

Use of Health and School-Based Services in Australia by Young People With Attention-Deficit/Hyperactivity Disorder

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ABSTRACT

Objective: To examine use of health (including psychiatric) and school-based services by children and adolescents who met symptom criteria for attention-deficit/hyperactivity disorder (ADHD), the factors associated with service use, and barriers to service access. **Method:** The relationship between parents' perceptions of children's need for professional help, the impact of children's problems on children and parents, and services used during the previous 6 months were examined in a national sample of 398 children and adolescents with ADHD symptoms aged 6 to 17 years (70% response rate). Information was obtained from parents who completed the Diagnostic Interview Schedule for Children Version IV and standard questionnaires. Data collection took place between February and May 1998. **Results:** Only 28% of those with ADHD symptomatology had attended health or school-based services. Among these, 41% had attended both health and school-based services, 39% had attended only health services, and 20% had attended only school-based services. Sixty-nine percent of parents attending health services wanted additional help. Parental perceptions that children needed professional help, children's functional impairment, the impact of problems on parents, and comorbid depressive or conduct disorders had a significant and independent relationship with service use. **Conclusions:** A minority of children and adolescents with ADHD symptomatology receives professional help for their problems in Australia. Counseling is the most frequent help provided, with many parents wanting additional help beyond that already provided. Factors other than children's ADHD symptomatology have a significant relationship with service attendance. Practical issues, including the cost of services and waiting lists are the most common barriers cited by parents as hindering access to services. *J. Am. Acad. Child Adolesc. Psychiatry*, 2004;43(11):1355–1363. **Key Words:** attention-deficit/hyperactivity disorder, service use.

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A prerequisite for effective service planning is accurate information about the extent to which those with mental disorders receive professional help. This includes information about the types of services attended, help provided by these services, factors that influence service attendance, and barriers to service access.

Population-based studies have consistently found that only a minority of children with mental health problems attend specialist mental health services (Angold et al., 1998; Offord et al., 1987; Verhulst and van der Ende, 1996). For example, Offord et al. (1987) reported that only 16.1% of children with mental disorders had received help from specialist mental health/social services in Ontario, Canada, during the previous 6 months. Similarly, in a study of 2,227 chil-

dren aged 4 to 18 years in the Netherlands, Verhulst and van der Ende (1996) reported that only 13% of those who scored above the recommended cutoff on the Child Behavior Checklist had been referred to mental health services during the previous 12 months. In a community sample of 1,015 children aged 9, 11, and 13 years in North Carolina, Angold et al. (1998) found that 40% of those with "serious emotional disturbance" had received any professional help and 20% had received help from specialist mental health services. Results from these studies also showed that children with mental health problems often receive help from services other than specialist mental health services. These include school-based services, family practitioners, pediatricians, and community health services (Burns et al., 1995; Cohen et al., 1990).

There is also evidence that the type of help provided for children with mental health problems is changing. For example, Hoagwood et al. (2000) used information from a national survey of practice-based physicians and primary care physicians to compare the treatment being provided to children with attention-deficit/hyperactivity disorder (ADHD) in 1989 and 1996. They reported that, during this period, the frequency of stimulant prescriptions increased from 54.8% of visits to 75.4%, whereas psychotherapy decreased from 41.1% of visits to 25.2%. These changes emphasize the importance of not assuming that the type of treatment provided to children with mental disorders is the same in different geographical regions or at different points of time.

A number of studies have investigated factors that influence service use. For example, Jensen et al. (1990) compared 134 children aged 6 to 12 years who had been referred to a military child psychiatry clinic with a matched community sample. Parental psychopathology, family size, and marital status were most predictive of children's symptoms, whereas stress levels, family size, and marital status were most predictive of service use. The authors reported that factors other than children's symptom levels explained 13.2% of the variance in referral rates. Lavigne et al. (1998) investigated the use of mental health services by 510 children aged 2 to 5 years who were attending pediatric practices in Chicago. They reported that high levels of family conflict and a diagnosis of a mental disorder increased the likelihood of referral to a mental health service. There are differing reports of the relationship between socioeco-

nomie status and service attendance. Lavigne et al. (1998) and Laitinen-Krispijn et al. (1999) reported that service use was not associated with socioeconomic status, whereas Burns et al. (1995) reported that poverty was significantly associated with service use among children in North Carolina.

Although substantial information is available about service use by children, most studies have focused on children identified as having mental health problems based on their scoring above recommended cutoffs on behavior checklists rather than based on diagnostic interviews (Offord et al., 1987; Verhulst and van der Ende, 1996). They have also largely used community-based convenience samples rather than nationally representative samples. These limitations reduce the impact of findings on planning and policy development. Further, most epidemiological data available for ADHD are based on *DSM-III* or *DSM-III-R* criteria so that little is known about the use of services by children with the inattentive and hyperactive-impulsive subtypes of ADHD introduced in *DSM-IV*.

This study focused on service use by children who met symptom criteria for ADHD and who participated in a national survey of the prevalence and distribution of child and adolescent mental health problems in Australia. ADHD is one of the most common disorders experienced by children and adolescents, and it has a significant adverse impact on children, families, and school communities (Seija, 2002). However, most of the information available refers to the combined subtype. There are limited data about the extent to which inattentive or hyperactive-impulsive subtypes, although dissimilar in their symptoms, actually differ in service use and parental perceptions of need for help (Lahey, 2001).

Specific aims of this study were (1) to describe the percentage of children with each of the three subtypes of ADHD attending health or school-based services, (2) to describe the type of help being provided for these children, and (3) to identify factors that are associated with use of these services, including barriers to service access. We hypothesized that comorbid depressive and conduct disorders, children's level of impairment, parental perceptions of the extent of children's problems and need for professional help, and parental perceptions of the impact of children's problems on parents would each have a significant and independent relationship with service attendance.

METHOD

Participants

The participants were 398 children of the 3,597 children aged 6 to 17 years who were recruited for the Child and Adolescent Component of the National Survey of Mental Health and Well-Being in Australia and who met *DSM-IV* symptom criteria for ADHD. The survey methodology has been described in detail elsewhere (Sawyer et al., 2000). In brief, the survey used a multistage probability sample of 4,509 households to select a representative sample of Australian children aged 4 to 17 years (for brevity, the term children will be used to describe both children and adolescents). Between February and May 1998, interviewers approached randomly selected households, the number chosen being proportional to the population of each state or territory. At each household, interviewers obtained informed consent before the interview proceeded. The response rate was 70%.

Parents or primary caregivers completed the parent version of the Diagnostic Interview for Children Version IV (DISC-IV) modules to identify major depressive disorder (MDD), conduct disorder (CD), and ADHD (Shaffer et al., 2000). The 1-year prevalence of ADHD was 11.2%, CD was 3.0%, and MDD was 3.7%. Among those with ADHD symptoms, 17% also met the criteria for CD and 11% met the criteria for MDD. This study focused on service use reported by 398 parents of children diagnosed with one of the three ADHD subtypes, including those with comorbid CD and MDD.

Ethical approval for the survey was obtained from the Research Ethics Committee at the Women's and Children's Hospital, Adelaide.

Measures

Assessment of Disorder. In face-to-face interviews, parents completed the parent version of the DISC-IV (Shaffer et al., 2000). The DISC-IV is a structured diagnostic interview that can be used by lay interviewers. It is designed to diagnose a range of mental disorders in children based on *DSM-IV* criteria. The diagnoses for the current study were based on the algorithms recommended to identify children with ADHD (DISC-IV Version H, July 2001). These algorithms meet the symptom criteria for psychiatric diagnosis according to *DSM-IV* but do not incorporate the impairment criteria.

Functional Impairment. For children who meet the criteria for a diagnosis, the DISC-IV assesses six areas in which children's symptoms may impair their functioning. These include annoying or upsetting caregivers or teachers, interference with school work, peer or family activities, and causing distress to the child with the disorder. In each case, caregivers are asked to rate the level of children's impairment at the time during the past year when the child's symptoms were causing the most problems. Ratings employ 3-point scales labeled either "A lot of the time/Some of the time/Hardly ever" or "Very bad/Bad/Not too bad." For the purpose of this study, impairment was rated as 0 if the parent reported the child's problem was not causing any problems, 1 if it was rated "not too bad/hardly ever," 2 if it was "bad/some of the time," and 3 if it was "very bad/a lot of the time." For children with the combined subtype, two ratings are obtained for each of the six areas of impairment, i.e., the six asking about the impact of inattentive symptomatology and the six asking about hyperactive/impulsive symptomatology. The ratings for each set were independently summed, and the higher score was used for children with the combined subtype. The range of scores for children with each ADHD

subtype was 0 to 18. The internal reliability (α coefficient) of the scales was 0.7 (inattentive) and 0.8 (hyperactive/impulsive).

Impact on Parents. The Parental Impact-Emotional and Parental Impact-Time scales from the Child Health Questionnaire were used to assess parental perceptions of the impact of children's problems on the time that parents have for their personal needs and on their emotional functioning (Landgraf et al., 1996). As recommended in the Child Health Questionnaire manual, before the analysis of results, the raw scores on each scale were initially transformed to a scale of 0 to 100, with higher scores indicating better functioning. The internal reliability (α coefficient) of both scales was 0.7.

Parents' Perceptions of Children's Problems. All parents were asked whether they considered their child to have had emotional or behavioral problems during the past 6 months. Those who responded "yes" were then asked "During that time, did he or she tend to have more emotional and behavioral problems than other boys or girls of his or her age?" and "Do you think he or she needs or needed professional help with these problems?" (all the questions were answered as yes or no). The responses to the latter two questions were dummy coded (0/1) and used for statistical analyses in the current study.

Service Use. The survey asked parents about a wide range of services used by children and adolescents to obtain help for emotional and behavioral problems during the 6 months before the survey. Service use was divided into two categories: (1) use of health services (including family doctors, pediatricians, psychiatrists, psychologists, and community- or hospital-based mental health clinics) and (2) use of school services (including counseling services and special school classes). Parents were also asked to identify whether their child had received medication for emotional or behavioral problems within the previous 6 months.

Statistical Analyses

We first examined the rates of service use by children and the types of help that the children received. In each table, rates and 95% confidence intervals (CIs) are shown. In addition, the significance levels of specific comparisons of interest are cited in the text. The rates reported are unweighted because previous analyses have shown that there are minimal differences between results obtained using weighted and unweighted analyses with data collected in this survey. In the presentation of results, the term significantly refers to $p \leq .05$.

Univariate logistic regression analyses were used to identify the variables that were significantly associated ($p \leq .05$) with the use of health services or school services by children with ADHD symptoms. In each analysis, the dependent variable was attendance at one or more of these services, whereas the independent variables were children's demographic characteristics, parental perceptions of children's problems, the impact of problems on parents, the type of ADHD (combined versus inattentive/hyperactive), the level of children's impairment, and the presence of a comorbid disorder. Variables that had a significant univariate relationship with service use were entered as independent variables in the multivariate model.

RESULTS

Characteristics of Children

The characteristics of children with each ADHD subtype are shown in Table 1. Overall, 70.1% were

TABLE 1
 Characteristics of Participating Children and Families (Percentage of Children [95% CI])

| | Inattentive (<i>n</i> = 205) | Hyperactive/Impulsive (<i>n</i> = 73) | Combined (<i>n</i> = 120) |
|---|----------------------------------|---|-------------------------------|
| Gender | | | |
| Male | 68.8 (62.5–75.1) | 64.4 (53.4–75.4) | 75.8 (68.1–83.5) |
| Age | | | |
| Child 6–11 yr | 57.6 (50.8–64.4) | 76.7 (67.0–84.4) | 69.2 (60.9–77.5) |
| Adolescent 12–17 yr | 42.4 (35.6–49.2) | 23.3 (13.6–33.0) | 30.8 (22.5–39.1) |
| Family type | | | |
| Single-parent family | 22.7 (17.0–28.4) | 18.2 (9.3–27.1) | 35.4 (26.8–44.0) |
| Maternal education ^a | | | |
| ≤15 yr | 28.2 (22.0–34.4) | 29.2 (18.8–39.6) | 38.7 (30.0–47.4) |
| Parental employment ^b | | | |
| No parent employed | 17.4 (12.2–22.6) | 26.3 (16.2–36.4) | 41.0 (32.2–49.8) |
| Perceived emotional and behavioral problems | | | |
| More than peers | 35.5 (28.9–42.1) | 36.4 (25.4–47.4) | 61.1 (52.4–69.8) |
| Needed professional help | 30.1 (23.8–36.4) | 28.8 (18.4–39.2) | 46.3 (37.4–55.2) |
| Comorbid condition | | | |
| Yes | 18.8 (13.45–24.15) | 21.7 (12.24–31.16) | 44.6 (35.71–53.49) |
| Impact on parents (mean score) | | | |
| Time | 80.6 (77.3–83.8) | 82.5 (76.7–88.2) | 70.2 (64.9–75.5) |
| Emotional | 62.0 (58.6–65.5) | 69.3 (63.3–75.4) | 55.9 (50.6–61.1) |

Note: CI = confidence interval.

^a Maternal education is the age at which the child's mother left school.

^b Parental employment: In this study, a parent was considered employed if he or she was in any type of paid employment in the previous week. This includes both full- and part-time employment.

males, 64.6% were aged 6 to 11 years, and 25.4% lived in single-parent families. Compared with other children in the survey, children with ADHD symptomatology were significantly younger (ADHD = 10.2 years, non-ADHD = 11.6 years, $t = 7.8$, $df = 1,3559$, $p < .001$), more frequently male (ADHD = 70%, non-ADHD = 47%; $\chi^2 = 73.9$, $df = 1$, $p < .001$), and more often living in single-parent households (ADHD = 25%, non-ADHD = 16%; $\chi^2 = 21.1$, $df = 1$, $p < .001$).

Children with the hyperactive/impulsive subtype were more frequently in the younger age group ($\chi^2 = 8.4$, $df = 1$, $p = .004$) than those with the inattentive subtype. Compared with children with the other two ADHD subtypes, children with the combined subtype were significantly more often perceived by their parents as having emotional and behavioral problems (combined versus hyperactive/impulsive: $\chi^2 = 10.0$, $df = 1$, $p = .002$; combined versus inattentive: $\chi^2 = 18.1$, $df = 1$, $p < .001$), to have comorbid depressive or conduct disorders (combined versus hyperactive/impulsive: $\chi^2 = 9.7$, $df = 1$, $p = .002$; combined versus inattentive: $\chi^2 = 23.4$, $df = 1$, $p < .001$), and their problems had a sig-

nificantly greater time impact (combined versus hyperactive/impulsive: $t = 3.0$, $p < .003$; combined versus inattentive: $t = 3.5$, $p < .001$) and emotional impact on parents (combined versus hyperactive/impulsive: $t = 3.3$, $p < .001$; combined versus inattentive: $t = 2.0$, $p < .05$). The mean impairment score for children with the combined subtype (mean \pm SD, 10.3 \pm 3.8) was also significantly higher than the scores for children with either of the other subtypes, whereas the mean score for children with the inattentive subtype (mean \pm SD, 8.1 \pm 3.9) was significantly higher than that for children with the hyperactive/impulsive subtype (mean \pm SD, 5.4 \pm 3.7).

Services Attended

Among the 398 children with ADHD symptoms, 112 (28.1%) had attended a health or school-based service during the 6 months before the study (Table 2). Although a higher proportion of children had attended health services (22.6%) than school services (17.1%), this difference was not statistically significant. Among those who had attended at least one of these services,

TABLE 2
Percentage of Children Attending Services in the Past 6 Months (Percentage of Children [95% CI])

| | ADHD Subtype | | | |
|--|----------------------------------|---|-------------------------------|----------------------------------|
| | Inattentive (<i>n</i> = 205) | Hyperactive/Impulsive (<i>n</i> = 73) | Combined (<i>n</i> = 120) | Any Subtype (<i>n</i> = 398) |
| Attended any service | 23.4 (17.6–29.2) | 17.8 (9.0–26.6) | 42.5 (33.7–51.3) | 28.1 (23.7–32.6) |
| Health services | | | | |
| Any health service | 18.5 (13.2–23.9) | 13.7 (5.8–21.6) | 35.0 (26.5–43.5) | 22.6 (18.5–26.7) |
| Family doctor | 11.2 (6.9–15.5) | 2.7 (0.0–6.4) | 20.0 (12.8–27.2) | 12.3 (9.1–15.5) |
| Private pediatrician | 9.8 (5.7–13.9) | 9.6 (2.8–16.4) | 23.3 (15.7–30.9) | 13.8 (10.4–17.2) |
| Mental health service | 10.7 (5.7–13.9) | 9.6 (2.8–16.4) | 17.5 (10.7–24.3) | 12.6 (9.3–2.4) |
| Other health-based services ^a | 7.3 (3.7–10.9) | 2.7 (0.0–6.4) | 10.8 (5.2–16.4) | 7.5 (4.9–10.1) |
| School-based services | | | | |
| Any school-based service | 14.6 (9.8–19.4) | 11.0 (3.8–18.2) | 25.0 (17.3–32.7) | 17.1 (13.4–20.8) |
| Counseling in school | 11.2 (6.9–15.5) | 8.2 (1.9–14.5) | 18.3 (11.4–25.2) | 12.8 (9.5–16.1) |
| Special school or class | 2.4 (0.3–4.5) | 2.7 (0.0–6.4) | 10.8 (5.2–16.4) | 5.0 (2.9–7.2) |
| Other school-based service ^b | 5.4 (2.3–8.5) | 0.0 | 8.3 (3.4–13.2) | 5.3 (3.1–7.5) |

Note: ADHD = attention-deficit/hyperactivity disorder; CI = confidence interval.

^a Other health-based services included outpatient services, telephone counseling, and drug and alcohol services.

^b Other school-based services included help from psychologists, teacher assistants, and teachers.

41.1% (95% CI = 32.0%–50.2%) had attended both health and school services, 39.3% (95% CI = 30.2%–48.3%) had attended only health services, and 19.6% (95% CI = 12.3%–27.0%) had attended only school services. This pattern of attendance varied little for children with different ADHD subtypes.

The general health services attended most frequently were pediatricians (13.8%) and family doctors (12.3%) (Table 2). A similar number of children (12.6%) had attended mental health services (this service category included community- and hospital-based mental health services and psychiatrists and psychologists in private practice).

Across the ADHD groups, significantly more children with the combined ADHD subtype than those with inattentive or hyperactive/impulsive subtypes had attended any services (combined versus hyperactive/impulsive: $\chi^2 = 12.5$, $df = 1$, $p < .001$; combined versus inattentive: $\chi^2 = 13.0$, $df = 1$, $p < .001$). This occurred because a larger proportion of children with combined subtype had attended both health services (combined versus hyperactive/impulsive: $\chi^2 = 10.5$, $df = 1$, $p = .001$; combined versus inattentive: $\chi^2 = 11.1$, $df = 1$, $p = .001$) and school-based services (combined versus hyperactive/impulsive: $\chi^2 = 5.7$, $df = 1$, $p = .002$; combined versus inattentive: $\chi^2 = 5.4$, $df = 1$, $p = .02$). Children with the hyperactive/impulsive subtype gen-

erally attended services less often than those with the other subtypes.

We also explored the hypothesis that the higher use of services among those with ADHD symptoms is not due to ADHD itself but to comorbid conditions that are commonly associated with ADHD. This is important because of the high rates of comorbidity among those with ADHD symptoms. These analyses showed that for each subtype, rates of service use by children with ADHD symptoms who did not have a comorbid condition remained significantly higher than those without ADHD symptoms (results not shown).

Help Provided by Health and School Services

In schools, counseling was the service most frequently received by children with any ADHD subtype (12.8%). Counseling was also the help most frequently provided by health services (Table 3). This included counseling for the children and counseling to help parents manage children's problems or to improve family relationships. Eighteen percent of children with ADHD symptoms (95% CI = 14.5%–22.1%) were being treated with medications (these included stimulants, antidepressants, and antipsychotics).

Among those who had attended a health service during the past 6 months, 58.9% (95% CI = 48.7%–69.1%) were receiving medication. These included

TABLE 3
Type of Help Received by Children From Health Services in the Past 6 Months (Percentage of Children [95% CI])

| | ADHD Subtype | | | Any Subtype (<i>n</i> = 398) |
|--|----------------------------------|---|-------------------------------|----------------------------------|
| | Inattentive (<i>n</i> = 205) | Hyperactive/Impulsive (<i>n</i> = 73) | Combined (<i>n</i> = 120) | |
| Help for child | | | | |
| Counseling | 15.1 (10.2–20.0) | 12.3 (4.8–19.8) | 28.3 (20.2–36.4) | 18.6 (14.8–22.4) |
| Medication | 10.7 (6.5–15.0) | 12.3 (4.8–19.9) | 35.0 (26.5–43.5) | 18.3 (14.5–22.1) |
| Psychological testing | 6.8 (3.4–10.2) | 9.6 (2.8–16.4) | 15.8 (9.3–22.3) | 10.1 (7.1–13.0) |
| Other help for child ^a | 3.4 (0.9–5.9) | 2.7 (0.0–6.4) | 6.7 (2.2–11.2) | 4.3 (2.3–6.3) |
| Help for child's family | | | | |
| Counseling to manage child's problem | 10.7 (6.5–15.0) | 9.6 (2.8–16.4) | 18.3 (11.4–25.2) | 12.8 (9.5–16.1) |
| Counseling for family relationships | 6.8 (3.4–10.2) | 6.8 (1.0–12.6) | 10.0 (4.6–15.4) | 12.8 (9.5–16.1) |
| Help with rent, money, food, or clothing | 3.9 (1.2–6.6) | 1.4 (0.0–4.1) | 5.0 (1.1–8.9) | 7.8 (5.2–10.4) |
| Other help for family ^b | 0.5 (0.0–1.5) | 4.1 (0.0–8.6) | 1.7 (0.0–4.0) | 3.8 (1.9–5.6) |

Note: ADHD = attention-deficit/hyperactivity disorder; CI = confidence interval.

^a Other help for child includes help such as speech therapy, occupational therapy, and natural therapies.

^b Other help for family includes help such as support groups and respite.

25.6% (95% CI = 16.5%–34.6%) who were receiving medications only and 33.3% (95% CI = 23.6%–43.1%) who were receiving both medications and counseling. A further 31.1% (95% CI = 21.5%–40.7%) of those using health services received counseling only. It should be noted that another 20 children (i.e., another 5%) were being treated with medications, but their parents did not report them as having attended a health service in the previous 6 months. It is likely that these children had been prescribed medication before the time period during which service use was assessed.

Additional Help Requested by Those Attending Health Services

Among parents of children attending health services, 68.8% (95% CI = 60.2%–77.3%) wanted more help (Table 4). Counseling was the help most frequently requested, with 53.6% of these parents requesting additional counseling for their children and 57.1% requesting additional counseling for themselves. Interestingly, 17% of parents (95% CI = 10.0%–23.9%), primarily single mothers and parents already receiving government assistance, requested additional help with rent, finance, food, or clothing. Only 21.4%

TABLE 4
Additional Help Requested by Parents of Children Attending Health Services in the Past 6 Months (Percentage of Children [95% CI])

| Type of Help Requested | Inattentive (<i>n</i> = 48) | Hyperactive/Impulsive (<i>n</i> = 13) | Combined (<i>n</i> = 51) |
|--|---------------------------------|---|------------------------------|
| Help for child | | | |
| Counseling | 54.2 (40.1–68.3) | 61.5 (35.1–88.0) | 51.0 (37.3–64.7) |
| Medication | 12.5 (3.1–21.9) | 38.5 (12.0–64.9) | 25.5 (13.5–37.5) |
| Psychological testing | 35.4 (21.9–48.9) | 30.8 (5.7–55.9) | 45.1 (31.4–58.8) |
| Other help for child ^a | 25.0 (12.8–37.2) | 15.4 (0.0–35.0) | 19.6 (8.7–30.5) |
| Help for child's family | | | |
| Counseling to manage child's problem | 50.0 (35.9–64.1) | 69.2 (42.4–87.3) | 60.8 (47.4–74.2) |
| Counseling for family relationships | 35.4 (21.9–48.9) | 53.8 (26.7–80.9) | 45.1 (31.4–58.8) |
| Help with rent, money, food, or clothing | 18.8 (7.7–29.8) | 7.7 (0.0–22.2) | 17.6 (7.2–28.1) |
| Other help for family ^b | 16.7 (6.1–27.2) | 7.7 (0.0–22.2) | 7.8 (0.5–15.2) |

Note: CI = confidence interval.

^a Other help for child includes help such as speech therapy, occupational therapy, and natural therapies.

^b Other help for family includes help such as support groups and respite.

wanted additional medication for their children. Of these, 75% (18 of 24) were parents of children who were already receiving medication as part of their treatment regimen.

Factors Associated With the Use of School and Health Services

In univariate analyses, parental perceptions that children had more problems than their peers and that they needed professional help, the impact of problems on the lives of parents, impaired functioning due to ADHD, symptoms of combined ADHD subtype, and the presence of a comorbid MDD or CD were all significantly associated with attendance at a school or health service (Table 5). In analyses adjusting for the presence of the other variables showing a significant univariate relationship with service use, parental perception of the need for professional help, the impact of problems on parental time, impaired functioning due to ADHD symptoms, and the presence of comorbid MDD or CD had a significant association with service use. As anticipated, in the univariate analysis, the parent emotional impact score was inversely associated with service use (low score implies high impact), but after adjustment for other terms including time impact, the association was no longer inverse. This result is difficult to interpret given the high correlation ($r = 0.65$, $p < .001$) between time and emotional impacts.

We also tested relevant interactions to determine whether the factors in the final model differed by age and gender. The only significant interactions are shown in Table 5. These show that, among children with ADHD, a higher proportion of girls with comorbid disorders than boys with comorbid disorders and a higher proportion of older children with the combined ADHD subtype than the younger children with the combined ADHD subtype attend services. The inclusion of these interaction terms and the associated main effects of age and gender produced a significant improvement in the overall fit of the model ($\chi^2 = 11.85$, $df = 4$, $p < .05$).

This set of analyses was repeated to identify significant correlates (from those shown in Table 5) of attendance at health services, school services, or mental health services. Univariate relationships between the correlates and service attendance varied little across the

TABLE 5

Predictors of Service Use in the Past 6 Months (95% CI)

| | Unadjusted Odds Ratio | Adjusted Odds Ratio ^a |
|-----------------------------------|-----------------------|----------------------------------|
| Gender | | |
| Male | 1.4 (0.9–2.3) | 1.6 (0.7–3.6) |
| Age | | |
| Child 6–11 yr | 1 | 1 |
| Adolescent 12–17 yr | 1.3 (0.8–2.0) | 0.7 (0.3–1.5) |
| Parent perception of problems | | |
| More than peers | 7.1 (4.2–12.1) | 2.1 (0.9–5.0) |
| Needed professional help | 8.1 (4.8–13.6) | 3.9 (1.6–9.5) |
| Impact on parents | | |
| Time | 0.97 (0.97–0.98) | 0.98 (0.96–0.99) |
| Emotional | 0.98 (0.97–0.99) | 1.02 (0.99–1.04) |
| Family type | | |
| Single-parent family | 1.3 (0.8–2.3) | |
| Maternal education | | |
| ≤15 yr | 1.3 (0.8–2.1) | |
| Parental employment | | |
| No parent employed | 1.6 (0.9–2.9) | |
| Type of ADHD | | |
| Inattentive/hyperactive | 1 | 1 |
| Combined type | 2.6 (1.7–4.2) | 0.16 (0.02–1.06) |
| Impairment due to ADHD | 1.2 (1.1–1.2) | 1.1 (1.0–1.2) |
| Comorbid disorder | 4.3 (2.6–7.1) | 7.5 (2.2–25.9) |
| Interactions | | |
| Gender × comorbid disorder | | |
| Comorbid males | | 0.16 (0.04–0.68) |
| Age × ADHD type | | |
| Older children with combined type | | 4.6 (1.2–17.1) |

Note: ADHD = attention-deficit/hyperactivity disorder.

^a Adjusted for the other independent variables shown in the multivariate model.

three service types. However, for health services, only parent perception that children had more problems than their peers (3.0; 95% CI = 1.2–7.5) and the impact of problems on parental time (0.98; 95% CI = 0.97–1.00) had significant adjusted odds ratios; for mental health services, the presence of a comorbid disorder (4.0; 95% CI = 1.7–9.6) and less maternal education (2.4; 95% CI = 1.1–5.5) had significant adjusted odds ratios; and for school services only parental perception that children needed professional help (4.7; 95% CI = 1.5–14.7) had a significant adjusted odds ratio.

Barriers to Help

The most frequent reason given by parents of children with ADHD symptoms who had not attended services was that they felt they could manage their children's problems on their own (20.3%). Other reasons were primarily practical such as the cost of services (14.7%), not knowing where to get help (14%), and the length of waiting lists (10.5%). Only 2.8% of parents reported that the attitude of friends or family members was a barrier to seeking help.

DISCUSSION

Only a minority of children with ADHD symptoms had received help from professional services during the 6 months before the survey. Family doctors and pediatricians played a key role in the provision of these services. Dulcan et al. (1990) have drawn attention to the role of pediatricians as gatekeepers to mental health services in the United States. In other countries such as the United Kingdom and Australia, family doctors provide primary health care for children, with pediatricians having a more specialist role. In these countries, increasing recognition of the important role of family doctors in the provision of help for children and adults with mental health problems has led to several policy changes. These include attempts to improve the quality of treatment partnerships between family doctors and psychiatrists, providing financial incentives to encourage family doctors to obtain additional training in brief psychotherapeutic techniques, and the provision of financial support that can be used by family doctors to arrange additional help for children with mental health problems.

School-based services were also an important source of professional help for children with ADHD symptoms, although the rate of use of these services in this study (17.1%) was lower than that reported in the United States (25%) (Jensen et al., 1999). In this study, more than 80% of children attending school-based services were also attending health services. This pattern may reflect the high rates of comorbid academic and learning problems experienced by children with ADHD symptoms. Health and education services are typically administered separately in most Western countries. However, this does not reflect the pattern of problems experienced by children where those with problems in one area often have problems in another.

Among those who attended health services, 72.2% received counseling and 45.6% received stimulants. Because they may not be measuring the same thing, caution is necessary when comparing differences in the rates of counseling in this study (72.2%) and rates of psychotherapy (25.2%) in the study conducted by Hoagwood et al. (2000). However, it does appear that stimulants are prescribed less often for children with ADHD attending health services in Australia (45.6%) than in the United States (75.4%). Despite this, among those who had attended health services in Australia, 63.4% of parents requested additional counseling for children and parents. A much smaller proportion (25.6%) requested additional medication for their children. Interestingly, the majority of these were parents whose children were already receiving medication. It suggests that the medication being received may not have been effective or the amount was inadequate. This is consistent with previous findings that children with ADHD treated in the community often receive a sub-optimal dose of stimulants (MTA, 1999).

The frequency at which additional help was requested by parents highlights the importance of not assuming that the needs of children and their parents who attend services have been met. It also highlights the importance of considering public knowledge and attitudes when planning mental health services (Jorm, 2000). There has been considerable emphasis on the importance of evidence-based practice. However, new treatment programs must not only be effective, they must also be acceptable to children and their parents who are the potential recipients of the programs. If they fail to do this, it is likely that parents will seek help from alternative service providers. At present, there is a strong focus on the development of new medications to help children with mental health problems. However, the results of this study highlight the importance that parents place on counseling for their children and themselves.

Key predictors of service use were parental perceptions that children had emotional and behavioral problems and needed professional help, the perceived impact of children's problems on parents, children's functional impairment, and the presence of comorbid MDD or CD. The findings highlight the crucial role played by parental perceptions of children's problems and their need for professional help. Dulcan et al. (1990) have shown that parents are crucial informants,

alerting pediatricians to the presence of emotional and behavioral problems that would otherwise go undetected. In this study, we highlight the close relationship between parental perceptions of children's problems and attendance at services by children. It draws attention to the potential influence of factors other than children's symptomatology on their use of health and school services.

Limitations

Limitations of the study are the use of parent reports to describe children's use of health and school services, the use of symptom criteria to identify children with ADHD, the absence of reports from teachers about children's ADHD symptomatology, and the response rate of 70%. In regard to the latter, extensive comparisons were made between the demographic characteristics of children and adolescents who participated in the study and those of the same age group reported in census data collected by the Australian Bureau of Statistics. The characteristics of the study sample showed only minor deviations from the total population. These primarily consisted of a slight overrepresentation of younger children and underrepresentation of the oldest children. We cannot determine in this study whether the factors associated with service use were specific for ADHD or apply to mental disorders more generally. Finally, the data were collected 6 years ago and patterns of service and awareness of ADHD may have changed in the interim.

Clinical Implications

Only a minority of children in the community with mental health problems receive professional help. Among these, the majority receive help from general health services and school-based services with only a small proportion of children receiving help from specialist mental health services. There are two important implications for child and adolescent psychiatrists arising from these findings. First, the findings emphasize the important role that child and adolescent psychiatrists can play in providing professional advice and support to staff in general health and educational services. Second, the results highlight the major challenge facing health services in determining the level of resources that should be allocated to clinical versus population-level

interventions for children and adolescents with mental health problems. It is important that child and adolescent psychiatrists are actively involved in this process of resource allocation to achieve the most effective use of the scarce resources available to help children and adolescents with mental disorders (Offord et al., 1987).

REFERENCES

- Angold A, Messer SC, Stangl D, Farmer EMZ, Costello EJ, Burns BJ (1998), Perceived parental burden and service use for child and adolescent psychiatric disorders. *Am J Public Health* 88:75-80
- Burns BJ, Costello EJ, Angold A et al. (1995), Children's mental health service use across service sectors. *Health Affairs* 14:147-159
- Cohen P, Kasen S, Brook JS, Struening EL (1990), Diagnostic predictors of treatment patterns in a cohort of adolescents. *J Am Acad Child Adolesc Psychiatry* 29:989-993
- Dulcan MK, Costello EJ, Costello AJ, Edelbrock C, Brent D, Janiszewski S (1990), The pediatrician as gatekeeper to mental health care for children: do parents' concerns open the gate? *J Am Acad Child Adolesc Psychiatry* 29:453-458
- Hoagwood K, Kelleher KJ, Feil M, Comer DM (2000), Treatment services for children with ADHD: a national perspective. *J Am Acad Child Adolesc Psychiatry* 39:198-206
- Jensen PS, Blodau L, Davis H (1990), Children at risk: II. Risk factors and clinic utilization. *J Am Acad Child Adolesc Psychiatry* 29:804-812
- Jensen PS, Kettle L, Roper MT et al. (1999), Are stimulants overprescribed? Treatment of ADHD in four US communities. *J Am Acad Child Adolesc Psychiatry* 38:797-804
- Jorm AF (2000), Mental health literacy: public knowledge and beliefs about mental disorders. *Br J Psychiatry* 177:396-401
- Lahey BB (2001), Should the combined and predominantly inattentive types of ADHD be considered distinct and unrelated disorders? Not now, at least. *Clin Psychol Sci Pract* 8:494-497
- Laitinen-Krispijn S, Van Der Ende J, Wierdsma AI, Verhulst FC (1999), Predicting adolescent mental health service use in a prospective record-linkage study. *J Am Acad Child Adolesc Psychiatry* 38:1073-1080
- Landgraf JM, Abetz L, Ware JE Jr (1996), *The CHQ User's Manual. First Edition*. Boston: The Health Institute, New England Medical Center (available at www.healthact.com)
- Lavigne JV, Arend R, Rosenbaum D et al. (1998), Mental health service use among young children receiving pediatric primary care. *J Am Acad Child Adolesc Psychiatry* 31:1175-1183
- MTA (1999), Effects of comorbid anxiety disorder, family poverty, session attendance, and community medication on treatment outcome for attention-deficit hyperactivity disorder. *Arch Gen Psychiatry* 56:1088-1096
- Offord DR, Boyle MH, Szatmari P et al. (1987), Ontario child health study: II. Six month prevalence of disorder and rates of service utilisation. *Arch Gen Psychiatry* 44:832-836
- Sawyer M, Arney F, Baghurst P et al. (2000), *The Mental Health of Young People in Australia: Child and Adolescent Component of the National Survey of Mental Health and Well-Being*. Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care. Australia. Available at www.mentalhealth.gov.au. Accessed February 1, 2004.
- Seija S, ed (2002), *Hyperactivity and Attention Disorders of Childhood*, 2nd Edition. New York: Cambridge University Press
- Shaffer D, Fisher P, Lucas C, Dulcan M, Schwab-Stone M (2000), NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry* 39:28-38
- Verhulst FC, Van Der Ende J (1996), Factors associated with child mental health service use in the community. *J Am Acad Child Adolesc Psychiatry* 36:901-909