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Patient Factors Associated with Guideline-concordant Treatment of Anxiety and Depression in Primary Care

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ABSTRACT

Objective To identify associations of patient characteristics (predisposing, enabling and need factors) with guideline-concordant care for anxiety and depression in primary care.

Design Analysis of data from the Netherlands Study of Depression and Anxiety (NESDA).

Participants Seven hundred and twenty-one patients with a current anxiety or depressive disorder, recruited from 67 general practitioners (GPs), were included.

Measures Diagnoses according to the Diagnostic and Statistic Manual of Mental Disorders, fourth edition (DSM-IV) were made using a structured and widely validated assessment. Socio-demographic and enabling characteristics, severity of symptoms, disability, (under treatment for) chronic somatic conditions, perceived need for care, beliefs and evaluations of care were measured by questionnaires. Actual care data were derived from electronic medical records. Criteria for guideline-concordant care were based on general practice guidelines, issued by the Dutch College of General Practitioners.

Results Two hundred and eighty-one (39%) patients received guideline-concordant care. High education level, accessibility of care, comorbidity of anxiety and depression, and severity and disability scores were positively associated with receiving guideline-concordant care in univariate analyses. In multivariate multi-level logistic regression models, significant associations with the clinical need factors disappeared. Positive evaluations of accessibility of care increased the chance (OR = 1.31; 95%−CI = 1.05–1.65; *p* = 0.02) of receiving guideline-concordant care, as well as perceiving any need for medication (OR = 2.99; 95%−CI = 1.84–4.85; *p* < 0.001), counseling (OR = 2.25; 95%−CI = 1.29–3.95; *p* = 0.005) or a referral (OR = 1.83; 95%−CI = 1.09–3.09; *p* = 0.02). A low educational level decreased the odds (OR = 0.33; 95%−CI = 0.11–0.98; *p* = 0.04) of receiving guideline-concordant care.

Conclusions This study shows that education level, accessibility of care and patients' perceived needs for care are more strongly associated with the delivery of guideline-concordant care for anxiety or depression than clinical need factors. Initiatives to improve GPs' communication skills around mental health issues, and to improve recognition of people suffering from anxiety disorders, could increase the number of patients receiving treatment for depression and anxiety in primary care.

INTRODUCTION

Depression and anxiety are the most prevalent mental disorders that run a chronic course, causing considerable emotional and physical suffering, as well as high disability and health care costs or loss of productivity[1]–[4]. Most people with anxiety or depression seek and receive care in primary care settings[3], but many receive no treatment at all[5,6]. Despite the existence of easily accessible guidelines, like the Dutch general practice guidelines for depression and anxiety[7,8], depression as well as anxiety are frequently not recognized or successfully treated in primary care settings[9]–[12]. Therefore, barriers that prevent primary care from mental health care delivery according to generally accepted guidelines should be analyzed.

Andersen's behavioral model of health services use[13,14] provides a useful framework for considering the factors that result in guideline-concordant care of mood disorders. This model portrays the multiple influences (contextual and individual characteristics) on health services' use. The individual characteristics can be distinguished into: 1) predisposing characteristics, such as demographics, social structure and beliefs; 2) enabling factors, such as finance and organization; and 3) factors that determine perceived need and evaluated (clinical) need for care[13,14].

Most earlier studies have focused on predisposing characteristics and clinical need factors in the delivery of care for anxiety and depressive disorders. More severely depressed patients and those with a higher educational level had higher chances of receiving 'appropriate' care in one study[15], while others found that being white, being female[16,17], age and housing status[18] were also predictors of receiving guideline-concordant care for common mental disorders. However, it seems reasonable to expect that the delivery of care to patients with anxiety or depressive disorders also depends on patients' beliefs or ideas and trust in the care and care provider[19,20]. Patients who perceive a need for mental health care have been found to be more likely to receive care for their anxiety or depressive symptoms than patients who experience no need for treatment[21]. While it is known that different individual characteristics are associated with health services' use, the most influential factors remain unclear.

In this study, we examined the association of patient characteristics with guideline-recommend anxiety and depression care. We specifically focused on the extent to which patients' beliefs, perceived needs and evaluations of received (mental) health care are associated with guideline-concordant care for anxiety and depression, while taking predisposing, enabling and clinical need factors into account. Since in the Netherlands the general practitioner (GP) serves as a gatekeeper to the rest of the health system and all residents are legally obligated to have health insurance, we expected no significant associations between enabling factors and health services use.

METHODS

Study Setting and Participants

Data were derived from the baseline wave of the Netherlands Study of Depression and Anxiety (NESDA), a longitudinal cohort study on the long-term course of depression and anxiety[22]. Adult patients were recruited from primary care centers in the vicinity of Amsterdam, Leiden and Groningen. Sixty-seven GPs from twenty-one practices participated, selected by their use of electronic patient record systems (EMRs) which allow uniform data extraction. Patients who attended their GP in the last 4 months, irrespective of the reason for consultation, were sent a questionnaire containing the Kessler-10 (K10)[23] with five additional questions to screen for anxiety or depressive disorders[24]. Nearly half of the screeners returned were screen-positive (K-10 score of 20 or higher or a positive score on any of the additional anxiety questions). Women and older people were more likely to return the screener, but there were no differences in psychopathology between responders and non-responders[22,25].

As presented in Fig. 1, 743 patients with a current depressive or anxiety disorder were recruited with this three-stage screening procedure. Twenty-two patients refused to give informed consent for the use of their health care information from their EMR, so 721 patients from 67 different GPs were finally included in this study. NESDA was approved by the Central Ethics Committee on Research involving human subjects of the participating institutes.

[FIGURE 1]

Dependent Variable: Actual GP Care

Information about the delivery of care given to patients with a current anxiety or depression diagnosis was gathered from the EMRs of GPs. Data were extracted from the year prior to inclusion in the NESDA study to one year after inclusion. For each included patient the following data were derived: International Classification of Primary Care (ICPC) codes, number and type of contacts, prescribed medication (type and dosage), duration of prescription, and referrals. Our earlier study[26] described to which degree GPs adhered to the evidence-based clinical depression and anxiety guidelines, issued by the Dutch College of General Practitioners, in the delivery of care for their anxiety and depression patients[7,8]. Patients were divided into two groups, based on the care they had received: 1) guideline-concordant care, and 2) non-guideline concordant care. Guideline-concordant care was defined as having received psychological support, including at least five consultations in 15 weeks after documentation of the diagnosis, counseling (only applicable to depression care), a prescription for antidepressant medication, or a referral to a mental health specialist. The criterion for medication treatment of anxiety or depression further required documentation of evaluation after 6 weeks of medication treatment initiation and a minimal treatment duration of 5 months, or documentation of treatment cessation in the case of no response.

Independent Variables

Predisposing characteristics such as age, gender, country of birth (the Netherlands versus other), educational level (in three levels) and information about partner status and personal network size (number of persons >18 years with whom you have regular and important contact; in six categories) were collected by means of a questionnaire.

The enabling factors income (24 levels), general financial situation (in three levels) and employment status (working versus not working) were collected by means of a questionnaire. Accessibility of care was measured with a single item (*I could make an appointment within two days*) of the QUOTE instrument (see below).

Clinical need was measured by the Composite Interview Diagnostic Instrument (CIDI), WHO version 2.1, to identify patients with a depressive disorder (Major Depressive Disorder (MDD), dysthymia) or an anxiety disorder (generalized anxiety disorder, social phobia, panic disorder, agoraphobia) according to DSM-IV criteria[27]. The World Health Organization Disability Assessment Schedule II (WHODAS II)[28] assessed disability, Inventory of Depressive Symptoms (IDS) assessed severity of depressive symptoms[29] and the Beck Anxiety Inventory (BAI) measured anxiety symptoms[30]. In order to measure somatic comorbidity, questions about the presence of and treatment received for 20 different chronic somatic conditions were asked.

The Perceived Need for Care Questionnaire (PNCQ) was used to measure if patients had a self-perceived mental health problem (yes/no), and their specific perceived needs for care. 'Perceived need' was defined as patients' perception that a type of care was needed from a health professional in the prior period[31]. The categories of perceived need are: (1) Information about mental illness, its treatment and available services; (2) Medication treatment; (3) Counseling or psychotherapy to talk about the causes of symptoms and learn to cope with emotional problems; (4) Practical support such as help to sort out housing or money problems or help with domestic tasks; (5) Skills training to improve one's ability to work, or to use one's time in other ways or help to improve one's ability to look after self or home; and (6) Referral to a specialist. Patients were divided into a 'no need' (if they did not receive a certain service and did not want to receive it) and 'any need' (if they received a certain service or they did not receive a certain service but felt they needed it) category for any of the six services. One last variable measured whether patients had no need for any services (did not want any help). The PNCQ has acceptable feasibility, reliability and validity for epidemiological and health services research[31].

Beliefs concerning mental health care were measured by four questions: two measured 'confidence in professional help' (Cronbach's alpha = 0.80), and two single items measured 'confidence in help from friends' (it's best to discuss psychological problems with friends) and 'confidence in self help' (psychological problems are best kept to yourself). Items were scored on a 4-point scale, ranging from 1 'strongly disagree' to 4 'strongly agree,' with score 2.5 as the neutral 'no opinion' option.

Patients' evaluation of different aspects of received (mental) health care was measured by the QUOTE (QUality Of care Through the patients Eyes) instrument32, revealing five subscales measuring providers' emotional support (Cronbach's alpha = 0.78), patient centeredness (Cronbach's alpa = 0.82), quality of care (Cronbach's alpha = 0.81), information and advice (Cronbach's alpha = 0.72), and self-help advice (Cronbach's alpha = 0.80). Items were measured on a 4-point scale, ranging from 1 'no' to 4 'yes', with score 2.5 as the neutral 'does not know' option, indicating that higher scores correspond with positive evaluations.

Data Analysis

Data were analyzed using SPSS software version 16.0 for Windows. Descriptive statistics were used to outline the characteristics of the patients. As the included patients are nested within 67 GPs from 21 practices, multi-level logistic regression analyses (software MLwiN 2.02) was required. First, univariate multi-level logistic analyses were performed on patients who received guideline-concordant care versus patients who received non-guideline concordant care on all patient characteristics. Second, based on the level of significance ($p \leq 0.05$) in the univariate analyses, a selection of variables were put into multivariate multi-level logistic models. As the significant clinical need variables were highly correlated, type of disorder and disability score were chosen as the most distinctive variables. The WHODAS was chosen as the primary outcome measure for severity because the extent to which patients suffer from a mental disorder and the extent to which it interferes with their daily activities guide GPs in their treatment plans8.

First, predisposing and enabling characteristics were entered, followed by the selected clinical variables in the second step. Since our research question focused on the extra influence of patients' perceived needs, beliefs and evaluations, the variables measuring these constructs were entered into the model in the last step.

Since some persons in our sample already had received care in the year preceding the baseline interview, prior treatment might have influenced patients' perceptions of care and the severity of their symptoms. To control for this potential effect, post-hoc analyses were performed on only those patients who had not received treatment for their anxiety or depressive disorder(s) in the year before the baseline interview. The same multi-level logistic analyses were performed on the patients who received guideline-concordant care in the year after baseline versus patients who received non-guideline concordant care.

RESULTS

Description of the Study Sample

Two-hundred and eighty-one (39%) patients received guideline-concordant care (Table 1). Of all predisposing and enabling characteristics, only a high (compared to low) education level (OR = 1.83; 95%–CI = 1.00–3.36; $p = 0.05$) and accessibility of care (OR = 1.47; 95%−CI = 1.20–1.78; $p < 0.001$) showed significant (positive) associations with receiving guideline-concordant care.

[TABLE 1]

Patients with anxiety disorder(s) only had decreased odds (OR = 0.38; 95%−CI = 0.27–0.55; $p < 0.001$) of receiving guideline-concordant care in comparison with patients suffering from both depressive and anxiety disorders (Table 2). Patients with a single episode of MDD (OR = 2.13; 95%−CI = 1.50–3.02; $p < 0.001$), dysthymia (OR = 2.58; 95%−CI = 1.69–3.95; $p < 0.001$), or generalized anxiety disorders (OR = 1.84; 95%−CI = 1.31–2.60; $p < 0.001$) had higher odds of receiving care according to the guidelines than patients without these disorders. Also, patients with higher disability and severity scores were more likely to receive guideline-concordant care compared to those with lower disability and severity scores.

[TABLE 2]

Patients with a perceived need for care, except for practical support, were nearly two to four times more likely to receive guideline-concordant care than those who had no need for these services (Table 3). Patients with more confidence in professional help (OR = 1.55; 95%−CI = 1.12–2.15; p = 0.01) and those with a more positive evaluation of their provider's emotional support (OR = 1.38; 95%−CI = 1.11–1.73; p = 0.004) and patient-centeredness (OR = 1.50; 95%−CI = 1.15–1.95; p = 0.003) had higher chances of receiving guideline-concordant care.

[TABLE 3]

Factors Associated with Guideline-concordant Care

When the predisposing, enabling and clinical need factors were entered into the multivariate multi-level logistic regression model, accessibility and type of disorder were still significantly associated with guideline-concordant care (Table 4, step 2). Patients with anxiety disorder(s) only showed lower odds (OR = 0.53; 95%−CI = 0.33–0.86; p = 0.01) of receiving guideline-concordant care compared with patients with both anxiety and depressive disorders. When the perceived need, beliefs and evaluation factors were also included (step 3), a low (versus high) education level (OR = 0.33; 95%−CI = 0.11–0.98; p = 0.05), accessibility of care (OR = 1.31; 95%−CI = 1.05–1.65; p = 0.02), and perceived need for medication (OR = 2.99; 95%−CI = 1.84–4.85; p < 0.001), counseling (OR = 2.25; 95%−CI = 11.29–3.95; p = 0.005) and referral (OR = 1.83; 95%−CI = 1.09–3.09; p = 0.02) turned out to be the factors most strongly associated with receiving guideline-concordant care. The intraclass correlation found at the level of GPs and general practices was 0.07 respectively 0.16, which means that a greater part of the variance, unexplained by the characteristics in our model, was at the level of the practices.

[TABLE 4]

Post-hoc Analyses

For only 38 patients (who had received guideline-concordant care), care was restricted to the year after baseline. The others might have been already in treatment at the moment of the interview. When we repeated our analyses with these 38 patients versus the original non-guideline concordant care group, most of the perceived need for care scales were still significantly different between the two groups, except for 'self perceived mental problem' and 'perceived need for medication'. After entering the (eight) significant univariate associations into a multivariate model, the presence of a generalized anxiety disorder (OR = 3.10; 95%−CI = 1.47–6.52; p = 0.003), and perceived need for referral (OR = 3.10; 95%−CI = 1.26–7.63; p = 0.01) were significantly associated with receiving guideline-concordant care.

DISCUSSION

Summary and Discussion of Findings

This study aimed to identify patient characteristics that are most strongly associated with receiving guideline-concordant care for anxiety or depression. Together with education level and accessibility of care, patients' perceived needs for medication, counseling or a referral were most strongly associated with the delivery of guideline-concordant care. Earlier studies[33,34] already concluded that people who perceive a need for care have higher rates of (mental) health care use. Post-hoc analyses show that nearly all perceived needs for care variables are still essential when only those patients who received guideline-concordant care after baseline interview were taken into account. These findings provide evidence that patients' perceived needs play a major role in receiving guideline-concordant care for anxiety or depression, and are perhaps more influential than predisposing, enabling and clinical need factors.

With regard to the clinical need variables, some interesting results were found. Patients with anxiety disorder(s) alone were less likely to receive guideline-concordant care than patients with both anxiety and depression. When anxiety patients also suffer from a depressive disorder, the chances of receiving counseling or pharmacotherapy increase significantly, which was found before[17]. This is consistent with the finding that, in general practice, anxiety disorders are less frequently diagnosed than affective disorders[35]. In addition, patients with more severe symptoms and greater disability were most often treated

according to the guidelines, indicating that those with more clinical need for care have greater chances of receiving it.

No differences were found on the predisposing characteristics, except for education level. Lower educated patients seem to be disadvantaged with respect to receiving guideline-concordant care from their GP in comparison with higher educated patients, consistent with previous research[21]. This difference could be explained by a of lack of knowledge of available services, lack of insight into their own mental problems or a less open attitude towards disclosing and discussing personal problems[15] among the less well educated. It is also possible that GPs treat lower educated patients differently compared with their higher educated counterparts since gender and age are also related with GP's provision of active treatment for common mental disorders[36,37].

As expected, patients' financial situation and employment status did not differ between the two groups, although patients who received guideline-concordant care reported better accessibility of care.

Strengths and Limitations

Strengths of this study include the large sample size and the use of a prospective design in collecting data to assess guideline adherence. Nonetheless, we acknowledge some limitations. The timeframe of 2 years (one before and one after baseline) to assess whether patients had received guideline-concordant care might have influenced patients' scores at baseline. Patients could have improved or have developed more positive beliefs about certain treatment forms because of prior treatment. Even though we performed post-hoc analyses on a subsample, we should keep this limitation in mind. Furthermore, our classification into guideline-concordant and non-guideline concordant care was based on available EMR data, which means that the quality of registration could have influenced our dependent variable.

Another limitation is that patient's needs, as measured by the PNCQ, are partly contaminated with guideline-concordant care, as receiving medication or counseling automatically implied a need for care and in most cases, care according to the guidelines as well. Nevertheless, these variables can also mean that patients believe that medication or counseling are useful treatment options.

CONCLUSION

In conclusion, education level, accessibility to care, and patients' perceived needs for care are strongly associated with the delivery of guideline-concordant care for patients with anxiety or depression in Dutch primary care practices. Since inadequate doctor-patient communication can limit GPs' ability to recognize depression and anxiety in their patients[38], initiatives to improve GPs' communication skills around mental health issues could increase the number of patients receiving treatment for depression and anxiety. Besides, GPs should increase their index of suspicion for patients suffering from anxiety disorder(s) only, since this patient group often remains unrecognized and untreated. Finally, the mechanisms underlying the relationship between patients' educational attainment and receipt of guideline-concordant care for mood disorders should be further examined to identify additional methods for optimizing delivery of mental health care to these patients.

Acknowledgments

Ethical approval   The NESDA study was approved centrally by the Ethic Review Board of the VU University Medical Centre and by local review boards of the participating institutes. After full verbal and written information about the study, written informed consent was obtained from all participants.

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FIGURE AND TABLES

Figure 1. Recruitment flow of NESDA respondents in the primary care setting. *Current=presence during last 6 months, non-current=presence before last 6 months, subthreshold symptoms defined as screen-positives or having a minor depression according to the CIDI interview. CIDISF= composite interview diagnostic instrument- short form; MHO=mental health care organizations; Dep/Anx disorders=depressive or anxiety disorders.
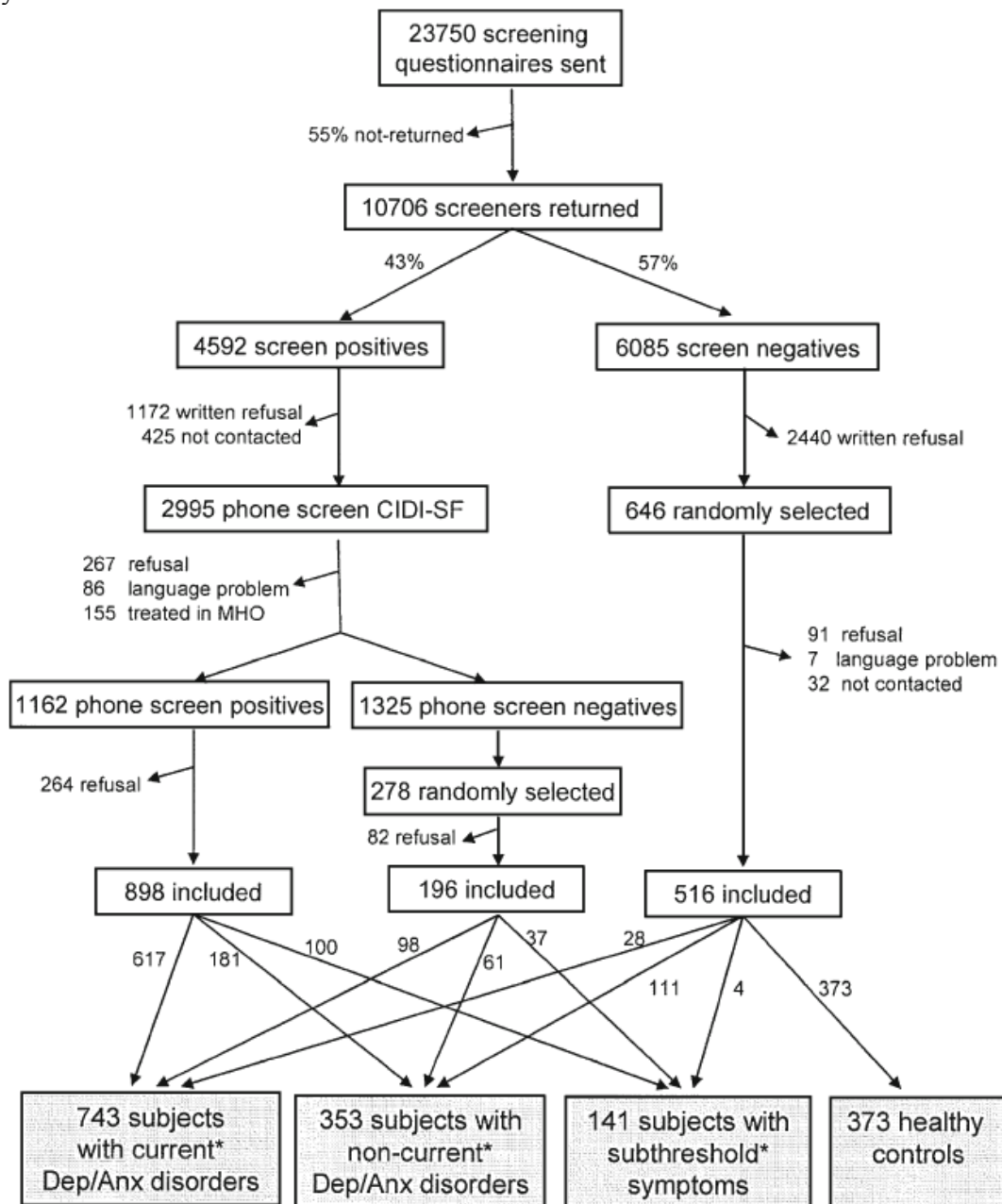
Table 1. Association of Patient Characteristics with Receipt of Guideline-Concordant Care for Mood Disorders

	Total	Guideline-concordant care	Non-guideline concordant care	Unadjusted OR (95% CI)	P value
N (%)	721 (100)	281 (39)	440 (61)		
Predisposing characteristics					
Age, *mean* (SD)	44.9 (12.1)	45.0 (11.4)	44.9 (12.5)	1.00 (0.99-1.01)	0.91
Gender, female	506 (70.2)	191 (68.0)	315 (71.6)	0.84 (0.60-1.17)	0.30
Country of birth					
The Netherlands	635 (88.1)	253 (90.0)	382 (86.8)	0.74 (0.45-1.21)	0.22
Education level					
Low	68 (9.4)	20 (7.1)	48 (10.9)	ref.	
Intermediate	423 (58.7)	171 (60.9)	252 (57.3)	1.64 (0.92-2.91)	0.09
High	230 (31.9)	90 (32.0)	140 (31.8)	1.83 (1.00-3.36)	0.05
Has a partner	481 (67.2)	188 (67.1)	293 (67.2)	0.95 (0.68-1.32)	0.76
Personal network, *mean* (SD)	2.6 (1.1)	2.6 (1.1)	2.6 (1.1)	0.97 (0.85-1.12)	0.70
Enabling factors					
Level of income, *mean* (SD)	9.1 (5.3)	9.2 (5.5)	9.1 (5.2)	1.00 (0.97-1.03)	0.91
Financial situation					
Usually money left	321 (44.5)	124 (44.1)	197 (44.8)	0.76 (0.49-1.19)	0.23
Just enough to manage	288 (39.9)	107 (38.1)	181 (41.1)	0.75 (0.48-1.18)	0.21
Not enough to manage	112 (15.5)	50 (17.8)	62 (14.1)	ref.	
Employment status					
Working	473 (65.6)	181 (64.4)	292 (66.4)	0.99 (0.72-1.37)	0.98
Accessibility of care, *mean* (SD)	3.4 (1.0)	3.6 (0.9)	3.3 (1.1)	1.47 (1.20-1.78)	<0.001

OR=odds ratio; CI=confidence interval; ref.=reference category

Table 2. Association of Mental Health Diagnoses and Symptoms with Guideline-Concordant Mental Health Care

	Total	Guideline-concordant care	Non-guideline concordant care	OR (95% CI)	P value
N (%)	721 (100)	281 (39)	440 (61)		
Type of diagnosis					
Anxiety disorder(s) only	298 (41.3)	81 (28.8)	217 (49.3)	0.38 (0.27-0.55)	<0.001
Depressive disorder(s) only	148 (20.5)	62 (22.1)	86 (19.5)	0.71 (0.47-1.08)	0.11
Comorbidity of both depressive and anxiety disorders	275 (38.1)	138 (49.1)	137 (31.1)	ref.	
Depressive disorder(s)					
Dysthymia	114 (15.8)	67 (23.8)	47 (10.7)	2.58 (1.69-3.95)	<0.001
MDD: single episode	180 (25.0)	96 (34.2)	84 (19.1)	2.13 (1.50-3.02)	<0.001
MDD: recurrent episode	218 (30.2)	88 (31.3)	130 (29.5)	1.08 (0.77-1.51)	0.66
Anxiety disorder(s)					
Generalized anxiety disorder	190 (26.4)	94 (33.5)	96 (21.8)	1.84 (1.31-2.60)	<0.001
Social phobia	269 (37.3)	95 (33.8)	174 (39.5)	0.81 (0.59-1.12)	0.20
Agoraphobia without panic	92 (12.8)	33 (11.7)	59 (13.4)	0.83 (0.52-1.33)	0.44
Panic with & without agoraphobia	254 (35.2)	100 (35.6)	154 (35.0)	1.06 (0.77-1.46)	0.74
WHODAS disability score: *mean* (SD)	31.5 (16.4)	35.6 (16.7)	28.8 (15.7)	1.03 (1.02-1.04)	<0.001
Severity of depressive symptoms: *mean* (SD)	27.4 (11.6)	30.8 (12.1)	25.3 (10.7)	1.47 (1.20-1.78)	<0.001
Severity of anxiety symptoms: *mean* (SD)	16.2 (10.3)	17.9 (11.3)	15.1 (9.5)	1.38 (1.11-1.73)	0.004
Under treatment for any chronic medical conditions	308 (42.7)	127 (45.2)	181 (41.1)	1.11 (0.90-1.38)	0.32

OR=odds ratio; CI=confidence interval; ref.=reference category;
WHODAS=World Health Organization Disability Assessment Schedule; MDD=major depressive disorder

Table 3. Association of Patient's Perceived Needs, Beliefs, and Assessments of Care with Receipt of Guideline Concordant Mental Health Care

	Total	Guideline-concordant care	Non-guideline concordant care	OR (95% CI)	P value
N (%)	721 (100)	281 (39)	440 (61)		
Perceived Need for Care					
Self perceived mental problem	629 (87.2)	266 (94.7)	363 (82.5)	4.09 (2.26-7.41)	<0.001
Perceived need for information	371 (57.7)	183 (67.5)	188 (50.5)	2.03 (1.45-2.84)	<0.001
Perceived need for medication	266 (41.6)	160 (59.5)	106 (28.6)	4.04 (2.85-5.74)	<0.001
Perceived need for counseling	386 (60.3)	202 (75.1)	184 (49.6)	3.25 (2.27-4.65)	<0.001
Perceived need for practical support	94 (14.7)	45 (16.7)	49 (13.2)	1.34 (0.85-2.10)	0.21
Perceived need for skills training	144 (22.5)	73 (27.2)	71 (19.1)	1.62 (1.10-2.38)	0.02
Perceived need for referral	319 (49.8)	177 (65.8)	142 (38.3)	3.00 (2.14-4.21)	<0.001
No need for any service	92 (12.8)	12 (4.3)	80 (18.2)	0.20 (0.11-0.38)	<0.001
Beliefs about mental health care: mean(SD)					
Confidence in professional help	3.0 (0.5)	3.0 (0.5)	2.9 (0.5)	1.55 (1.12-2.15)	0.01
Confidence in help from friends	2.4 (0.6)	2.4 (0.6)	2.5 (0.5)	0.96 (0.71-1.28)	0.76
Confidence in self help	1.8 (0.8)	1.8 (0.8)	1.8 (0.7)	0.88 (0.71-1.11)	0.28
Evaluation of received care: mean(SD)					
Evaluation of provider's emotional support	3.0 (0.9)	3.1 (0.8)	2.9 (0.9)	1.38 (1.11-1.73)	0.004
Evaluation of patient-centeredness	3.2 (0.7)	3.3 (0.7)	3.1 (0.8)	1.50 (1.15-1.95)	0.003
Evaluation of quality of care	2.9 (0.8)	3.0 (0.8)	2.9 (0.8)	1.21 (0.96-1.52)	0.10
Evaluation of information & advice	3.1 (0.9)	3.2 (0.8)	3.1 (0.9)	1.22 (0.98-1.53)	0.08
Evaluation of self-help advice	2.9 (0.9)	3.0 (1.0)	2.9 (0.9)	1.04 (0.85-1.27)	0.72

OR=odds ratio; CI=confidence interval

Table 4. Multivariate of Patient and Multilevel Logistic Regression Analysis on Receiving Guideline-concordant Care

Random Effects	Step 1	Step 2	Step 3
	Variance estimate (St. error), ICC	Variance estimate (St. error), ICC	Variance estimate (St. error), ICC
Level 3: general practice (n=21)	0.74 (0.33), 0.18	0.72 (0.33), 0.18	0.71 (0.37), 0.16
Level 2: general practitioners (n=63)	0.08 (0.16), 0.02	0.05 (0.16), 0.01	0.29 (0.25), 0.07
Level 1: patient (n=437)	0.95 (0.07)	0.95 (0.07)	0.91 (0.07)
Fixed Effects			
Predisposing and enabling factors	OR (95% CI), P-value	OR (95% CI), P-value	OR (95% CI), P-value
Education level			
Low	0.48 (018-1.23), 0.13	0.40 (0.15-1.06), 0.07	0.33 (0.11-0.98), 0.05
Intermediate	0.80 (0.51-1.24), 0.31	0.77 (0.49-1.21), 0.25	0.70 (0.42-1.16), 0.16
High	ref.	ref.	ref.
Accessibility of general practitioner	1.36 (1.11-1.67), 0.003	1.38 (1.12-1.69), 0.002	1.31 (1.05-1.65), 0.02
Clinical need factors			
Type of disorder			
Depressive disorder(s) only		0.95 (0.55-1.64), 0.85	0.96 (0.52-1.79), 0.91
Anxiety disorder(s) only		0.53 (0.33-0.86), 0.01	0.69 (0.40-1.19), 0.18
Comorbidity of both depressive and anxiety disorders		ref.	ref.
Disability score		1.01 (1.00-1.03), 0.06	1.01 (1.00-1.03), 0.16
Perceived needs, beliefs and evaluations			
Self perceived mental problem			2.17 (0.41-11.49), 0.36
Perceived need for information			1.09 (0.65-1.84), 0.74
Perceived need for medication			2.99 (1.84-4.85), <0.001
Perceived need for counseling			2.25 (1.29-3.95), 0.01
Perceived need for skills training			1.10 (0.64-1.90), 0.72
Perceived need for referral			1.83 (1.09-3.09), 0.02
No need for any service			0.74 (0.26-2.09), 0.57
Confidence in professional help			1.14 (0.73-1.79), 0.57
Evaluation of provider's emotional support			1.21 (0.89-1.66), 0.23
Evaluation of patient-centeredness			1.22 (0.83-1.78), 0.31

OR=odds ratio; CI=confidence interval; ICC=intraclass correlation; ref.=reference category.
First, predisposing and enabling factors were put into the model. Second, clinical need factors were entered, and in the third step perceived needs, beliefs and evaluation factors were added to the (final) model