

Students Admitted to University who fail: Hidden Disabilities Affecting Students Performance

AM Pottinger¹, F La Hee², K Asmus³

ABSTRACT

Objective: To compare grade point averages and social adjustment and academic difficulties of students with or without a hidden disability at The University of the West Indies, Mona, Jamaica.

Methods: Comparison groups were identified through the University of the West Indies (UWI) Health Centre, peer-counselling training programme and an undergraduate class. The 165 participants completed a checklist on health, social and academic concerns and provided a copy of their transcripts. students were screened for hidden disabilities including Attention Deficit Hyperactivity Disorder (ADHD) and psychiatric morbidity.

Results: Students with hidden disabilities consistently performed poorer academically than their non-disabled peers, and students with ADHD performed the worst. The high levels of distress common to students with a hidden disability may explain the difference in performance between them and non-disabled students. Students' ability to manage their time, irrespective of having a disability, was singled out as important for obtaining good grades.

Conclusions: Potentially brilliant students are at risk of failing out of university because of hidden disabilities and the associated emotional and social challenges.

Estudiantes que Ingresan a la Universidad y Fracasan en sus Estudios: Discapacidades Ocultas que Afectan el Rendimiento de los Estudiantes

AM Pottinger¹, F La Hee², K Asmus³

RESUMEN

Objetivo: Comparar los promedios generales de calificaciones (PGC) y el ajuste social y las dificultades académicas de los estudiantes con o sin discapacidades ocultas, en la Universidad de West Indies, Mona, Jamaica.

Métodos: Se identificaron grupos de comparación en el Centro de Salud de la Universidad de West Indies (UWI), el programa de adiestramiento para el asesoramiento entre iguales, y una clase de pregrado. Los 165 participantes completaron una lista de control (checklist) de asuntos de salud, sociales y académicos, y entregaron una copia de su expediente académico. Los estudiantes fueron sometidos a un pesquisaje a fin de detectar sus discapacidades ocultas, incluyendo el trastorno de hiperactividad con déficit de atención (THDA) y la morbilidad psiquiátrica.

Resultados: Los estudiantes con discapacidades ocultas tuvieron un rendimiento académico sistemáticamente más pobre que sus iguales no discapacitados, y los estudiantes con THDA fueron los de peor rendimiento. Los altos niveles de distrés común a los estudiantes con alguna discapacidad oculta, pueden explicar la diferencia en rendimiento entre ellos y los estudiantes sin discapacidades: La capacidad de los estudiantes para administrar su tiempo, independientemente de estar afectados o no por alguna discapacidad – fue señalada como un elemento importante para la obtención de buenas calificaciones.

Conclusiones: Estudiantes potencialmente brillantes, se hallan en riesgo de fracasar académicamente en la Universidad, debido a discapacidades ocultas y retos emocionales y sociales asociados con ellas.

West Indian Med J 2009; 58 (2): 1

From: ¹Department of Obstetrics, Gynaecology and Child Health, ²University Health Centre, The University of the West Indies, Mona, Kingston 7, and ³Department of Public Health, University of London.

Correspondence: Dr AM Pottinger, Department of Obstetrics, Gynaecology and Child Health, The University of the West Indies, Mona, Kingston 7, Jamaica, West Indies. e-mail: pottsie@cwjamaica.com

INTRODUCTION

Many students who meet the criteria for entry to university fail out before completing their programme because of a disability that is not readily visible (1) but which can be effectively addressed (2). While a growing number of universities offer facilities and resources that can accommodate students with physical disabilities, resources for students with non-physical disabilities that result in learning challenges lag behind. This is despite hidden disabilities, namely, attention deficit hyperactivity disorder (ADHD), learning disability (LD) and psychiatric disabilities (PD) having the greatest increase among disabling conditions for university students in the 21st century (2). Further, although more students with these disabilities are enrolling in universities, little scholarly attention has been paid to hidden disabilities in the university student population (3, 4)

Based on a systematic chart review of university students attending a counselling and mental health centre at a university in the United States of America (USA), Heiligenstein *et al* (4) documented the high incidence of unrecognized ADHD in this student population. Attention deficit hyperactivity disorder is a pattern of behaviours manifested by inappropriate levels of inattention, impulsivity or hyperactivity, of which the prevalence among college students is estimated between 3–8% (5, 6). Learning disabilities, a neurologically based learning disorder, causes academic underachievement as opposed to general low achievement and carries a prevalence rate of 1.5 to 10%, average of 2.6%, among college students (7). Psychiatric morbidities including suicidal behaviour, substance abuse, severe depression and acute anxiety or distress are common presentations by university students (8) with 1–2% suffering from a severe disorder and 10–20% from milder forms (9–11). The high prevalence of mental health concerns among university students is likely due to the challenges of transitioning to university along with the developmental nature of many psychiatric disorders (10).

Consistently, research findings have shown that university students with ADHD are at increased risk for academic and psychological difficulties (4, 12, 13). They are more likely to have lower grade point averages, be put on academic probation, view themselves as not managing their school work and be psychologically maladjusted when compared to students who do not have ADHD (4). Despite the intellectual abilities of these students with ADHD ranging from Low Average to Gifted, only about 12% will complete their first degree (14) compared to 60% of the general university population (15).

Researchers have suggested that the emotional and behavioural problems associated with psychiatric illnesses have the potential to affect not only the identified student but his or her roommates, classmates and the faculty as well (16). While the impact of a psychiatric illness on academic performance has not been as widely or rigorously studied as

ADHD, students with illnesses such as bi-polar disorder, suicidal behaviour, borderline personality disorder and substance related disorders have in common the tendency to be impulsive and impulsivity, which is also found in ADHD, has been linked to underachieving (17).

In general, students with hidden disabilities face psychological distress, persistent cognitive deficits and poor social and interpersonal skills that undermine their learning process and prevent many from graduating on time. However, many university students view seeking help for mental health concerns as detrimental to subsequent successful career progression (18), thus preventing them from accessing available and effective university support services. This is unfortunate as studies show that students who receive psychiatric treatment obtain higher grade point averages [GPA] (19) and remain in university when compared to students diagnosed with a psychiatric condition who do not receive treatment (15).

Local findings from a 2005 report on consultation liaison psychiatry revealed that affective disorders were the most commonly diagnosed mental health concerns among university students attending the UWI Health Centre, Mona, Jamaica (20). Over two decades ago, Allen and Gordon (21) concluded that psychiatric morbidity was a cause of 'academic wastage' among the students at UWI, Mona, as they found that 13% of students with a psychiatric disability had to repeat an academic year while 20% repeated one or more courses. More recently, Baboolal (22) reported that 59% of a sample of medical students seen over a two-year period for psychiatric consultation at the UWI, St Augustine, presented with mood and anxiety disorders and of this sample, 9% of a class did not finish medical school as a result of a psychiatric disorder.

Students who have low GPAs and those placed on academic probation are sometimes referred to the UWI Health Centre, Mona, by faculty and administrative staff; however, their referral is oftentimes late, when the student is at the point of dropping out or being asked to withdraw. Moreover, many students do not access relevant resource help from the health centre because they and the faculty are not aware of disabilities that can be 'hidden'. Preliminary results from a 2006 study suggest that 30% of the university students seeking counselling for relationship and adjustment issues at the UWI Health Centre, Mona, were diagnosed with ADHD that had been previously unrecognized (23).

Investigating a link between university students who underachieve and who have a hidden disability will help to sensitize the university faculty, students and administration about this relationship. The findings can also be used to guide discussions about how to retain potentially brilliant students who are at risk of dropping out because of social and emotional adjustment difficulties (24).

In this study, two forms of hidden disabilities were examined: ADHD and PD. We investigated (1) the rela-

tionship between academic performance and the presence and type of hidden disabilities among university students, and (2) social and academic concerns of students and the association to hidden disabilities.

SUBJECTS AND METHODS

Participants

Participants ($n = 165$) were taken from three groups: (i) 78 students with diagnosed hidden disabilities were identified from the charts of students who received psychiatric treatment between 2005–06 from the university counselling services at the UWI Health Centre, Mona, Jamaica. Of these, 38 students were diagnosed with ADHD and 40 with other PDs, (ii) 30 students with no identified disability (NID) were selected from students enrolled in peer counsellor training in 2006 and they were screened for ADHD and previous professional mental health counselling; and (iii) 57 students from an undergraduate psychology class who were not screened for a hidden disability (UD).

Measurements

- (a) Students' transcripts provided data on their grade point averages for each semester and cumulatively while at UWI.
- (b) A 43-item problem checklist that is routinely administered at intake sessions at the counselling centre was used to identify students' concerns about academic and psychosocial matters and provide a measure of comparison among study participants. Items included concern about time management, reading and study skills, mental health concerns, sexual and physical health concerns, loss and relationship issues, risky life style practices and social factors such as crime and finances. The severity of these concerns were rated on a 5-point scale indicating discomfort: (0) no discomfort (1) a little discomfort (2) some discomfort (3) moderate discomfort and (4) severe discomfort.
- (c) a brief demographic data sheet eliciting students' age, gender, marital status, year of study, faculty and type of enrollment was developed.

Procedures

Permission was sought from the director of the UWI Health Centre to review students' charts and the review was done by the Centre's psychiatrist, one of the study investigators. Only those records of students who met the criteria for a diagnosis of a psychiatric disorder or ADHD based on DSM IV criteria (25) were selected. Students with florid psychiatric symptoms were excluded. Each student selected from the retrospective chart review were contacted and provided with information about the study and invited to provide written informed consent and a copy of their university transcript. Their diagnosis, test data to support the diagnosis, responses from their intake checklist and relevant demographic data were taken from the records of those who consented. A comparison group of students who volunteered for peer-

counselling training were also invited to provide written informed consent to participate and they completed a brief demographic questionnaire, the Counselling Centre's intake checklist and provided a copy of their transcripts. Further, students attending a psychology 101 undergraduate class were invited to anonymously complete the demographic questionnaire and intake checklist in class. Ethical approval for the study was received from the UWI/UHWI Ethics Committee.

Data analysis

For analyses, the students were divided into case and comparison groups comprising four categories. Cases were those with a diagnosis of ADHD or a diagnosis of PD; comparison groups were those with NID or UD. Descriptive statistics, tests for differences between the groups and correlational analyses were done using SPSS version 13.

RESULTS

Table 1 presents the demographic characteristics of each of the four categories of students who participated in the study. Of the 165 students, 81% were female and 58% were less than 23 years. The majority were undergraduates (83%) enrolled full-time (85%) and all faculties of the university were represented. All participants in the UD category belonged to one faculty but the other categories had wider faculty representation. The groups of students were statistically different from each other in two respects, by their ages and year in programme. Students in the comparison groups were younger than the cases and had fewer graduate students [$p < 0.01$] (Table 1).

Academic findings

The mean scores for overall GPAs for the sample trended upwards with years, thus at the end of year 1, the overall mean GPA was 1.87, for year 2, 1.96 and for year 3, 2.20. When the academic performance (GPA) of students diagnosed with ADHD and PD were compared with students with no identified disability (NID), students with ADHD performed comparatively worse than the other two groups throughout the students' course of study. Using ANOVA, this trend reached statistical significance when GPAs were compared for year 2. Students with ADHD obtained a significantly lower mean GPA score than the other two groups in year 2 for their 1st semester and their overall final grade ($F(2, 40) = 4.33, p < 0.05$) and ($F(2, 42) = 3.57, p < 0.05$) respectively. There was no difference in the mean scores among the three category of participants and their overall cumulative GPA at the end of their programme ($F(2, 52) = 1.76, p = 0.18$).

A similar pattern of results was obtained when academic performance was compared between students diagnosed with ADHD and students with PD. The mean GPA scores for students with ADHD was significantly lower for

Table 1. Demographic characteristics of the sample by cases of students screened for hidden disability and comparison groups

	Cases				Comparison				Total Sample	
	ADHD (n=38)		PD (n=40)		UD (n = 57)		NID (n = 30)		(n = 165)	
	n	%	n	%	n	%	n	%	n	%
Age-groups										
19–23	18	47.4	16	40.0	37	64.9	25	83.4	96	58.2
24–30	13	34.2	8	20.0	7	12.3	1	3.3	29	17.6
31–40	4	10.5	10	25.0	6	10.5	4	13.3	24	14.5
41–54	2	5.3	6	15.0	4	7.0	0	0	12	7.3
(Missing)	1	2.6	0	–	3	5.3	0	–	4	2.4
Gender										
Male	6	15.8	11	27.5	4	7.0	8	26.7	29	17.6
Female	32	84.2	29	72.5	51	89.5	22	73.3	134	81.2
(Missing)	0	–	0	–	2	3.5	0	–	2	1.2
Marital status										
Single	33	86.9	31	77.5	45	78.8	26	86.7	135	81.7
Married	4	10.5	4	10.0	7	12.3	2	6.7	17	10.3
Divorced	1	2.6	1	2.5	1	1.8	0	0	3	1.9
Separated	0	0	2	5.0	0	0	0	0	2	1.2
Engaged	0	0	1	2.5	0	0	1	3.3	2	1.2
Common law	0	0	1	2.5	1	1.8	1	3.3	3	1.9
(Missing)	0	–	0	–	3	5.3	0	–	3	1.8
Enrolment status										
Fulltime	30	78.9	37	92.5	44	77.5	30	100.0	141	85.5
Part-time	8	21.1	3	7.5	10	17.5	0	0	21	12.7
(Missing)	0	–	0	–	3	5.3	0	–	3	1.8
Year in Programme										
Undergrad 1	16	42.1	16	40.0	14	24.6	9	30.0	55	33.3
Undergrad 2	9	23.7	7	17.5	6	10.5	13	4	35	21.2
Undergrad 3	6	15.8	3	7.5	31	54.4	7	23.3	47	28.5
Graduate	5	13.2	9	22.5	0	0	1	3.3	15	9.1
(Missing)	2	5.3	5	12.5	6	10.5	0	–	13	7.9
Faculty										
Humanities and Education	10	26.3	12	30.0	0	0	7	23.3	29	17.6
Pure and applied Sciences	9	23.7	2	5.0	0	0	4	13.3	15	9.1
Social Sciences	13	34.2	16	40.0	57	100.0	15	50.1	101	61.2
Law	2	5.3	2	5.0	0	0	0	0	4	2.4
Medical Sciences	4	10.5	7	17.5	0	0	4	13.3	15	9.1
(Missing)	0	–	1	2.5	0	–	0	–	1	.6

Note: ADHD = Attention Deficit Hyperactivity Disorder; PD = Psychiatric Disability; UD = Unscreened for Disability; NID = No identified disability based on screening

year 2, first semester ($p = 0.017$), overall GPA at the end of year 2 ($p = 0.024$) and cumulative GPA at the end of the programme ($p = 0.046$). No significant differences in academic performance were found between students with PD and NID.

Psychosocial concerns

Chi-square revealed significant differences among the cases and comparison groups for the frequency and intensity of their overall reported concerns ($\chi^2 = 37.48$, $p < 0.0001$). While 42% of students with ADHD had high levels of psy-

chosocial concerns (scoring greater than 50), and 30% of students with PD, only 7% of students with NID and 5% who were unscreened (UD) had scores greater than 50. Thus, more students with diagnosed disabilities reported a wide range of concerns and expressed a greater level of concern than students with no diagnosed disabilities (Table 2). ANOVA revealed significant mean differences for level of concerns among the four categories: $F(3) = 14.38$, $p < 0.0001$. *Post hoc* (Tukey HSD) showed that the mean scores for students with ADHD and PD were not significantly different but concerns by students with ADHD were

Table 2: Percentage distribution of moderate to severe concerns among cases and comparison groups

Psychosocial Concerns	Cases		Total Cases n=78	Comparison		Total Comparison n = 87
	ADHD n = 38	PD n = 40		NID n=30	UD n = 57	
Academics	83.9	72.5	77.5	40.0	49.1	46.0***
Adjusting to college	25.8	22.5	23.9	13.3	17.5	16.1
Alcohol & drugs	6.5	2.5	4.2	7.1	7.3	7.2
Anxiety/worry/fears	77.4	85.0	81.1	26.7	22.8	24.1***
Assertiveness	54.8	37.5	45.1	13.3	16.7	15.5***
Breakup	45.2	37.5	40.8	10.0	21.4	17.4**
Concentration	87.1	75.0	80.3	16.7	21.4	19.8***
Confusion beliefs/ values	35.5	30.0	32.4	6.7	9.3	8.3***
Crime victim	6.5	10.0	8.5	13.3	17.9	16.3
Death/ impending death	25.8	15.0	19.7	17.2	29.8	25.6
Decisions career/major	64.5	47.5	54.9	6.7	40.0	28.2**
Depression	83.9	72.5	77.5	10.0	12.5	11.6***
Independence from family	45.2	35.0	39.4	20.0	21.4	20.9**
Discrimination	9.7	7.5	3.5	10.0	8.8	9.2
Eating problems	29.0	25.0	26.8	0.0	17.5	11.5*
Finances	54.8	55.0	54.9	43.3	50.0	47.7
Homesickness	3.2	10.0	7.0	13.3	14.0	13.8
Irritable/anger/hostility	58.1	47.5	52.1	6.7	3.6	4.7***
Making friends	32.3	22.5	26.8	10.0	8.8	9.2*
Perfectionism	34.8	35.0	43.7	20.0	21.4	20.9**
Physical health problems	48.9	47.5	47.9	16.7	19.3	18.4***
Pregnancy problems	3.2	5.0	4.2	3.3	3.7	3.6
Procrastination/motivation	90.3	40.0	62.0	33.3	33.3	29.9***
Rape/sexual assault	9.7	2.5	5.6	6.9	5.3	5.8
Reading/study skills	64.5	45.0	53.5	23.3	33.3	29.9**
Relation with family	48.4	35.0	40.8	10.0	5.4	7.0***
Relation with peers	32.3	25.0	28.2	13.3	3.5	6.9**
Relation spouse/partner	35.5	40.0	38.0	6.7	15.8	12.6**
Spiritual concerns	45.2	25.0	33.8	20.0	12.5	15.1*
Self-esteem/confidence	74.2	62.5	67.6	16.7	21.1	19.5***
Sexual concerns	29.0	17.5	22.5	13.3	5.3	8.0**
Sexual harassment	9.7	5.0	7.0	6.7	3.5	4.6
Sexual identity/orientation	3.2	17.5	11.3	0.0	0.0	0.0**
STD's	9.7	12.5	11.3	3.3	3.5	3.4
Shyness	32.3	30.0	31.0	13.3	10.7	11.6*
Sleeping problems	58.1	40.0	47.9	16.7	14.0	14.9**
Stress management	64.5	67.5	66.2	16.7	19.3	18.4***
Suicidal feelings	32.3	22.5	26.8	6.7	1.8	3.5***
Test/performance anxiety	51.6	45.0	47.9	16.7	23.2	20.9**
Time management	80.6	47.5	62.0	26.7	33.3	31.0***
Uncertain about future	67.7	55.0	60.6	10.0	29.8	23.0***
Weight/body image	335.5	32.5	33.8	13.3	33.3	26.4
% scores >= 50	41.9	30.0	35.2	6.7	5.3	5.7***

Note: ADHD = Attention Deficit Hyperactivity Disorder; PD = Psychiatric Disorder; UD = Unscreened for disability; NID = No identified disability based on screening

* $p < .05$. ** $p < .01$. *** $p < .001$

significantly greater than the two comparison groups and concerns by students with PD were also different from the two comparison groups.

Specific concerns related to studying or test taking were singled out and examined for students with ADHD and PD. These included students' perception of their ability to concentrate, their level of motivation/procrastination, read-

ing/study skills, anxiety at test time and time management skills. Based on Chi-square tests, two concerns differentiated the group: more students in the ADHD group reported having moderate to severe concerns about time management ($p < 0.001$) and procrastinating or getting motivated ($p = 0.02$) than students with PD. When both disabilities were combined, more students with hidden disabilities reported moder-

ate to severe difficulty with all areas related to studying compared to the comparison groups: concentration (80% vs 17%, $p < 0.001$); procrastination/motivation (62% vs 23%, $p = 0.001$); reading/study skills (54% vs 23%, $p = 0.003$); test anxiety (48% vs 17%, $p = 0.001$); time management (62% vs 27%, $p = 0.001$).

Spearman correlations revealed significant correlations between some psychosocial concerns and GPAs. An indirect relationship was found between GPA and concern about time management ($p < 0.05$), sleeping difficulty ($p < 0.01$), the future ($p < 0.01$) career decisions ($p < 0.05$) and perceived academic performance ($p < 0.05$). Thus, the greater the student's level of concern in these areas, the lower was their GPA. On the other hand, certain traits were positively correlated with GPA, such as perfectionism ($p < 0.01$), assertiveness and concern about a healthy life style and practice ($p < 0.05$).

No statistical findings were associated with age, gender, year of study and faculty with academic performance. Nonetheless, students in the different faculties were differentiated by their academic concerns. More students in the faculties of Pure and Applied Sciences (85%), Law (75%) and Medicine (71%) were moderately to severely concerned about their academic performance compared to students in Humanities (63%) and Social Sciences [52.5%] ($p = 0.04$). Further, all students in Law (100%) and most in Pure and Applied (69%) and Humanities (63%) complained specifically about difficulty concentrating compared to those in Medicine (57%) and Social Sciences (35%) ($p = 0.04$). Graduate students were more likely to be generally anxious and worried than undergraduate students of any year ($p = 0.001$), but more undergraduate 1st year students and graduate students expressed moderate to severe concerns about their academic performance than other students ($p = 0.001$). While there were no gender differences, older students, between 24 and 40 years, were more likely to report being stressed ($p = 0.017$) and be concerned about their academics ($p = 0.018$) than young students and those over 40 years.

DISCUSSIONS

The small sample restricted the use of multivariate analyses which would have allowed for the simultaneous examinations of variables such as faculty and age with hidden disabilities and social and academic concerns and performance. Additionally the cross-sectional study design only allows for associations to be made and not cause and effect conclusions. Notwithstanding, students with ADHD seem to fare comparably worse academically, psychologically and socially than other students with or without other hidden disabilities. Although the rate of co-occurrence of ADHD with psychiatric illnesses is high (25), students with ADHD can be differentiated from students with other mental disorders and are likely to underachieve more than their peers at university.

Research has identified deficits in executive functioning of individuals with ADHD which are believed to result in difficulty with goal setting, time management and organization skills (26). The attention-related demands of the academic environment at universities therefore may be placing students with ADHD at a disadvantage.

On the other hand, the distress level of university students with a psychiatric illness is as high as those with ADHD. In our sample, both categories of students with a UD were equally likely to be concerned about their mental health, physical health, share similar academic concerns and have difficulties developing and maintaining good relationships. Their concerns were also more severe than students without a disability. The only academic survival skills that differentiated students with a psychiatric illness from ADHD were that the former were better able to manage their time and be motivated despite the impairment from their illness. The high levels of distress reported by students with a hidden disability place them at risk for dropping out of university especially in light of research concluding that emotional and social health factors are good predictors of student performance and retention (27) and may even be a better predictor than academic grades (24).

Our findings show that the ability to manage one's time is essential for the academic success of students. How well students felt they were managing their time was significantly related to their GPA, regardless of them having a disability. Several studies have found an association between time use and management among college students and grades (28, 29). While time management behaviour may not be easily changed, time management skills can be taught (29) and are usually offered through university counselling services.

Using a measure to screen and track students' concerns by the university's health system is encouraged from these findings. Most studies have identified the first year of transitioning to university as the most difficult for students (30). On average, the students in our sample obtained their lowest grades in year 1 and most reported their highest level of concerns in undergraduate year 1 and graduate school. However, it was year 2 that differentiated the academic grades of students. Those who had a hidden disability were more likely to do comparatively worse than their non-disabled peers in year 2. Future studies using larger samples can improve on this design to help identify trigger factors for poor performance and clarify in which year of study are students with disabilities most at risk.

In summary, having a UD puts students at risk for failing and dropping out of university, but there are programmes and resources that can minimize these risks. Given the contemporary economic climate and the constraint on university budgets, there is an urgent need for university administrators to work more closely with the university counselling services and hold discussions on student attrition and retention.

REFERENCES

1. Kessler RC, Foster CL, Saunders WB, Stang PE. Social consequences of psychiatric disorders, I: Educational attainment. *Am J Psychiatry* 1995; **152**: 1026–32.
2. Wolf LE. College students with ADHD and other hidden disabilities: outcomes and interventions. *Ann N Y Acad Sci* 2001; **931**: 385–95.
3. Glutting JJ, Youngstrom EA, Watkins MW. ADHD and college students: exploratory and confirmatory factor structures with student and parent data. *Psychol Assess* 2005; **17**: 44–55.
4. Heiligenstein E, Guenther G, Levy A, Savino F, Fulwiler J. Psychological and academic functioning in college students with attention deficit hyperactivity disorder. *J Am Coll Health* 1999; **47**: 181–5.
5. DuPaul GJ, Schaughency EA, Weyandt LL, Tripp G, Kiesner J, Ota K et al. Self-report of ADHD symptoms in university students: cross-gender and cross-national prevalence. *J Learn Disabil* 2001; **34**: 370–9.
6. Weyandt L, Linterman I, Rice J. Reported prevalence of attentional difficulties in a general sample of college students. *J Psychopathol Behav Assess* 1995; **17**: 293–304.
7. Hatman-Hall H, Haaga D. 2002. College students willingness to seek help for their learning disabilities. *Learn Disabil Quarter* 2002; **25**: 263–74.
8. Turner A, Berry T. Counselling Center contributions to student retention and graduation: A longitudinal assessment. *J Coll Stud Dev* 2000; **41**: 627–36.
9. Guthrie E, Black D, Bagalkote H, Shaw C, Campbell M, Creed F. Psychological stress and burnout in medical students: a five-year prospective longitudinal study. *J R Soc Med* 1998; **91**: 237–43.
10. O'Mahony P, O'Brien S. Demographic and social characteristics of university students attending a psychiatrist. *Br J Psychiatry* 1980; **137**: 547–50.
11. Ryle A. University psychiatric services in the United Kingdom. In: Howells J G et al., eds. *Modern Perspectives in Adolescent Psychiatry*. London: Oliver and Boyd; 1971.
12. Weyandt L, Du Paul G. ADHD in college students. *J Attent Dis* 2006; **10**: 9–19.
13. Barkley RA, Fischer M, Edelbrock CS, Smallish L. The Adolescent Outcome Of Hyperactive Children Diagnosed By Research Criteria 1: an 8 year prospective study. *J Am Acad Child Adolesc Psychiatry* 1990; **29**: 546–57.
14. Mannuzza S, Klein RG, Bessler A, Malloy P, Hynes ME. Educational and occupational outcome of hyperactive boys grown up. *J Am Acad Child Adolesc Psychiatry* 1997; **36**: 1222–7.
15. Sharkin, B. College counselling and student retention: research findings and implications for counselling centers. *J Coll Couns* 2004; **7**: 99–108.
16. Kitzrow, MA. The mental health needs of today's college students: Challenges and recommendations. *NASPA Journal* 2003; **41**: 165–79.
17. Spinella M, Miley W. Impulsivity and academic achievement in college students. *Coll Stud J* 2003; **37**: 545–9.
18. Chew-Graham CA, Rogers A, Yassin N. "I wouldn't want it on my cv or their records: medical students' experiences of help-seeking for mental health problems". *Med Educ* 2003; **37**: 873–80.
19. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on academic productivity of university students. *J Ment Health Policy Econ* 2005; **8**: 145–51.
20. La Hee F. Consultant liaison psychiatry in a primary care setting, the UWI Health Centre, Mona, Jamaica (Unpublished report) 2005.
21. Allen EA, Gordon AI. Psychiatric Morbidity and Related Factors in West Indian Students. *West Indian Med J* 1984; 252–7.
22. Baboolal NS. Mental Disorders in Medical Students at The University of The West Indies Trinidad and Tobago. *West Indian Med J* 2002; **51**: 102–7.
23. Pottinger A.M, La Hee F, Asmus K. Unrecognized Attention Deficit Hyperactivity Disorder (ADHD) in university students. Is there need for public health concern? *West Indian Med J* 2006; **55 (Suppl 2)**: 68.
24. Gerdes H, Mallinckrodt, B. Emotional, social and academic adjustment of college student: A longitudinal study of retention. *J Couns Dev* 1994; **72**: 281–8.
25. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. text revision. Washington, DC: American Psychiatric Association; 2000.
26. Kaminski, P, Turnock P, Rosen L, Laster S. Predictors of academic success among college students with attention disorders. *J Coll Couns* 2006; **9**: 60–71.
27. Pritchard M, Wilson G. Using emotional and social factors to predict student success. *J Coll Stud Dev* 2003; **44**: 18–28.
28. Trueman M, Hartley J. A comparison between the time-management skills and academic performance of mature and traditional-entry university students. *Higher Educ* 1996; **32**: 199–215.
29. Lahmers A, Zulauf C. Factors associated with time use and academic performance of college students: a recursive approach. *J Coll Stud Dev* 2000; **41**: 544–54.
30. Frey L, Tobin J, Beesley D. Relational predictors of psychological distress in women and men presenting for university counselling center services. *J Coll Couns* 2004; **7**: 129–39.