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Prevalence of DSM-IV major depression among Spanish university students

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Vázquez, F.L. y Blanco, V. (en prensa). Prevalence of DSM-IV major depression amogn Spanish university students. *Journal of American College Health.*

Abstract

The purpose of this study was to estimate the current prevalence and correlates of DSM-IV major depressive episodes (MDEs) among Spanish university students. Muñoz's Mood Screener was administered by interviewers to a sample of 554 students aged 18-34 years (65.9% women). The current prevalence of MDEs was 8.7% (95% CI: 6.5-11.3%). The most common symptoms were depressed mood (81.3%) and alteration of sleep (79.2%). MDEs were more prevalent among women than men (χ^2 (1) = 4.13, $p < 0.05$). The mean number of previous episodes of depression among currently depressed students with previous episodes was 2.2 (SD = 1.4). Some 0.6% of currently depressed students had considered suicide, and 0.2% had attempted suicide.

Key words: depressive disorder, prevalence, epidemiology, students, cross-sectional study

Depression is one of the most common psychiatric disorders, with a lifetime prevalence of around 16%[1] in the general population and figures almost as high among adolescents and young adults.[2,3] Worldwide, it is now the fourth-leading cause of the disease burden, and the leading cause of disability. [4] It is a disabling disorder that causes great suffering for individuals and their families, significantly perturbs everyday activity and productivity, is a risk factor for suicide, and often worsens the outcome of other health problems.[5]

In many countries university students now constitute a significant proportion of their age group. In general, their health is somewhat poorer than that of their peers, especially as regards emotional disorders.[6-8] The risk of emotional disorders increases under stress, and university students can be put under stress not only by accommodation, finance and social problems, but also by academic difficulties and their awareness that they must at this stage make some of the most important decisions in their lives. Such pressures can trigger the onset of depressive episodes in susceptible students and, in turn, depression can negatively affect academic performance by altering memory function and other learning processes.[9,10]

In spite of the apparent vulnerability of young adults attending university, the phenomenology of depression in this population has been insufficiently investigated. In particular, only two studies, concerning first-year Japanese students[11] and Swedish medical students,[12] have used DSM-IV criteria for estimation of prevalence. The need for studies that may help orient preventive measures derives not only from the immediate effects that a depressive episode may have on a student's life, but also from the possibility that an episode at

this time of life may, as in the case of onset in adolescence,[13-15] predispose towards further episodes,[16] with or without comorbidities.[17]

In this work we evaluated the current prevalence of major depressive episodes (MDEs) in a random sample of Spanish university students that was stratified by gender and class standing, and we investigated the relationships between depression and a number of other variables in this sample.

Method

Using the records of the University of Santiago de Compostela, Spain, we selected 559 of its 27,587 students by random sampling with proportional stratification by gender and by "class-standing", i.e. by whether they were in the 1st year, 2nd year, etc., of their university course (see Table 1). The selected students were contacted personally, informed of the nature, aims, and potential risks and benefits of the study, and invited to participate. They were assured of anonymity and confidentiality, and any relevant questions they raised were answered. Participation was completely voluntary, with no kind of economic or academic incentive. Five of the 559 declined to participate, and the remaining 554 (whose characteristics are summarized in Tables 2 and 3) gave written consent prior to their participation. The study had been reviewed and approved by the university Ethics Committee.

Data concerning sociodemographic and academic variables, personal relationships and depressive symptoms were obtained from each subject in a 10-20 min interview with one of three postgraduate psychology students. As part of these interviews, current and past DSM-IV

MDEs were screened for using Muñoz's Mood Screener[18,19] (see Table 4), an instrument that is consistent with PRIME-MD ($\kappa = 0.75$)[20] and SCID-CV ($\kappa = 0.76$) [21] and has been found to have a sensitivity of 0.969 and a specificity of 0.967 for detection of MDEs in a non-clinical population[21]. With this instrument, subjects test positive for current MDE if they report that within the past 2 weeks they have experienced five or more of the nine DSM-IV MDE symptoms (including either depressed mood or anhedonia), and that these symptoms have significantly interfered with their lives. A parallel series of questions screens in the same way for past MDEs, and in this study students reporting past MDE symptoms were also asked about the number of past episodes and their age when the first had occurred.

The interviewers were trained in administration of the Mood Screener by an experienced clinician who had himself originally been trained in its use by its author. Training comprised two 90-minute classes that included role-playing and ten case histories, each class being followed by videotaped administration of the Screener to nine subjects similar to those included in the study, with follow-up discussion of the videotaped interviews.

Statistical analyses were performed using SPSS software (version 12.0). Association between categorical variables was evaluated using χ^2 tests for large numbers and Fisher's exact test for small numbers. Association between categorical predictor variables and quantitative dependent variables was evaluated by means of Student's *t* test when the predictors were two, and by analysis of variance when they were more than two. Confidence intervals for the values of estimated parameters in the population from which the sample was drawn were estimated by calculation of exact binomial probabilities.

Results

Some 99.3% of the sample were single, 41.9% were from families with a monthly income of 960-1,920 € ($1,267-2,534 as of November 30th 2006), 71.7% described themselves as middle-class, and 68.8% came from urban localities. Some 66.4% were studying social sciences, law or humanities, and 53.1% were in the first three years of their undergraduate course.

Current MDE was diagnosed for 8.7% of the sample (95% CI: 6.5-11.3%). A number of these subjects had had previous episodes (54.2%), three (0.6%) had considered suicide, and one (0.2%) had attempted suicide. The mean number of reported previous episodes among currently depressed students with previous episodes was 2.2 (SD = 1.4; range 1 to 6), and the reported age of the first episode was on average 15.5 years (SD = 3.3 years). Some 43.8% of students with current MDE had had their first episode at age 18 years or older. The most common symptoms among students with current MDE were depressed mood (81.3%) and alteration of sleep (79.2%) (see Table 5).

MDEs were more prevalent among women (38, 10.4%) than among men (10, 5.3%) (χ^2 (1) = 4.13, $p < 0.05$) (see Table 6), but there was no significant association of MDE with age, marital status, family income, social class, background (urban or rural), class standing, whether all the previous year's exams had been passed, kind of discipline, whether sports activity was indulged in, who the student lived with during term time, maintenance of good relations with father or mother, whether the student had recently faced personal, social or

other problems, whether help with any such problems had been received from family or friends, or the student's satisfaction with such help.

Comment

A substantial proportion of the students taking part in this study, more than 8%, screened positive for an MDE. This is a rather higher prevalence than has been observed in those community studies of similarly aged young people in the U.S. or Europe in which, as in this study, explicit diagnostic criteria have been employed: the U.S. National Comorbidity Survey and its follow-up study detected a 30-day prevalence of 5.8% among U.S. adolescents and young adults,[3] and a 12-month prevalence of 6.6% among all adults[1]; while according to the ODIN study the average current prevalence in European countries is also 6.6%, though only 1.8% in urban Spain.[22] Other studies of subgroups of university students have observed even higher rates, such as 12.9% among Swedish medical students,[12] or a 12-month prevalence of 19.8% among first-year students in Japan.[11] Thus depression appears to be relatively common in this sector of the population. It is possible that our figures may be somewhat inflated due to the difficulty of distinguishing between MDE and adjustment disorders, but there are reasons to believe that any such distortion must have been minimal: only 70 of our 554 subjects were first-year students, and only 26 postgraduates; interviews were carried out during an exam-free time of year; and we found no relationship between MDE and recent problems, conflict with parents, or lack of support.

The phenomenology of the episodes of depression detected in this study was similar to

that described by Haarasilta *et al.* for young adults.[23] In both cases, depressed mood, difficulty in concentration and alteration of sleep are among the symptoms most frequently reported, and thoughts of death among the least frequently reported. However, anhedonia was commoner in Haarasilta *et al.*'s study, and fatigue- or appetite-related symptoms were commoner in ours. Episode phenomenology was basically independent of gender, but in keeping with other studies gender did influence prevalence,[24] current depression being about twice as prevalent among women as among men. None of the other factors considered were found to influence prevalence.

A number of MDEs detected in this study were cases of recurrence. This is in keeping with Newman *et al.*'s finding that high rates among young adults are maintained by episodes suffered by individuals with recurrent depression,[25] although on average our MDE students with previous episodes had suffered fewer episodes than the 15-24—year-old subjects studied by Kessler and Walters,[3] 2.2 as against 5.4. That 56% of our students had suffered their first episode before the age of 18 years (i.e. at pre-university age) is consistent with the high recurrence rate of adolescent-onset depression;[13-15] and the average reported age of onset, 15.5 years, is similar to the average 15.8 years found in a U.S. study of women in the same age group as ours.[26] However, 44% of our recurrent MDE students had had their first episode when older than 18 years, which suggests that university students are still at an age at which MDEs bring with them a high risk of recurrence.

The attempted suicide rate in this study, 0.2%, is much lower than has been reported for Swedish medical students (2.7%) [6] or adolescents (6-13%).[27,28]

The limitations of this study include the usual limitations of transverse studies, and the

absence of detailed information on previous episodes. As regards the generality of our results, our having studied just one particular sector of the general population, university students, may also be seen as a limitation. However, this sector is not only of interest in its own right, but also has methodological advantages that go beyond the convenience of its easy accessibility to researchers. Specifically, it has been pointed out that cross-cultural comparison of results on depression is more transparent when the results concern undergraduate students than when it is necessary to control for confounding factors such as type of job, job-related stress, and marital stress.[29]

It may be a more serious limitation that this was a single-university study. However, the validity of our results for the university in question would not seem to be threatened by sampling bias, the sample having been stratified by gender and class-standing, and the drop-out rate having been less than 1%. Whether our results can be generalized to the rest of Spain is of course more questionable, but the relative homogeneity of Spanish society suggests that they are probably fairly representative of the situation at other Spanish universities.

The findings of this study suggest that therapeutic resources and preventive measures should target university students as a population at relatively high risk of major depression, a disorder with possible life-long consequences. Teachers, educational authorities and students themselves should be made more aware of the threat of depression, and measures should be taken to minimize this threat, including measures to promote awareness of depression as an illness and not a stigma.[30] Currently, many Spanish universities, including that at which this study was carried out, do not run a student mental health service; and at those that do, students

are often unaware of its existence. The usual route to treatment is via the student's general practitioner. This could explain why only 6 of the 48 students who screened positive in the study had sought medical attention prior to the study. Since people with depression who seek help in general health care settings receive a correct diagnosis in less than one-quarter of cases,[31] it would also explain why all six were receiving medication, but had not been referred to a psychiatrist or psychologist.

In addition to the above measures, there should be further research focussing on two issues in particular: comorbidities, especially the relationship between depression and substance abuse, on which surprisingly little has been published; and the genesis of MDE among students, and its effects on their lives and futures, for which longitudinal studies are required.

Acknowledgments

This study was supported by grant PGIDT05PXIA21101PR from the Directorate General for Research and Development (Counsellery of Innovation, Industry and Trade) of the Xunta de Galicia (Spain).

References

1. Kessler RC, Berglund PA, Demler O et al. The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication (NCS-R). JAMA. 2003;289:3095-3105.
2. Haarasilta L, Marttunen M, Kaprio J, Aro H. The 12-month prevalence and characteristics of major depressive episode in a representative nationwide sample of adolescents and young adults. Psychol Med. 2001;31:1169-1179.
3. Kessler RC, Walters EE. Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. Depress Anxiety. 1998;7:3-14.
4. Ustun TB, Ayuso-Mateos JL, Chatterji S, Mathers C, Murria CJL. Global burden of depressive disorders: Methods and data sources. Br J Psychiatry. 2004;184:386-392.
5. Wang PS, Kessler RC. Global burden of mood disorders. In Stein DJ, Kupfer DJ, Schatzberg AF, Eds. The American psychiatric publishing textbook of mood disorders. Washington: American Psychiatric Publishing, Inc; 2006. p.55-68.
6. De Melo JA, Farber BA. Willingness to seek help for psychosocial problems among Latino and white American college students. Psychol Rep. 2005;97:50-52.
7. Grant A. Identifying students' concerns: A whole institutional approach. In Stanley N, Manthorpe J, Eds. Students' mental health needs: Problems and responses. London: Jessica Kingsley; 2002. p.83-105.

8. Stewart-Brown S, Evans J, Patterson S et al. The health of students in institutes of higher education: An important and neglected public health problem? J Public Health Med. 2000;22:492-499.
9. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on the academic productivity of university students. J Ment Health Policy Econ. 2005;8:145-151.
10. Hyman S, Chisholm D, Kessler R, Patel V, Whiteford H. Mental disorders. In Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans D. et al., Eds, Disease control priorities in developing countries (2th ed.). New York: Oxford University Press; 2006. p. 605-625.
11. Tomoda A, Mori K, Kimura M, Takahashi T, Kitamura T. One-year prevalence and incidence of depression among first-year university students in Japan: A preliminary study. Psychiatry Clin Neurosci. 2000;54:583-588.
12. Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: A cross-sectional study. Med Educ. 2005;39:594-604.
13. Lewinsohn PM, Clarke GN, Seeley JR, Rohde P. Major depression in community adolescents: Age at onset, episode duration, and time to recurrence. J Am Acad Child Adolesc Psychiatry. 1994;33:809-818.
14. Newman DL, Moffitt TE, Caspi A, Magdol L, Silva PA, Stanton W. Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. J Consult Clin Psychol. 1996;64:552-562.

15. Wittchen H-U, Nelson CB, Lachner G. Prevalence of mental disorders and psychosocial impairments in adolescents and young adults. Psychol Med. 1998;28:109-126.

16. Harringon R, Fudge H, Rutter M, Pickes A, Hill J. Adult outcomes of childhood adolescent depression. Arch Gen Psychiatry.1990;47:465-473.

17. Franko DL, Thompson D, Barton BA et al. Prevalence and comorbidity of major depressive disorder in young black and white women. J Psychiatr Res. 2005;39:275-283.

18. Miller WR, Muñoz RF. Controlling your drinking. New York: Guilford;2005.

19. Muñoz RF. Preventing major depression by promoting emotion regulation: A conceptual framework and some practical tools. Int J Ment Health Promot. 1998;1:23-40.

20. Muñoz RF, McQuaid JR, González GM, Dimas J, Rosales V. Depression screening in a women's clinic: Using automated Spanish- and English-language voice recognition. J Consult Clin Psychol. 1999;67:502-510.

21. Vázquez FL, Muñoz RF, Blanco V, López, M. Validation of Muñoz's Mood Screener for use in non-psychiatric Spanish populations. Unpublished observations:2006.

22. Ayuso-Mateos JL, Vázquez-Barquero JL, Dowrick C, Lehtinen V, Dalgard OS, Casey C et al. Depressive disorders in Europe: Prevalence figures from ODIN study. Br J Psychiatry. 2001;179:308-316.

23. Haarasilta L, Marttunen M, Kaprio J, Aro H. The 12-month prevalence and characteristics of major depressive episode in a representative nationwide sample of adolescents and young adults. Psychol Med. 2001;31:1169-1179.
24. Bebbington PE. Sex and depression. Psychol Med. 1998;28:1-8.
25. Newman DL, Moffitt TE, Caspi A, Magdol L, Silva PA, Stanton W. Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. J Consult Clin Psychol. 1996;64:552-562.
26. Daley SE, Hammen C, Rao U. Predictors of first onset and recurrence of major depression in young women during the 5 years following high school graduation. J Abnorm Psychol. 2000;109:525-533.
27. Garland AF, Zigler E. Adolescent suicide prevention : Current research and social policy implications. Am Psychol. 1993;48:169-182.
28. Ruangkanchanasetr S, Plitponkarnpim A, Hetrakul P, Kongsakon R. Youth risk behavior survey: Bangkok, Thailand. J Adolesc Health. 2005;36:227-235.
29. Iwata N, Buka S. Race/ethnicity and depressive symptoms: A cross-cultural/ethnic comparison among university students in East Asia, North and South America. Soc Sci Med. 2002;55:2243-2252.
30. Patel V. A culturally sensitive psychiatric epidemiology. Int Rev Psychiatry. 1998;10:317-322.

31. Linden M, Lecrubier Y, Bellantuono C, Benkert O, Kisely S, Simon G. The prescribing of psychotropic drugs by primary care physicians: An international collaborative study. J Clin Psychopharmacol. 1999;19:132-140.

Table 1
Stratification of the sample initially selected (N = 559) by class-standing

Year of study course	N	N
1st	4574	70
2nd	4769	116
3rd	6277	112
4th	4365	75
5th/6th	7163	160
Postgraduate	439	26

Table 2
Sociodemographic and academic profile of the final sample (N = 554)

Characteristic	*n*	%
Gender		
Male	189	34.1
Female	365	65.9
Age (years)		
M	22.2	
SD	2.6	
Marital status		
Single	550	99.3
Married	3	0.5
Divorced/widowed	1	0.2
Declared social class		
Upper	83	15.0
Middle	397	71.7
Lower	64	11.6
NR/NS*	10	1.8
Monthly family income		
< 960 €	49	8.8
960-1920 €	232	41.9
> 1920 €	151	27.3
NR/NS*	112	22.0
Geographical background		
Rural	173	31.2
Urban	381	68.8
University course level		
Level 1 (years 1-3)	294	53.1
Level 2 (4th-final years)	234	42.2
Level 3 (postgraduate)	26	4.7
Kind of discipline		
Social sciences and humanities	368	66.4
Health sciences	91	16.4
Natural sciences and mathematics	95	17.2
Primary occupational descriptor		
Student	529	95.5
Others	15	4.5
Passed all previous year's subjects		
Yes	220	39.7
No	325	58.7
NR/NS*	9	1.6

Note. (*) No response or not sure.

Table 3
Other characteristics of the sample

Characteristic	*n*	%
Persons lived with during term		
Parents	265	47.8
Friends	195	35.2
Others	94	16.0
Sports activity		
Yes	256	46.2
No	288	52.0
NR/NS*	10	1.8
Relationship with father		
Poor	27	4.9
Indifferent	62	11.2
Good	431	77.7
NR/NS*	34	6.1
Relationship with mother		
Poor	2	0.4
Indifferent	40	7.2
Good	501	90.5
NR/NS*	11	2.0
Number of friends		
M	9.2	
SD	12.0	
Recent problems?		
Yes	195	35.2
No	352	33.8
NR/NS*	7	1.3
Help from family or friends?		
Yes	170	87.2
No	25	12.8
Satisfaction with help?		
Yes	154	90.6
No	16	9.4

Note. (*) No response or not sure.

Table 4
Mood Screener

	En tu vida ha habido alguna vez dos semanas o más durante las cuales la mayor parte de los días… [Have you ever had two weeks or more when nearly every day you…]	¿Has tenido este problema la mayor parte del día casi todos los días en las últimas dos semanas? [Have you had this problem nearly every day in the last two weeks?]
1. (a) ¿Te sentiste triste, melancólico, deprimido la mayor parte del día casi todos los días? [Felt sad, blue, or depressed most of the day nearly every day?]	Sí (Yes) [] No []	Sí (Yes) [] No []
2. (a) ¿Perdiste todo el interés y el gusto por cosas que normalmente te interesan o con las que disfrutas? [Lost all interest or pleasure in things you usually cared about or enjoyed?]	Sí (Yes) [] No []	Sí (Yes) [] No []
3. (a) ¿Perdiste o aumentaste tu apetito casi cada día? [Lost or increased your appetite nearly every day?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(b) ¿Perdiste peso sin proponértelo durante varias semanas? (En torno a 1 kg. por semana) [Lost weight without trying to? (Over 2 lbs. per week)]	Sí (Yes) [] No []	Sí (Yes) [] No []
(c) ¿Ganaste peso sin proponértelo durante varias semanas? [Gained weight without trying to?]	Sí (Yes) [] No []	Sí (Yes) [] No []
4. (a) ¿Tuviste dificultades en quedarte dormido, en permanecer dormido o en despertarte demasiado temprano? [Had trouble falling asleep, staying asleep, or waking up too early?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(b) ¿Dormiste demasiado casi todos los días? [Been sleeping too much nearly every day?]	Sí (Yes) [] No []	Sí (Yes) [] No []
5. (a) ¿Hablaste o te moviste más despacio de lo normal? [Talked or moved more slowly than is normal for you?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(b) ¿Tuviste que estar en continuo movimiento, es decir, no podías sentarte o quedarte quieto y dejar de pasear de un lado para otro? [Had to be moving all the time, that is, could not sit still, paced up or down?]	Sí (Yes) [] No []	Sí (Yes) [] No []
6. (a) ¿Te sentiste fatigado o sin energía casi todo el tiempo? [Felt tired or without energy nearly all the time?]	Sí (Yes) [] No []	Sí (Yes) [] No []
7. (a) ¿Sentiste que no valías para nada o que eras una persona pecadora o culpable casi todos los días? [Felt worthless, sinful, or guilty nearly every day?]	Sí (Yes) [] No []	Sí (Yes) [] No []
8. (a) ¿Tuviste mucha más dificultad de lo normal para concentrarte o tomar decisiones? [Had a lot more trouble concentrating or making decisions than is normal for you?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(b) ¿Notaste casi todos los días que tus pensamientos se sucedían más lentos o parecían más confusos de lo habitual? [Noticed that your thoughts came much slower than usual or seemed mixed up nearly every day?]	Sí (Yes) [] No []	Sí (Yes) [] No []
9. (a) ¿Pensaste mucho sobre la muerte, ya sea en la tuya, o en la de otra persona o en la muerte en general? [Thought a lot about death –either your own, someone else's, or death in general?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(b) ¿Quisiste morirte? [Wanted to die?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(c) ¿Te sentiste tan deprimido que pensaste en suicidarte? [Felt so low you thought about committing suicide?]	Sí (Yes) [] No []	Sí (Yes) [] No []
(d) ¿Intentaste suicidarte? [Attempted suicide?]	Sí (Yes) [] No []	Sí (Yes) [] No []
10. ¿Interfirieron mucho estos problemas con tu vida o tu actividad? [Did these problems interfere with your life or activities a lot?]	Sí (Yes) [] No []	Sí (Yes) [] No []

Note. From Vázquez et al. [21].

Table 5
Frequencies of DSM-IV diagnostic symptoms among the 48 students who screened positive for MDE

	n	%
Depressed mood	39	81.3
Anhedonia	26	54.2
Weight loss or altered appetite	24	50.0
Alteration of sleep	38	79.2
Psychomotor agitation or retardation	36	75.0
Fatigue or loss of energy	27	56.3
Feelings of worthlessness or of excessive or inappropriate guilt	17	35.4
Impaired concentration	31	64.6
Thoughts of death	11	22.9

Table 6
Prevalence of MDE by gender

	Gender			
	Male		Female	
MDE	n	%	n	%
Yes	10	5.3	38	10.4
No	179	94.7	327	89.6
Total	189	100.0	365	100.0