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- Gutierrez JP, Bertozzi S. Resource availability for HIV/AIDS and the funding gap. XV International AIDS Conference Satellite Session: resource tracking and priority setting, July 2004. Kaiser Family Foundation. www.kff.org/hiv/aids/upload/Resource-Availability-for-HIV-AIDS-the-Funding-Gap.pdf
- Gutierrez JP, Johns B, Adam T, Bertozzi SM, Edejer TT, Greener R, et al. Achieving the WHO/UNAIDS antiretroviral treatment 3 by 5 goal: what will it cost? *Lancet* 2004;364:63-4.
- Evans DB, Tan-Torres Edejer T, Adam T, Lim SS, for the WHO-CHOICE MDG Team. Achieving the millennium development goals for health: Methods to assess the costs and health effects of interventions for improving health in developing countries. *BMJ* 2005;331:1137-40.
- Bollinger L, Cooper-Arnold K, Stover J. Where are the gaps? The effects of HIV-prevention interventions on behavioral change. *Stud Fam Plann* 2004;35:27-38.
- Stover J, Walker N, Garnett GP, Salomon JA, Stanecki KA, Ghys PD, et al. Can we reverse the HIV/AIDS pandemic with an expanded response? *Lancet* 2002;360:73-7.
- Grosskurth H, Moshafiq F, Todd J, Mwijarubi E, Klokke A, Senkoro K, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet* 1995;346:530-6.
- Wawer MJ, Sewankambo NK, Serwadda D, Quinn TC, Paxton LA, Kiwanuka N, et al. Control of sexually transmitted diseases for AIDS prevention in Uganda: a randomised community trial. *Lancet* 1999;353:525-35.
- Kamali A, Quigley M, Nakyingi J, Kinsman J, Kengeya-Kayondo J, Gopal R, et al. Syndromic management of sexually-transmitted infections and behaviour change interventions on transmission of HIV-1 in rural Uganda: a community randomised trial. *Lancet* 2003;361:645-52.
- Orroth KK, Korenromp EL, White RG, Changalucha J, de Vlas SJ, Gray RH, et al. Comparison of STD prevalences in the Mwanza, Rakai, and Masaka trial populations: the role of selection bias and diagnostic errors. *Sex Transm Infect* 2003;79:98-105.
- Grosskurth H, Gray R, Hayes R, Mabey D, Wawer M. Control of sexually transmitted diseases for HIV-1 prevention: understanding the implications of the Mwanza and Rakai trials. *Lancet* 2000;355:1981-7.
- Korenromp EL, Bakker R, de Vlas SJ, Gray RH, Wawer MJ, Serwadda D, et al. HIV dynamics and behaviour change as determinants of the impact of sexually transmitted disease treatment on HIV transmission in the context of the Rakai trial. *AIDS* 2002;16:2209-18.
- White RG, Orroth KK, Korenromp EL, Bakker R, Wambura M, Sewankambo NK, et al. Can population differences explain the contrasting results of the Mwanza, Rakai, and Masaka HIV/sexually transmitted disease intervention trials?: A modeling study. *J Acquir Immune Defic Syndr* 2004;37:1500-13.
- World Health Organization. *Antiretroviral drugs and the prevention of mother-to-child transmission of HIV infection in resource-limited settings*. Geneva: WHO, 2005.
- Salomon JA, Hogan DR, Stover J, Stanecki KA, Walker N, Ghys PD, et al. Integrating HIV prevention and treatment: from slogans to impact. *PLoS Med* 2005;2(1):e16.

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Parental concerns about their child's emotions and behaviour and referral to specialist services: general population survey

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Childhood psychiatric disorders are common and are associated with heavy use of health services.¹ Up to a third of children and adolescents attending primary care and paediatric outpatient departments have clinically significant psychopathology.^{2,3} Only a minority of these children reach specialist mental health services, partly because the presenting complaint is rarely psychological, so their disorders may not be recognised.^{2,4} Child mental health services may reject inappropriate referrals leading to frustration among referrers and families.

Although medical professionals often depend on parental concerns to identify affected children, we do not know how predictive they are. We used empirical data from the 1999 British child and adolescent mental health survey to examine how predictive parental perceptions of psychological difficulties were of psychiatric disorder and to provide simple strategies to aid clinicians in identifying children requiring referral.¹

Participants, methods, and results

We used the child benefit register to select a nationally representative sample of 10 438 children aged 5-15 years from Great Britain. The Development and Well Being Assessment combined information from parents, teachers, and young people aged 11 and older to diagnose psychiatric disorders according to the

Diagnostic and Statistical Manual of Mental Disorders, fourth edition.⁵ Parents completed the Strengths and Difficulties Questionnaire, which generates total difficulties and impact scores.⁶ The latter indicates the level of distress and related impairment in family life, peer relationships, academic functioning, and leisure activities.

Parents were also asked whether their child had "hyperactivity," "behavioural problems," and "emotional problems" and whether teachers had complained about the child's concentration, activity level, or impulsiveness. We cross tabulated parents responses to these questions with the presence of psychiatric disorder to elicit ways in which clinicians might assess which children require referral.

The negative predictive power and specificity of parental opinions were high, suggesting that clinicians can mostly be reassured by a lack of parental concern (table). About half of the children that parents were worried about had a psychiatric disorder; almost three quarters of parents reported problems in more than one area. Many of the children identified as having difficulties by parents will have significant problems even if they fall below the threshold for a psychiatric diagnosis. The Strengths and Difficulties Questionnaire total symptoms and impact scores were much higher in the "parent concerned but no diagnosis" group (n = 396) than the "no parental concern" group

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Accuracy of parental concerns about their child's emotions, behaviour, and activity level. Values are percentages (95% confidence intervals)

Parental perception (prevalence)	Prevalence (%)	Positive predictive power*	Negative predictive power†	Sensitivity‡	Specificity§
Predicting to any psychiatric disorder	9.4				
Parent reports at least one problem	9.5	47.2 (44.1 to 50.3)	94.6 (94.1 to 95.0)	47.8 (44.7 to 51.0)	94.4 (94.0 to 94.9)
Parent reports more than one problem	2.9	70.5 (64.9 to 75.6)	92.4 (91.8 to 92.9)	21.4 (18.8 to 24.1)	99.1 (98.9 to 99.3)
Parent reports behavioural problems	5.5	60.5 (56.4 to 64.5)	93.5 (93.0 to 94.0)	35.2 (32.2 to 38.3)	97.6 (97.3 to 97.9)
Parent reports emotional problems	4.1	52.2 (47.4 to 57.0)	92.4 (91.9 to 92.9)	22.9 (20.3 to 25.7)	97.8 (97.5 to 98.1)
Parent reports hyperactivity	3.4	45.2 (39.9 to 50.6)	91.8 (91.3 to 92.4)	16.3 (14.0 to 18.7)	98.0 (97.6 to 98.2)
Predicting to conduct disorder:	4.8				
Parent reports behavioural problems	5.5	46.5 (42.4 to 50.7)	97.6 (97.3 to 97.9)	53.0 (48.5 to 57.4)	96.9 (96.6 to 97.3)
Predicting to emotional disorder:	4.3				
Parent reports emotional problems	4.1	28.1 (23.9 to 32.6)	96.8 (96.4 to 97.1)	27.1 (23.1 to 31.5)	96.9 (96.5 to 97.2)
Predicting to attention deficit/hyperactivity disorder	2.2				
Parent reports hyperactivity	3.4	23.2 (18.9 to 27.9)	98.5 (98.3 to 98.7)	35.3 (29.2 to 41.9)	97.3 (97.0 to 97.6)
Parent reports teacher concern about hyperactivity**	3.7	35.3 (30.6 to 40.4)	99.0 (98.8 to 99.2)	58.2 (51.6 to 64.6)	97.6 (97.3 to 97.9)
Parent reports hyperactivity and teacher concern about hyperactivity**	0.8	62.1 (51.0 to 72.3)	98.3 (98.0 to 98.5)	23.3 (18.0 to 29.3)	99.7 (99.6 to 99.8)

*Percentage with a disorder if the informant(s) express concern.

†Percentage without a disorder if the informant(s) do(es) not express concern.

‡Percentage with a disorder identified by informant(s) concerns.

§Percentage without a disorder identified by lack of informant(s) concerns.

¶Parents reported problems in one or more of emotions, behaviour, or hyperactivity.

**At least two major or one major and two minor teacher concerns about inattentiveness, overactivity, and impulsivity.

($n=9477$), (symptom score 13.9 (standard deviation 5.3) *v* 7.5 (4.9), $t=26$, $P<0.001$; impact score 0.9 (1.4) *v* 0.2 (0.7), $t=11$, $P<0.001$).

Parents were most accurate at identifying conduct disorders, and those children reported to have behavioural problems were also most likely to have any sort of psychiatric disorder. However, nearly half of the children reported to have emotional problems or hyperactivity also had a psychiatric disorder. Parental reports of teacher concerns were more predictive of attention-deficit/hyperactivity disorder than parental concern alone; positive predictive power was particularly high when both the parent and teacher were concerned.

Comment

About half the children that parents are concerned about have a psychiatric disorder; others have subclinical levels of psychopathology. When parents are concerned about attention and activity, asking whether teachers are also concerned can help identify which children warrant referral to specialist services. Professionals should have a low threshold for enquiring about mental health issues in children as parents rarely raise these concerns.

What is already known on this topic

Children with psychiatric disorders rarely present themselves for treatment and are therefore dependent on the adults around them to identify their distress

What this study adds

If a parent reports concerns about their child's mental health, the child has a 50:50 chance of having a psychiatric disorder, and the predictive power of parental reports can be increased by asking about the level of concern at school; parental accuracy about the absence of significant problems is high

Although child mental health services are being expanded, they inevitably focus on children with the most severe levels of difficulty.⁴ Children with lesser, but still troubling, levels of psychopathology may benefit from self help approaches or contact with the voluntary sector. For example, www.youthinmind.net includes information on books and websites related to child mental health in addition to online questionnaires and reports.

Contributors: TF conceived the idea and took the lead in the analysis and writing. She was involved in the planning and clinical rating of the Department of Health survey that provided the data for this analysis. RG supervised the analysis and contributed to the writing. He was involved in the planning and clinical rating of the Department of Health survey that provided the data and designed two of the instruments used to measure psychopathology. KS contributed to the conception, analysis, and writing up. HM contributed to the analysis and writing up of this manuscript and led the design, analysis, and writing up of the Department of Health survey that provided the data for this analysis. RG is guarantor.

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Competing interests: RG and his family provide www.youthinmind.net as a free public service.

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- 1 Melzer H, Gatward R, Goodman R, Ford TJ. *Mental health of children and adolescents in Great Britain*. London: Stationery Office, 2000.
- 2 Kramer T, Garralda E. Psychiatric disorders in adolescents in primary care. *Br J Psychiatry* 1998;173:508-13.
- 3 Glazebrook C, Hollis C, Heussler H, Goodman R, Coates L. Detecting emotional and behavioural problems in paediatric clinics. *Child Care Health Dev* 2003;29:141-9.
- 4 Ford T, Hamilton H, Goodman R. Service contacts among the children participating in the British child and adolescent mental health surveys. *Child Adolesc Ment Health* 2005;10:2-9.
- 5 Goodman R, Ford T, Richards H, Meltzer H, Gatward R. The development and well-being assessment: description and initial validation of an integrated assessment of child and adolescent psychopathology. *J Child Psychol Psychiatry* 2000;41:645-57.
- 6 Goodman R, Ford T, Simmons H, Gatward R, Meltzer H. Using the strengths and difficulties questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *Br J Psychiatry* 2001;177:534-9.

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