric referral were not included. Psychiatric problems in parents may have influenced the child’s symptoms, but not in

### Table 4

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous number of face-to-face contacts</td>
<td>1.03</td>
<td>1.00–1.06</td>
<td>.045</td>
</tr>
<tr>
<td>Gender, female</td>
<td>1.10</td>
<td>0.66–1.84</td>
<td>.713</td>
</tr>
<tr>
<td>Multisymptomatic FSS, yes</td>
<td>2.20</td>
<td>1.34–3.62</td>
<td>.002</td>
</tr>
<tr>
<td>Chronic physical disease, yes</td>
<td>1.45</td>
<td>0.65–3.24</td>
<td>.362</td>
</tr>
</tbody>
</table>

*OR interpreted per unit change in number of consultations.*

---

**FIGURE 2**

Previous use of health care resources in general practice (GP) in consulters for FSS at ages 5–7 years. Separate analyses were performed by using the Wilcoxon-Mann-Whitney test to examine the difference in pairs between the 3 subgroups.
a way severe enough to make the parents seek medical care on behalf of their child. Furthermore, due to the small number of register cases on parental psychopathology, the effect of specific parental psychiatric disorders such as anxiety and somatization, which may have a particular bearing on the such as anxiety and somatization, which

speci

cental psychopathology, the effect of their child. Furthermore, due to the parents seek medical care on behalf of a way severe enough to make the

parents corresponds to the prevalence physical diseases among partici-

pants corresponds to the prevalence of long-term illness of 12.8% reported in Danish children aged 2 to 12 years. Also, the median number of physician’s visits during the first 4 years of life corresponds to the reported average number overall for Danish children in this age group. Therefore, we have no reason to consider severe confounding of the results due to attrition per se.

The data coverage on health care use was restricted to general practice services. Inclusion of additional health care sectors could yield a more comprehensive picture on the full range of available health services. However, this limitation may be partially compensated for by the fact that general practice services are the primary and the most common means for providing health care to young children in Denmark.

The scope of our analysis was somewhat limited due to the lack of additional variables on parental health. Therefore, we could not explore findings from the previous research regarding significant associations of high maternal and child health care use. Future follow-up studies of CCC2000 plan to expand the exploration of the influences of parental health care use on the patterns of children’s medical consultation due to FSS.

CONCLUSIONS

The study underscores the significance of FSS as an important area of problematic child health associated with both impairment and burden and increased use of medical consultations. The present findings point to potential targets of early intervention in primary care toward children with FSS: (1) children with an early pattern of high health care use in general practice, and in its own right and regardless of the putative direction of causality; (2) children with FSS with associated impairment in various areas; and (3) parents who have unrealistic health anxiety and worries about the symptoms of their children.

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Pediatrics 2013;132:e459; originally published online July 8, 2013;
DOI: 10.1542/peds.2013-0159

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