Factors associated with recurrent depression: a prospective study in family practice

Kadri Suija[a],*, Anu Aluoja[b], Ruth Kalda[a] and Heidi-Ingrid Maaroos[a]

[a]Department of Family Medicine and [b]Department of Psychiatry, University of Tartu, Tartu, Estonia.
*Correspondence to Kadri Suija, Department of Family Medicine, University of Tartu, Puusepa 1a-2120, 50406 Tartu, Estonia;
E-mail: kadri.suija@ut.ee

Background. Depression has a high rate of recurrence. Finding the variables that predict which patients are at higher risk of experiencing a recurrent episode of depression would benefit an individual patient.

Objective. To determine the factors associated with recurrent depression >12 months.

Methods. Consecutive patients ($N = 1094$), aged 18–75 years, were recruited from 23 family practices across Estonia. The patients were followed up at 6- and 12-month intervals as suggested in the PredictD study. Depression was assessed using the Composite International Diagnostic Interview. Each participant filled in a questionnaire to assess their risk factors for depression.

Results. Major depression was diagnosed in 13% of the patients. Twenty-eight per cent of the depressed patients had a recurrent episode of depression 12 months later. The odds of having recurrent depression were significantly higher for patients who had a history of drug abuse, odds ratio (OR) 7.48 [95% confidence interval (CI) = 1.42–39.43), for patients who had experienced discrimination, OR 2.92 (95% CI = 1.05–8.11) and for patients with a history of childhood abuse, OR 1.58 (95% CI = 1.05–2.38).

Conclusions. One-third of the patients developed recurrent depression. Drug abuse, discrimination and childhood abuse predicted recurrent depression. These factors should be taken into consideration by family doctors when managing patients with depression.

Keywords. Depression, family medicine, risk factors, social care.

Introduction

Depression is often a lifelong disease, with a number of different courses. Studies conducted in primary care have reported that depression is a highly recurrent disorder where up to half recovered patients continue experiencing one or more subsequent episodes of depression.[1–3] As earlier studies often equate recurrence and relapse, there has been considerable confusion about explaining these terms. Now, the definitions of recurrence and relapse have been standardized: relapse is a return of symptoms that occurs during the period of remission but before recovery (i.e. within 8 weeks) and recurrence is defined as the appearance of a new episode of depression, e.g. full symptomatology of depression after a period of recovery (at least 8 weeks).[4]

Recurrent depression may differ from the first episode,[5] which has prompted researchers to attempt and identify the risk factors associated with recurrent depression. Several psychological variables, such as lack of social support,[6] recent negative life events[7] and a stressful childhood,[8] have been proposed as the risk factors for recurrent depression. Other factors associated with the first episode of depression, such as gender, age, marital and socio-economic status, seem to be less important in predicting recurrent depression.[9–11] Studies have also shown that every episode of depression increases the probability of having a future episode.[11,12] Similarly, co-morbid psychopathology is associated with recurrent depression.[13,14] As the mechanism of recurrent depression is still unclear, the focus of research has been placed on its genetic determinants.[15] Moreover, there is yet a gap in the knowledge of how the factors related to treatment of depression affect recurrence of depression.[9,16]

Further research, particularly with a prospective design, based on a primary care population, is needed to characterize the link between the risk factors and recurrent depression. From the practical point of view, information about the risk factors is useful to the physician, especially to the family doctor. It has been reported that the outcomes of depression in primary and psychiatric care may differ;[17,18] consequently, the knowledge of the risk factors of recurrence can help family doctors identify and prevent recurrence. As

depression has a major economic impact in terms of consultations, medications and decreased personal productivity,[19,20] prevention of recurrence can reduce the burden of depression. The aim of this study was to determine the risk factors for recurrent depression among primary care patients.

Methods

Description of setting

The current study is a part of the PredictD study carried out between 2003 and 2005 in 23 family practices across Estonia. The design of the study was prospective: consecutive patients aged 18–75 years were recruited and followed up after 6 and 12 months. Recruitment of the patients and the design of the study were consistent with the PredictD project, as described in detail by King *et al.*[21] Briefly, the PredictD study was an international study conducted in one Latin American and six European countries with the aim to estimate the overall risk of depression across a range of possible risk factors.[21] We report relevant data from Estonia. The statistical power and the sample size of the study were calculated for the PredictD study.[21]

Patients

Family doctors recruited 1094 consecutive primary care patients. According to the baseline interview, 952 (87%) of the patients were non-depressed and 142 (13%) were depressed. For the 6-month interview, we were unable to contact 12 patients. Of the interviewed patients, 127 (98%) were non-depressed and 3 (2%) were depressed. For the 12-month interview, we failed to contact four patients. Of the interviewed patients, 89 (72%) were non-depressed and 34 (28%) were depressed (Fig. 1).
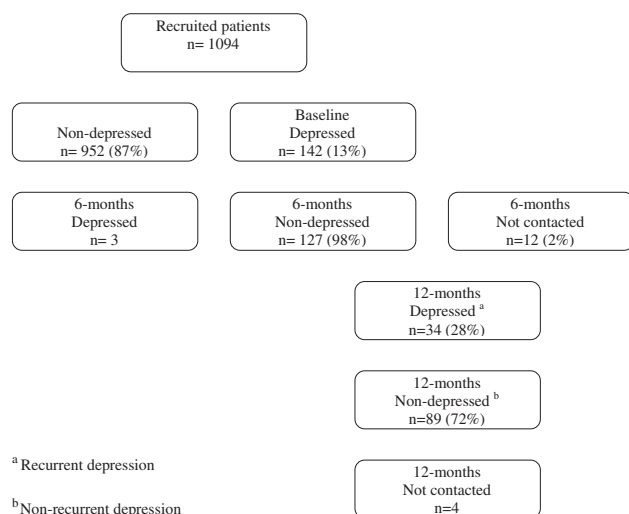

^a Recurrent depression

^b Non-recurrent depression

FIGURE 1 *Flowchart of study sample*

To determine the risk factors associated with recurrent depression, we followed the patients up for 12 months and analysed the data of 123 patients: 89 of them had non-recurrent depression (major depression at baseline, no longer depression at the 6-month interview and no longer depression at the 12-month interview) and 34 of them had recurrent depression (major depression at baseline, no longer depression at the 6-month interview and recurrent depression at the 12-month interview) (Fig. 1).

Instruments

Depression was diagnosed with the Depression Section of the Composite International Diagnostic Interview (CIDI) version 2.1,[22] according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), criteria based on symptoms experienced in the past 6 months. The CIDI was chosen for assessment of depression because of the high reliability and validity of this tool.[23,24] The CIDI was carried out by specially trained interviewers.

Each participant filled in a questionnaire for assessment of the risk factors for depression. The selection of the risk factors and the tools to be used was based on the PredictD study.[21] Standardized questionnaires were evaluated for test–retest reliability prior to the start of the study.[21] The risk factors analysed in the current study are presented in Box 1.

The questionnaire included questions about socio-demographic and personal factors, such as age, sex, educational level, marital and employment status, history of illicit drug use and psychiatric family history. Physical well-being and mental well-being were assessed by the Short-Form 12 Health Survey (Version 1.0).[25] Furthermore, the physical component summary scale (PCS 12) and the mental component summary scale (MCS 12) were calculated for each patient.

To assess alcohol misuse, we used the Alcohol Use Disorders Identification Test questionnaire.[26] Brief questions about the quality of sexual and emotional relationship were adapted from the Brief Sexual Questionnaire.[27] The Childhood Trauma Interview was used for assessment of childhood experiences of physical, emotional and sexual abuse[28] and the Patient Health Questionnaire was used for assessment of the history of panic attacks.[29] Questions about the experience of discrimination were based on the report by Janssen *et al.*[30] Experience of life events was assessed by the List of Threatening Life Experiences.[31]

Additionally, we asked for information from the patients' family doctors about each patient's disability, prescribed antidepressants, number of days on sick leave, number of visits to the family doctor, number of co-morbid diagnoses and structure of co-morbid diagnoses during the study period (2003–05).[19] We sent information request forms to the family doctors and

---
Box 1   *The risk factors being analysed*

Sociodemographic and personal factors: (1) age, (2) sex, (3) educational level, (4) marital status, (5) employment status, (6) living alone or together with person(s), (7) experienced difficulties with unpaid and paid job, (8) difficulties in getting along with people, (9) difficulties in maintaining close relationships, (10) difficulties with paying bills, (11) enough money for food and clothes, (12) economic coping, (13) having chronic health problem and (14) a history of depression.
Physical and mental well-being as assessed by the Short-Form 12: (15) PCS 12 and (16) MCS 12.
Alcohol misuse according to the WHO's Alcohol Use Disorders Identification Test (AUDIT) questionnaire: (17) AUDIT ≥8 and (18) use of any of the drugs (cannabis, amphetamine, heroin, cocaine, LSD, anxiolytics and hypnotics) without physician prescription in order to relax or improve mood during the lifetime.
Quality of sexual and emotional relationships with partner: (19) satisfaction with sexual relationship with the present partner, (20) satisfaction with sex life and (21) satisfaction with emotional relationship with the present partner.
(22) Childhood experience of physical and/or emotional and/or sexual abuse; (23) experience of discrimination on the grounds of sex, age, ethnicity, appearance, disability or sexual orientation and (24) history of panic attacks.
(25) Recent major life events, such as serious illness or injury; serious illness or injury to a close relative; death of first-degree relative; death of close family friend/second-degree relative; separation due to marital difficulties; broke off a steady relationship; serious problem with a close friend/neighbour/relative; unemployed/seeking work for more than one month; sacked from job; major financial crisis; problems with police and court appearance and something valuable lost/stolen.
Family psychiatric history: (26) suicide among first-degree relatives and (27) serious physical, psychological or substance misuse problems with close relatives/friends.
Information obtained from family doctors: (28) disability. (29) prescribed antidepressants, (30) number of days on sick leave. (31) number of visits to the family doctor, (32) number of co-morbid diagnoses. (33) co-morbid infectious, (34) neurological, (35) endocrinological, (36) urological, (37) musculoskeletal, (38) cardiovascular, (39) respiratory, (40) psychiatric, (41) dermatological, (42) respiratory, (43) digestive, (44) eye, (45) ear disease, (46) co-morbid neoplasm, (47) injury or (48) co-morbid disease not classified elsewhere.

all forms were returned. Disability was defined if the patient had a somatic or mental disease that limited his/her ability to work and if he/she received social benefits. Days on sick leave were defined as days absent from work due to an illness.

Statistics
The Statistical Package for the Social Sciences (SPSS) for Windows Release 17.0.0 was used for data analysis.[32] Standard methods [mean, SD and percentages (%)] were used for descriptive statistics. Logistic regression analysis and odds ratios (OR) with 95% confidence intervals (95% CI) were employed to determine the factors associated with recurrent depression. Firstly, in univariate models, we entered each variable one at a time. Secondly, we constructed a multivariate model by combining the variables that were associated with

recurrent depression in the univariate model. The significance level of the model was tested by the chi-square test and the Nagelkerke R square. All tests were two-sided and statistical significance was assumed when $P < 0.05$.

Results

Sample characteristics
The mean age of the subjects of the study group was 39 ± 13 years and 85% of them were female. All patients had major depression at baseline. At 12-month follow-up, 72% ($n = 89$) of the patients were in remission, while 28% ($n = 34$) of the patients experienced recurrent major depression by the DSM-IV criteria (Fig. 1).

Factors associated with recurrent depression
The factors that were significantly associated with recurrent depression in univariate analysis were lower educational level; non-working status; age 40–59 years; disability; major difficulties with paying bills; not having enough money for food and clothes; history of drug abuse; history of panic attacks; low level of satisfaction with emotional relationship with partner; comorbid respiratory illness; prescribed antidepressants; childhood experiences of physical, emotional or sexual abuse and experiences of discrimination on the grounds of sex, age, ethnicity, appearance, disability or sexual orientation (only significant associations are presented in Table 1).

The most prevalent misused drugs were anxiolytics and hypnotics: 68% of the patients with recurrent depression and 32% of the patients with non-recurrent depression reported using these drugs ($P = 0.005$) to improve their mood or to relax. No statistically significant association was found between recurrence of depression and use of other illicit drugs (cannabis, amphetamine, heroin, cocaine or LSD).

The factors that were statistically non-significantly associated with recurrent depression were female gender; marital status; living alone; difficulties in economic coping; having chronic health problem; history of depression; alcohol misuse; negative life events in recent history; low level of satisfaction with sexual relationship; difficulties in getting along with people or establishing and maintaining relationships; physical or emotional problems with a family member or a close friend; suicide in the family; experienced difficulties at work; co-morbid infectious, neurological, endocrinological, urological, musculoskeletal, cardiovascular, psychiatric, dermatological, digestive, eye and ear disease, co-morbid neoplasm, injury and co-morbid disease not classified elsewhere; number of days on sick leave; number of visits to the family doctor; number of co-morbid diagnoses; PCS 12 score and MCS 12 score.

TABLE 1 *Association of recurrent depression with sociodemographic, personal, economical factors, co-morbidity and prescribed treatment for depression: results of logistic regression analysis*

Characteristics	Study group n (%)	% with recurrent depression	OR	95% CI
Total	123 (100)	28		
Education				
Higher	27 (22)	18	1.0	
Secondary	85 (69)	62	1.15	0.41–3.22
Primary	11 (9)	21	6.12	1.33–28.21
Employment				
Employee	80 (65)	47	1.0	
Unemployed	7 (6)	9	3.00	0.61–14.77
Not working	36 (29)	44	2.86	1.21–6.75
Age in groups (years)				
18–39	76 (62)	44	1.0	
40–59	32 (26)	38	2.78	1.13–6.87
60–75	15 (12)	18	2.71	0.83–8.80
Disability	29 (24)	41	3.45	1.43–8.33
History of panic attacks	27 (23)	36	2.74	1.11–6.75
Drug abuse	68 (55)	74	2.97	1.25–7.08
Difficulties with paying bills				
No/small	43 (35)	18	1.0	
Some	53 (43)	41	2.21	0.77–6.37
Very big/big	27 (22)	41	6.64	2.11–20.89
Enough money for food/clothes				
Always	37 (30)	27	1.0	
Seldom	79 (64)	59	1.05	0.42–2.61
Never	7 (6)	15	7.78	1.28–47.22
Satisfaction of emotional relationship with partner				
Satisfied	47 (48)	36	1.0	
Satisfied/dissatisfied	29 (29)	25	1.18	0.39–3.54
Dissatisfied	23 (23)	39	3.39	1.16–9.94
Co-morbid respiratory disease	48 (39)	24	0.37	0.15–0.92
Use of antidepressants	54 (43)	59	0.41	0.18–0.92
Childhood abuse	83 (68)	74	1.28	1.06–1.55
Discrimination	44 (36)	56	2.15	1.32–3.49

To determine the factors independently associated with depression, we combined the factors that were significantly associated with recurrent depression in univariate analysis. According to the multivariate model, the odds of having recurrent depression were significantly higher for those who had misused drugs in their history, for those who had experienced discrimination and for those with a history of childhood abuse (Table 2). The whole model was significant (chi-square = 43.755; P = 0.001) describing ~52% of variation (Nagelkerke R square = 0.52).

Discussion

The results of this study show that about one-third of the patients presenting with major depression also experienced a recurrent episode of depression 12 months later. However, most of the patients stayed in remission. Previous studies conducted in primary care have reported a similar rate of recurrence.[1,2]

The factors associated with recurrence were lower educational level, non-working status, age 40–59 years, disability, major difficulties in paying bills, not having enough money for food or clothes, misuse of drugs, history of panic attacks, absence of co-morbid respiratory disease, non-prescription of antidepressants, experiences of discrimination and childhood abuse. However, when we analysed all these factors in the same model, only drug abuse, experience of discrimination and childhood abuse remained significantly associated with recurrence of depression during 1 year. Other studies have also suggested that these factors play a role in development of recurrent depression.[1,7,14,33]

Abuse of anxiolytics and hypnotics was significantly related to recurrent depression. Similarly, according to the Zurich Cohort Study, benzodiazepine abuse was significantly more prevalent among long-term depressives than among patients with a single episode of depression.[34] It is possible that patients who have residual symptomatology after recovery from a depressive episode resort to self-medication to alleviate their distress. However, it seems that use of anxiolytics and hypnotics does not prevent further development of depression. The rate of using anxiolytics and hypnotics drugs was high, with 68% of the patients with

TABLE 2   *Factors independently associated with recurrent depression: results of multiple logistic regression analysis*

Variable	OR	95% CI
Drug abuse	7.48	1.42–39.43
Discrimination	2.92	1.05–8.11
Childhood abuse	1.58	1.05–2.38
Disability	1.82	0.25–13.42
History of panic attacks	1.91	0.46–7.83
Co-morbid respiratory disease	0.81	0.17–3.82
Use of antidepressants	0.55	0.12–2.47
Age	1.02	0.96–1.09
Employment		
Employee	1.0	0.21–23.50
Unemployed	2.24	0.16–4.87
Not working	0.87	
Education		
Higher	1.0	0.26–8.27
Secondary	1.46	0.45–65.18
Primary	5.39	
Difficulties with paying bills		
No/small	1.0	0.32–14.53
Some	2.17	0.33–26.14
Big/very big	2.94	
Enough money for food or clothes		
Always/often	1.0	0.05–1.82
Seldom	0.31	0.01–17.60
Never	0.40	
Level of satisfaction with emotional relationship with partner		
Satsified	1.0	0.08–2.67
Satisfied/dissatisfied	0.47	0.23–6.41
Dissatisfied	1.22	

recurrent depression reporting it. According to the DEPRES study, conducted in six European countries, ~30% of patients received tranquillizers.[20] It should be emphasized that the patients in our study reported using anxiolytics and hypnotics without the physician's recommendation. Coulehan and Zettler-Segal[35] estimated the prevalence of substance abuse among primary care patients at 7.8%, ranking as the third most common mental health diagnosis after depression and alcohol abuse. Prescription drug abuse is a rising problem, constituting the second most prevalent category of drug abuse after marijuana in the USA.[36] On the other hand, drug abuse is often unrecognized in family practice.[35] This can be explained by several reasons. Patients whose main problem is drug abuse are typically reluctant to present it due to legal worries or they present indirectly with symptoms that are not specific of substance abuse. Drug use has a huge impact on the users' medical, social and economic lives, inevitably creating a cluster of problems that affect not only users but also their families. Consequently, it is important for a family doctor to identify drug abuse. Physicians can easily recognize drug abuse if the patient has also concurrent antisocial personality disorder; however, the problem is often missed if the patient has concomitant depression.[35] Identification of drug abusing patients is crucial as chronic use of

anxiolytics and hypnotics can cause dependence and worsening of depression.

The prevalence of childhood abuse is reported to range from 2.5 to 44%.[33,37] The relationship between childhood abuse and adulthood psychiatric disorder is well documented.[8,33,37] Discrimination too may be related to poorer mental health, although it is difficult to establish causality between discrimination and the diagnosis.[38] This issue requires further research, especially among primary care patients.

Like drug abuse, experience of discrimination and abuse can easily remain unrecognized in family practice. This could be attributed to underlying moral and legal issues.[37] Evidently, more attention should be paid to recognition of discrimination and abuse by family doctors.

We failed to find association between recurrence of depression and sociodemographic factors such as gender, marital status and educational level. Similarly, recent major life events did not predict recurrence of depression. This is in line with other studies reporting that sociodemographic factors are not significant risk factors for recurrence.[10,11]

According to our results, use of prescribed antidepressants cannot prevent recurrence of depression. Earlier studies have demonstrated that antidepressants can be effective in preventing relapse and remission of depression.[39] Since information about medication use in our study was gathered from the family doctors rather than from the patients themselves, we were not able to analyse the effect of patient adherence to antidepressants, which is often poor in primary care.[40] Nor did we have any information about the length of the antidepressant course, which is also associated with recurrence of depression.[16] Moreover, we did not have any information about prescription of antidepressants by other specialists. Therefore, it is difficult to make conclusions about antidepressant use in relation to recurrence of depression. On the other hand, since the factors significantly associated with recurrence of depression were drug abuse, discrimination and childhood abuse, this further underscores the appropriateness of including psychological interventions into prevention of recurrent depression. Recent studies have also demonstrated the effectiveness of psychotherapy in treatment of recurrent depression.[41]

The major strengths of this study are of methodological nature: use of a reliable diagnostic interview, such as the CIDI for assessment of depression; prospective study design; enrolment of consecutive patients and concurrent assessment of a large number of relevant risk factors.

One limitation of the study is the retrospective nature of the reports of child abuse, discrimination and other negative life events. According to Kuyken and Brewin,[42] depression may alter patients' recall of their past. Also, the use of numerous independent variables

in multiple logistic regression analysis makes the interpretation of the results difficult. The interaction between different factors could have contributed to recurrence of the disorder. Moreover, it may be difficult to draw clear causality between depression and drug abuse, between depression and discrimination and between depression and childhood abuse. Nor can we claim that patients who did not experience a recurrent episode of depression during the study period will not develop it later. Yet it is clear that drug abuse, discrimination and childhood abuse are related to earlier recurrence of depression. Evidently, the whole topic deserves to be studied more in detail.

Another limitation is connected with the generalizability of our findings. As the total number of patients with recurrent depression was small, the number of subjects under different categories, e.g. education, marital status or alcohol misuse was also small. Therefore, the low sample size may have led to low statistical power. We calculated CIs, which were quite wide because of the small study group. On the other hand, we included all patients who developed a recurrent episode of depression during the study period and the model was significant.

In conclusion, about one-third of the primary care patients presenting with depression went on experiencing recurrent depression 12 months later. The factors that can predict recurrence include drug abuse, discrimination and childhood abuse. These factors should be taken into account by family doctors when managing patients with depression. If we can identify individuals at risk for recurrent depression, we may be able to monitor them more carefully and to consider tailored interventions such as psychotherapy, for addressing the underlying cause of depression. In this way, we may be able to reduce the overall prevalence of depression.

Acknowledgements

Declaration

References

1 Vuorilehto MS, Melartin TK, Isometsä ET. Course and outcome of depressive disorders in primary care: a prospective 18-month study. *Psychol Med* 2009; **2:** 1–11.

2 van Weel-Baumgarten E, van den Bosch W, van den Hoogen H, Zitman FG. Ten year follow-up of depression after diagnosis in general practice. *Br J Gen Pract* 1998; **48:** 1643–6.

3 Wilson I, Duszynski K, Mant AA. 5-year follow-up of general practice patients experiencing depression. *Fam Pract* 2003; **20:** 685–9.

4 Frank E, Prien RF, Jarret RB et al. Conceptualization and rationale for consensus definitions of terms in major depressive disorder. Remission, recovery, relapse, and recurrence. *Arch Gen Psychiatry* 1991; **48:** 851–5.

5 Lewinsohn PM, Allen NB, Seeley JR, Gotlib IH. First onset versus recurrence of depression: differential processes of psychosocial risk. *J Abnorm Psychol* 1999; **108:** 483–9.

6 Lewinsohn PM, Hoberman HM, Rosenbaum M. A prospective study of risk factors for unipolar depression. *J Abnorm Psychol* 1988; **97:** 251–64.

7 Paykel ES, Tanner J. Life events, depressive relapse and maintenance treatment. *Psychol Med* 1976; **6:** 481–5.

8 Wainwright NW, Surtees PG. Childhood adversity, gender and depression over the life-course. *J Affect Disord* 2002; **72:** 33–4.

9 Belsher G, Costello CG. Relapse after recovery from unipolar depression: a critical review. *Psychol Bull* 1988; **104:** 84–96.

10 Burcusa SL, Iacono WG. Risk for recurrence in depression. *Clin Psychol Rev* 2007; **27:** 959–85.

11 Gonzales LR, Lewinsohn PM, Clarke GN. Longitudinal follow-up of unipolar depressives: an investigation of predictors of relapse. *J Consult Clin Psychol* 1985; **53:** 461–9.

12 Keller MB, Shapiro RW. Major depressive disorder: initial results from a one-year prospective naturalistic follow-up study. *J Nerv Ment Dis* 1981; **169:** 761–8.

13 Gaynes BN, Magruder KM, Burns BJ et al. Does a coexisting anxiety disorder predict persistence of depressive illness in primary care patients with major depression? *Gen Hosp Psychiatry* 1999; **21:** 158–67.

14 Barkow K, Maier W, Üstün TB et al. Risk factors for depression at 12-month follow-up in adults primary care patients with major depression: an international prospective study. *J Affect Disord* 2003; **76:** 157–69.

15 Zubenko GS, Hughes HB III, Stiffler JS, Zubenko WN, Kaplan BB. D2S2944 identifies a likely susceptibility locus for recurrent, early-onset, major depression in women. *Mol Psychiatry* 2002; **7:** 460–7.

16 Gardarsdottir H, van Geffen ECG, Stolker JJ, Egberts TCG, Heerdink ER. Does the length of the first antidepressant treatment episode influence risk and time to a second episode? *J Clin Psychopharmacol* 2009; **29:** 69–72.

17 Ryabchenko KA, Pepper CM, Jeglic EL, Griffith JW, Miller AB. Differences in course and comorbidity of recurrent depression in primary care and psychiatric populations. *Depress Anxiety* 2004; **20:** 153–4.

18 Poutanen O, Mattila A, Seppälä NH et al. Seven-year outcome of depression in primary and psychiatric outpatient care: results of the TADEP (Tampere Depression) II Study. *Nord J Psychiatry* 2007; **61:** 62–70.

19 Suija K, Kalda R, Maaroos HI. Patients with depressive disorder, their co-morbidity, visiting rate and disability in relation to self-evaluation of physical and mental health: a cross-sectional study in family practice. *BMC Fam Pract* 2009; **10:** 38.

20 Lepine JP, Gastpar M, Mendlewicz J, Tylee A. Depression in the community: the first pan-European study DEPRES (Depression Research in European Society). *Int Clin Psychopharmacol* 1997; **12:** 19–29.

21 King M, Weich S, Torres-González F et al. Prediction of depression in European general practice attendees: the PREDICT study. *BMC Public Health* 2006; **6:** 6.

22 World Health Organization. *Composite International Diagnostic Instrument (CIDI)*. Version 2.1. Geneva, Switzerland: WHO, 1997.

23 Witchen HU. Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): a critical review. *J Psychiatry Res* 1994; **28:** 57–84.

[24] Andrews G, Peters G. The psychometric properties of the Composite International Diagnostic Interview. *Soc Psychiatry Psychiatr Epidemiol* 1998; **33:** 80–8.

[25] Ware JE, Kosinski M, Keller SD. *How To Score the SF-12 Physical and Mental Health Summary Scales*. 2nd Edn. Boston, MA: The Health Institute. New England Medical Center, 1995.

[26] Barbor TF, de la Fuente JR, Saunders J, Grant M. *The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Care*, 2nd edn. World Health Organization, 2001.

[27] Reynolds CF III, Frank E, Thase ME *et al*. Assessment of sexual function in depressed, impotent, and healthy men: factor analysis of a Brief Sexual Function Questionnaire for men. *Psychiatry Res* 1988; **24:** 231–50.

[28] Fink LA, Bernstein D, Handelsman L, Foote J, Lovejoy M. Initial reliability and validity of the childhood trauma interview: a new multidimensional measure of childhood interpersonal trauma. *Am J Psychiatry* 1995; **152:** 1329–35.

[29] Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME_MD: the PHQ primary care study. Primary care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA* 1999; **282:** 1737–44.

[30] Janssen I, Hanssen M, Bak M *et al*. Discrimination and delusional ideation. *Br J Psychiatry* 2003; **182:** 71–6.

[31] Brugha TS, Bebbington PE, Tennant C, Hurry J. The List of Threatening Experiences: a subset of 12 life event categories with considerable long-term contextual threat. *Psychol Med* 1985; **15:** 189–94.

[32] SPSS for Windows Rel. 17.0.0. Chicago, IL: SPSS Inc., 2008.

[33] Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: results from the National Comorbidity Survey. *Am J Public Health* 2001; **91:** 753–60.

[34] Angst J, Gamma A, Rössler W, Ajdacic V, Klein DN. Long-term depression versus episodic major depression: results from the prospective Zurich study of a community sample. *J Affect Disord* 2009; **115:** 112–21.

[35] Coulehan JL, Zettler-Segal M. Recognition of alcoholism and substance abuse in primary care patients. *Arch Intern Med* 1987; **147:** 349–52.

[36] Manchikanti L. Prescription drug abuse: what is being done to address this new drug epidemic? Testimony before the subcommittee on Criminal Justice, Drug Policy and Human resources. *Pain Physician* 2006; **9:** 287–321.

[37] Gould DA, Stevens NG, Ward NG *et al*. Self-reported childhood abuse in an adult population in a primary care setting: prevalence, correlates, and associated suicide attempts. *Arch Fam Med* 1994; **3:** 252–6.

[38] Pascoe EA, Smart Richman L. Perceived discrimination and health: a meta-analytic review. *Psychol Bull* 2009; **135:** 531–54.

[39] Geddes JR, Carney SM, Davies C *et al*. Relapse prevention with antidepressant drug treatment in depressive disorders: a systematic review. *Lancet* 2003; **361:** 653–61.

[40] Beardon PH, McGilchrist MM, McKendrick AD, McDevitt DG, MacDonald TM. Primary non-compliance with prescribed medication in primary care. *BMJ* 1993; **307:** 846–8.

[41] Bockting CL, Spinhoven P, Wouters LF, Koeter MW, Schene AH. Long-term effects of preventive cognitive therapy in recurrent depression: a 5.5-year follow-up study. *J Clin Psychiatry* 2009; **70:** 1621–8.

[42] Kuyken W, Brewin R. Autobiographical memory functioning in depression and reports of early abuse. *J Abnorm Psychol* 1995; **104:** 585–91.