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Brief depression among patients in general practice

Prevalence and variation by recurrence and severity

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Abstract Depression with substantial psychosocial impairment, but not qualifying as depressive disorder according to the standard diagnostic manuals, is frequent among primary care patients. Recurrent brief depression (RBD) is a diagnostic category intended to identify a major proportion of this group of patients. The WHO study on "Psychological Problems in Primary Health Care" was used as a vehicle to estimate the proportion of patients with this diagnosis and to evaluate the validity of this diagnosis as well as of alternative concepts of brief depression with multiple episodes. This study applies a two-stage sampling scheme; 300 patients also underwent an additional interview tailored for variants of brief depression. 7.6% of primary care patients were identified as RBD with the majority not receiving any other psychiatric diagnosis (DSM-III-R). These patients reported substantial psychosocial impairment, and the majority were identified as psychological cases by general practitioners. However, patients experiencing other variants of brief episodes were also found to be substantially psychosocially impaired, although they were not identified as psychiatric cases by DSM-III-R. Thus, a less restrictive definition of RBD is proposed. The diagnostic definition of RBD has a major impact on the sex ratio of cases: the less restrictive the diagnosis, the more balanced are the prevalence rates between males and females.

Key words Recurrent brief depression · Primary care
Diagnostic schedules · Sex ratio in depression

Introduction

A series of surveys of psychiatric diagnoses and psychological treatments in primary care has found that the diagnostic categories of major depression and dysthymia are insufficient to identify the vast majority of people suffering from depression (Sireling et al. 1985; Kessler et al. 1985; Barret et al. 1988). The scientific problem resulting from this situation is to define a distinct diagnostic subtype that extends beyond the generally accepted, well-defined categories and that meets the following two criteria: (1) includes the majority of subjects suffering from depression or in need of treatment for depression but not considered as cases according to the well-defined categories of affective disorders; and (2) excludes the substantial proportion of these subjects who do not experience significant psychosocial impairment.

Minor and intermittent depression as defined by RDC may partly fit these criteria (Spitzer et al. 1978). However, these categories might be overinclusive and, as they have never been proven to be valid entities, have not been included in DSM-III/DSM-III-R. The diagnostic category of recurrent brief depression offers a more appropriate diagnosis (Angst et al. 1990). It is based on the observations emerging from the Zurich Study that brief episodes of depression with a sufficiently large number of related symptoms are associated with substantial psychosocial impairment and treatment-seeking behaviour if the episodes are highly recurrent, i.e. have a mean of more than one episode per month. Thus, definitions of RBD place conditions on the minimum number of associated symptoms, the minimum number of episodes per year, and the mode of regularity, with some disagreement as to the stringency of the regularity conditions. Angst et al. (1990) have requested a minimum of one episode per month over 1 year. Angst (1993) reported that the majority of subjects with depressive disorders encountered in the general population, who reported antidepressant treatment but did not qualify as depressed according to DSM-III, fitted these specific criteria. The distinct feature of this definition is the regularity and multiplicity of occurrences and the relatively high number of associated symptoms. Thus, the clinical validity of this new diagnostic entity implies that brief depression, with fewer associated symptoms and/or a lower number of episodes per year and/or more irregu-

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lar occurrence of episodes, is either rare or does not result in substantial psychosocial impairment. However, evidence for the distinctness of the RBD category is still lacking. The present study compares a variety of mutually exclusive definitions of brief depression manifested in multiple episodes per year, varying by stringency of criteria, prevalence, and degree of psychosocial impairment in primary care patients.

Methods

Study design

Patients with various subtypes (including RBD) of recurrent brief episodes with depression were identified among primary care patients at a local extension of the WHO Study on "Psychological Problems in Primary Care" (Sartorius et al. 1993). This study employed a two-stage sampling system, using the General Health Questionnaire or GHQ (12-item version with scores varying between 0 and 12) as a screener in the first stage. Subjects were assigned to three mutually exclusive strata defined by global GHQ scores. Fixed stratum-specific numbers of subjects were selected for stage II, i.e. for detailed examination using standardized instruments. Of the patients selected for stage II, 20% had GHQ scores of 0, 1, or 2; 20% scores of 3 or 4; and 60% had scores between 5 and 12.

The WHO protocol was applied to the first subsample of patients selected for the psychiatric interview (second-stage investigation) in a standard fashion. After it became evident that the standard protocol is quite feasible and that time for additional clinical examinations is usually available within the same session, all subsequent patients were also asked about brief episodes of depression. Thus, the extension of the protocol was begun after 25% of the patients were already enrolled (i.e. after 100 patients were selected for stage II) and was applied to $n = 300$ patients selected for direct interview and assessment in stage II.

Sample

A consecutive sample of patients attending 20 offices of general practitioners (GPs) in the city and the rural surroundings of Mainz (Germany) within a defined period of time was selected, as Sartorius et al. (1993) have extensively described. The GP offices selected for this study were intended altogether to provide a patient sample as representative as possible for general practice patients in this area. After categorizing the area under study according to the social background and age structure of its inhabitants, and the GP offices according to number of registered patients and the psychotherapeutic competence of the doctor, 30 general practitioners scattered across the study area were identified. However, only 20 of the 30 general practitioners contacted agreed to participate.

Patients were contacted in waiting rooms while they were waiting to see the doctor. The waiting time is usually about 30 min. On some days, the waiting rooms were overcrowded with patients. The busy atmosphere of the waiting room, where the patient was contacted while sitting among other patients, afforded no privacy. The research assistant contacted the patient, explained the study, and asked for cooperation. We had prepared a letter in German, signed by the head of the WHO Mental Health Division indicating the relevance of the project for mental health care all over the world. The patient was asked to complete the GHQ.

Some 10% of the patients were reluctant to sign the informed consent form because they did not want to give us their names and address. The CIDI interview was conducted by medical students who had been trained as research workers. They collected the informed consent forms from the patients and contacted them, most often by phoning them a few days later.

Sample size

A total of 2003 German-speaking patients were selected for screening and 1860 (91%) completed the GHQ. Of the patients, 46.1% had GHQ scores from 0 to 2; 23.6% had scores of 3 or 4; and 30.2% had scores ranging from 5 to 12 in stage II. 906 patients were chosen for the stage II interview, of whom 300 (33.1%) completed the CIDI and the interview for brief episodes of complaints. A total of 603 (66.7%) refused to participate in stage II. Two (0.2%) of the interviews could not be completed due to interruption. Patients selected for stage II interview but refusing or failing to complete the interview were substituted for by another patient of the same sex and from the same GHQ stratum. The main reasons for refusing to participate were that patients felt stressed by a lack of time (50%) and concerns about data security (30%). We tried to reduce the drop-out rate caused by time limitation by offering for the interview to take place either at home, in the clinic, or in the doctor's office.

Socio-demographic characteristics

In the first stage, we screened 1008 males (43.1%) and 1052 females (56.9%). 18% of the sample were between 18 and 24 years old, 52% between 25 and 44 years old, and 30% between 45 and 65 years old. More than 50% of the population were middle aged, only 30% were over 45 years old, and the remainder were between 18 and 24 years old.

For the second stage interview, two-thirds (63%) were female and only one-third (37%) male, with an age distribution similar to the stage I sample. The compliance of women was higher than that of men. All second-stage participants had had at least 8 years of schooling, 51.3% had had between 9 and 12 years, and 32.9% had a high-school or university degree. Half of the second-stage sample were married (50.9%), 11.5% were divorced, 1.3% widowed, and 36.3% single. About 80% of the patients were employed, 59.8% working full time and 17.3% part time. Approximately 12.5% of the sample were unemployed, which corresponds to the general population of the area. The most frequent chronic illness among the patients sampled were gastric/peptic ulcer (16.1%), heart disease (13.6%), high blood pressure (11.5%), and arthritis (10.1%).

Interviews and assessments

The Composite International Diagnostic Interview (CIDI) and the Social Disability Schedule (SDS) were the main instruments in the stage-II examinations. In this local study, both instruments were administered according to the standard protocol (Sartorius et al., 1993). The CIDI, as modified for this study, probes for (1) disturbances of mood, appetite, sleep, loss of interest or energy, psychomotor speed, self esteem, concentration, and suicide ideation lasting longer than 2 weeks; and (2) RBD in a global fashion with a single question if no episode of depression lasting more than 2 weeks is reported. Thus, we decided to supplement the investigation at our study center with an additional interview asking about occurrence of brief episodes (i.e. shorter than 2 weeks) with all complaints for which the CIDI is also probing. The development of this new module was based on an interview module in a CIDI format developed by Y. Lecrubier and J.-P. Lepine. Mean and maximum duration of each symptom were also explored. No skipping rules were used. In addition, the temporal pattern of manifestations of brief episodes and associated social impairment in various aspects of life were assessed.

The SDS measures dysfunction in a patient's social role. It was assessed after an interview by the investigator. Disability is defined as a restriction or inability to perform activities and/or manifest behaviors expected in defined social roles. In this article, we focus on the following four roles of the SDS: self-care, family, social, and occupational. Scores on each role range from 0 through 3, with 0 indicating no disability, 1 mild disability, 2 moderate dis-

ability, and 3 severe disability. The scores are based on behavioral deviations from prevailing norms and expectations, typically in the local community. The total global SDS score is defined as the maximum across these four areas of daily activities and social roles.

Interviewers for both instruments were residents and advanced students with clinical experience who had been trained in at least 20 sessions in handling interviews and assessments. The study was guided by multiple reliability tests (Sartorius et al. 1993).

The GP filled in a "Physician Encounter Form", which contained questions about main reasons for contact, physical status of the patient, and the severity of psychological disorder. A scale between 0 and 4 was used to charge the severity of psychological disorder: completely normal (0), subclinical disturbance (1), mild case (2), moderate case (3), and severe case (4). Patients receiving a score of 2, 3, or 4 were assessed to be psychological cases by the GP.

Diagnostic definitions

Recurrent brief depression was defined according to the criteria proposed by Angst et al. (1990), i.e. as multiple episodes with either depressed mood or loss of interest with a duration shorter than 2 weeks and at least four additional symptoms listed in the definition (DMS-III-R) of major depression. At least one short episode (< 2 weeks) of this kind was required for each month last year, with only minor exceptions. Although all patients receiving this diagnosis reported at least some psychosocial impairment, impairment was not required for definition, in order to enable comparison with recurrent syndromes with fewer symptoms or episodes.

Single episodes of brief depression during the last year were not reported, as forgetting of episodes is likely in the absence of recurrence (Rice et al. 1992). The definition of recurrent brief depression (Angst et al. 1990) was also used as a starting point for defining recurrent episodes with depressed mood (and/or loss of interest), but with less stringent requirements for the number of associated symptoms per episode and/or the number and regularity of episodes during the preceding year. With regard to the minimum number of associated symptoms, in addition to the category of four or more associated symptoms, two additional categories (two or three associated symptoms and one or no associated symptoms) were introduced. With regard to number and regularity of episodes, two additional categories were introduced in addition to the criterion of at least one episode per month over the last year: at least one episode per month during 6 months last year; and several episodes distributed over the course of last year. Thus, nine mutually exclusive categories of multiple occurrence of brief episodes with depressed mood and/or loss of interest were obtained.

Results

Of the patients of our local general practitioners, 7.6% were currently (i.e. during the preceding 12 months) suffering from recurrent brief depression, with a strong female excess (1.4% in male and 10.6% in female patients). Exclusion of patients who additionally reported at least one episode of major depression during the last 12 months resulted in a reduction of the prevalence rate to 5.4%. Exclusion of patients with any DMS-III-R diagnosis (i.e. major depression, dysthymia, panic disorder, agoraphobia, generalized anxiety disorder, somatization disorder, hypochondriasis) resulted in a reduction to 4.5%. Patients with at least two brief episodes characterized by depressed mood or loss of interest were frequent at 50.23%, including 44.23% of the male and 59.73% of the female patients. Even after the exclusion of those patients with major depression or any other DSM-III-R diagnosis, still 46.24% and 41.67%, respectively, reported this condition.

Table 1 Gender-specific 1-year prevalence rates (reweighted) for mutually exclusive variants of recurrent brief episodes with depression in primary-care patients

Maximum number of symptoms	Number of episodes/regularity		
	More than 12 with more than 1 monthly	More than 6 with more than 1 monthly over 6 months	Several with more than 1 monthly over 2 months
Male patients			
> 4	1.42%	18.16%	6.90%
3 or 4	2.00%	3.90%	0.00%
1 or 2	2.53%	4.90%	4.45%
Female patients			
> 4	10.64%	20.49%	10.91%
3 or 4	1.03%	1.35%	1.49%
1 or 2	5.21%	4.61%	3.91%

Most surprising was the very high 1-year prevalence rate of patients experiencing brief depression with at least four associated symptoms and multiple episodes (> 6 with at least 6 months with one episode per month as a minimum) without meeting the restrictive criteria for recurrent brief depression. Numbers of episodes during the last year range between 6 and 18 in this category, with 30% of patients reporting at least 12 brief episodes per year but with a few months episode free. However, if the number of symptoms is reduced to three or two associated symptoms, only a few such cases are obtained. Thus, a "point of rarity" is observed after reduction of the minimum number of associated symptoms of depression. This is clearly not the case if the requirement for monthly occurrence of episodes is replaced by a less restrictive condition.

The restrictiveness of the definition of recurrent brief depression has major impact on the sex ratio of identified cases (Table 1). Whereas females predominate strongly over males in the group of subjects diagnosed according to strictly defined recurrent brief depression (sex ratio 7.5), the ratio drops to 1.9 if cases reporting a minimum of 6 months with at least one episode are also included, and to 3.4 if cases those with only two or three associated symptoms are included. The sex ratio is 1.3 within the total group of patients with at least two episodes of brief depression (i.e. all patients included in Table 1).

Table 4 reports the degree of mean psychosocial impairment measured by the global SDS score. The disability scores (global SDS score) among patients with recurrent brief depression range between 0 and 3, with a mean score of 1.34 when associated psychiatric disorders are ignored and of 1.41 when only cases without other psychiatric disorders) are considered, indicating a moderate degree of disability. Mean disability scores are similar between patients with subthreshold recurrent brief depression (i.e. at least 6 months with at least one episode per

Table 2 One-year prevalence rates (reweighted) or prevalence rates of mutually exclusive variants of brief episodes of depression *not* associated with major depression by DSM-III-R diagnosis (during last year) in primary-care patients

Maximum number of symptoms	Number of episodes/regularity		
	More than 12 with more than 1 monthly	More than 6 with more than 1 monthly over 6 months	Several with more than 1 monthly over 2 months
> 4	5.39%	18.03%	8.30%
3 or 4	1.00%	1.85%	0.18%
1 or 2	2.92%	4.65%	3.92%

Table 3 One-year prevalence rates (reweighted) of prevalence rates of variants of brief episoded of depression *not* associated with any other psychiatric diagnosis by DSM-III-R (during last year) in primary-care patients

Maximum number of symptoms	Number of episodes/regularity		
	More than 12 with more than 1 monthly	More than 6 with more than 1 monthly over 6 months	Several with more than 1 monthly over 2 months
> 4	4.48%	16.04%	7.31%
3 or 4	0.50%	1.67%	0.81%
1 or 2	2.92%	4.65%	3.92%

month and at least four associated symptoms per episode) and RBD patients (no significant differences by chi-square 1.40, $df = 1$, $P > 0.5$ considering all cases, chi-square 1.09, $df = 1$, $P > 0.10$ concerning those cases without associated psychiatric disorders, respectively). For comparison, the mean global SDS score among patients without any psychiatric diagnosis (DSM-III-R) and without multiple brief episodes with depressed mood or loss of interest was also calculated and resulted in 0.56. Thus, patients with RBD as well as patients with subthreshold RBD show significantly elevated psychosocial impairment compared to patients without psychiatric disorders and without recurrent brief depressive episodes (chi square 5.01 or 4.00 $df = 1$, $P < 0.05$).

The group of patients with fewer than six episodes as well as all patients with only one or no associated symptoms had lower psychosocial disability scores than RBD patients, particularly when only cases without associated psychiatric disorders were considered. Psychosocial disability among these groups is not significantly increased, as compared with patients without psychiatric diagnoses (chi-square smaller than 1.30, $df = 1$, $P > 0.10$.

Table 5 reports assessment of psychiatric cases by general practitioners unaware of the results of the CIDI interviews. The majority of patients with strictly defined RBD are considered as psychological cases by the treating physician, even when only patients who did not receive a DSM-III-R diagnosis by the CIDI interview are considered. Only 5.6% of patients who did not receive a psychiatric diagnosis (DSM-III-R by the independently administered structured interview) without any recurrent brief episodes of depression were considered as cases. A substantial proportion of patients with at least six episodes of depression with more than four associated symptoms were also classified at psychological cases. However, this recognition rate is still substantially higher than among patients without psychiatric diagnoses or without multiple brief episodes of depressed mood (chi-square 5.6, $df = 1$,

Table 4 Current mean scores of global psychosocial impairment measured by SDS in GP patients with various subtypes of recurrent brief episodes with depression (*all* patients and – in italics – patients *without* associated DSM-III-R diagnoses)

Maximum number of symptoms	Mean global SDS scores Number of episodes/regularity		
	More than 12 with more than 1 monthly	More than 6 with more than 1 monthly over 6 months	Several with more than 1 monthly over 2 months
> 4 (n = 132 / *69*)[a]	1.34 / *1.41*	1.21 / *1.06*	1.12 / *0.73*
3 or 4 (n = 67 / *37*)[a]	1.67 / *1.40*	1.33 / *0.76*	0.67 / *1.00*
1 or 2 (n = 25 / *12*)[a]	0.45 / *0.49*	0.38 / *0.36*	0.88 / *0.99*

[a] = unweighted

Table 5 Percentage (reweighted) of psychological cases (identified by the general practioner) among variants of recurrent brief episodes with depression (all patients and – in italics – patients without other psychiatric disorders)

Maximum number of symptoms	Number of episodes/regularity		
	More than 12 with more than 1 monthly	More than 6 with more than 1 monthly over 6 months	Several with more than 1 monthly over 2 months
> 4 (n = 132 / *69*)[a]	60.13% / *62.25%*	44.68% / *37.21%*	42.16% / *22.84%*
3 or 4 (n = 67 / *37*)[a]	50.37% / *40.00%*	33.95% / *10.77%*	0.00% / *0.00%*
1 or 2 (n = 25 / *12*)[a]	37.81% / *17.12%*	14.37% / *14.62%*	13.15% / *9.18%*

[a] = unweighted

$P < 0.05$). Only a relatively small proportion of patients with recurrent brief episodes of depression associated with only a few additional symptoms are considered as psychological cases (Table 5).

Discussion

Prevalence of RBD

This survey of patients of general practitioners again highlights the insufficiencies of diagnostic manuals like the DSM-III-R in primary care, although acceptance of this classification system in psychiatry is very high. A considerable number of patients with recurrent episodes of depressive symptoms associated with psychosocial disability and recognized as psychological cases by the clinical judgment of the general practitioners are not classified as psychological cases according to any accepted psychiatric diagnosis based on DSM-III-R. In this respect, this study supports previous reports expressing a similar conclusion. The framework of the WHO study on "Psychological Problems in Primary Care" has compiled a very useful data set for the evaluation of strategies for identification of subthreshold cases.

This extension of the WHO study demonstrated that the concept of recurrent brief depression as defined by Angst et al. (1990) provides a partial solution to this problem. A considerable proportion of patients (7.6%) were diagnosed as RBD. A simultaneously conducted survey in Paris (also an extension of the WHO study on "Psychological Problems in Primary Care") conducted in a very similar setting using the same study methods found a nearly identical rate (8.3%) for RBD among general practice patients (Weiller et al. 1994).

The majority of the patients with RBD identified in this survey did not received any other psychiatric diagnosis by DSM-III-R; 4.5% of primary care patients were diagnosed as RBD with other psychiatric diagnoses. These patients present substantial psychological and psychiatric problems and thus identification as a psychiatric case by an appropriate diagnostic manual is warranted. The mean degree of psychosocial disability is of moderate magnitude and is substantially higher than the degree of psychosocial disability in patients not receiving any established DSM-III-R diagnosis or a RBD diagnosis. The majority of patients with RBD were considered as psychological cases by the general practitioner, even when patients with other DSM-III-R diagnoses are excluded. Given these results, the skeptical attitude of the recently published DSM-IV draft on recurrent brief depression is not justified (APA 1993).

Appropriateness of definition of RBD

This survey of primary care patients draws attention to the appropriateness of the definition of recurrent brief depression by Angst et al. (1990). This definition specifies the minimum of associated symptoms and the temporal pattern of occurrence of the brief episodes. The requirement of at least four symptoms associated with depressed mood or loss of interest is appropriate because (1) subjects with multiple brief episodes with depressed mood and two or three associated symptoms are relatively rare; and (2) subjects with fewer associated symptoms do not report a higher degree of psychosocial impairment and are not more often recognized as psychiatric cases in the same offices than are patients without psychiatric diagnoses. However, the specification of at least 12 recurrent episodes with at least one episode per month during the last year is not validated by the present study.

Brief episodes with depressed mood or lack of interest having occurred repeatedly within the last year apparantly vary along a continuum defined by the number of episodes and by regularity. In particular, a very high proportion of patients (19%) report occurrence of at least one brief episode monthly over 6 months during the last year. These patients are similar to RBD patients in terms of elevated mean degree of psychosocial impairment. Although the recognition rate of such patients as psychological cases by the general practitioner is lower than for RBD patients, it is still significantly higher than among patients in the same offices who did not receive any DSM-III-R or RBD diagnosis by structured interviews.

Thus, the present survey favors a less restrictive definition of the criterion on the temporal pattern of occurrence of brief depression in the definition of RBD than that proposed by Angst et al. (1990). In line with this, the ICD-10 manual (WHO 1992) requires *nearly* monthly occurrence of brief episodes over 1 year for diagnosis of RBD but this definition might be too imprecise and therefore reduce reliability. On the other hand, the criterion of 6 months with at least one episode monthly might be too overinclusive, since the 1-year prevalence of this condition is very high and the number of patients considered as psychological cases by the physician is lower than among patients fitting the more restrictive criteria of RBD. However, a similarity in the mean magnitude of psychosocial impairment with RBD patients and their elevated recognition rate as psychological cases (compared to patients without psychiatric diagnoses) suggests that a substantial proportion of patients with this subthreshold condition belong in a diagnostic category. It is beyond the scope of this study to evaluate various concurrent definitions of RBD. However, future epidemiological studies should include alternative, less restrictive temporal criteria as "at least one episode monthly in at least 10 months during the last year" in addition to the original temporal criterion. Thus, a most appropriate diagnostic definition can be derived empirically.

Sex ratio in brief depression

RBD was substantially more frequent among females than males (sex ratio 7.4 in favor of females). An excess prevalence of RBD among females was also consistently observed in general population surveys (Ernst and Angst

1992), although the excess rate was lower than in the present study. In the present paper, the female preponderance became less excessive with a less restrictive definition of regularity of occurrence of episodes. Thus, the condition of monthly occurrence of on episode is of crucial importance for the excess of females among RBD cases. This regularity might propose that the brief episodes occurring monthly are due to the menstrual cycle. Although the interviewers are advised to exclude premenstrual syndromes in evaluating recurrent depression, it cannot be ruled out that other variants of perimenstrual syndromes might account for some of the RBD cases. Although the interview did not require that this possibility be specified, it is unlikely that the majority of female cases could be thus explained, given the observation by Angst et al. (1990) that the occurrence of RBD does not overlap with perimenstrual syndromes.

This study also explores the dependency of the sex ratio of patients reporting multiple brief episodes with depression on the definition of the disorder. Although the restrictively defined RBD was about seven times more frequent among females than males, multiple occurrence of brief episodes with depressed mood or loss of interest was nearly as common among males and females. By relaxing the definition of recurrent brief depression, the excess of female prevalence rates reduces dramatically. Recent epidemiological and family studies reported a similar variation in sex ratio for number of associated symptoms when 14 days of depressed mood or loss of interest was required as a minimum for an episode (Kessler et al. 1993; Ernst and Angst 1992; Maier et al. 1992; Young et al. 1990). Thus, the present study builds on these previous reports on episodes lasting longer than 2 weeks by proposing that reduction of the minimum number of associated symptoms reduces the female preponderance of depression for brief depressive episodes, as well.

Conclusion

It is apparent from this study that RBD is able to identify a large proportion of primary care patients with disabling depression who do not fit other DSM-III-R diagnoses of affective disorders. However, the definition by Angst et al. (1990) might be too restrictive and should be extended to include other variants of brief depression occurring multiple times during a year but in a less regular manner. An additional large proportion of primary care patients with disabling brief depression might thus be identified as cases. A strong female preponderance of RBD emerges when the very restrictive original definition is applied. This unbalanced sex ratio is likely to be at least partly a result of the restrictiveness of the diagnostic definition. A less exclusive definition of the multiplicity and regularity of episodes will result in a more balanced sex ratio.

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