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The costs of guideline-concordant care and of care according to patients' needs in anxiety and depression

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ABSTRACT

Aim To describe the direct and indirect costs for people with anxiety and depressive disorders where guidelines are adhered to and patients' perceived needs are fully met.

Method Data were derived from the Netherlands Study of Depression and Anxiety. At baseline, adult patients were interviewed and they completed questionnaires to measure DSM-IV diagnoses, socio-demographic characteristics and perceived need for care. Actual care data were also derived from electronic medical records. Criteria for guideline adherence were based on general practice guidelines, issued by the Dutch College of General Practitioners. Direct and indirect costs were inferred from the Perceived Need for Care Questionnaire administered at baseline, and the Trimbos and iMTA questionnaire on Costs associated with Psychiatric illness administered at 1-year follow-up.

Results For 568 patients with a current anxiety or depressive disorder a complete dataset on health care use and absenteeism was available. Guideline adherence was significantly associated with increased care use and corresponding costs, while fully met perceived need was unrelated to costs. Socio-demographic characteristics, severity of symptoms and guideline

adherence all affected the societal costs of patients with fully met perceived needs compared with patients with perceived unmet needs.

Conclusion It appears that guideline-concordant care for anxiety and depression costs more than non-concordant care, while care that has fulfilled all of a patient's needs seems not to be more expensive than care that has not met all perceived needs. However, randomized controlled trials should first confirm this conclusion.

INTRODUCTION

Anxiety and depressive disorders are among the most disabling diseases in the world [1] and impose a significant economic burden as a result of high health care utilization [2,3] and productivity losses [4–6]. In the Netherlands, the 1-year prevalence rate for anxiety is about 10% and for depression it is 7% [7]. Most patients are treated in primary care settings but many do not receive any form of treatment or are not recognized as having anxiety or depression [8,9]. Other explanations why many people with anxiety or depression do not seek or receive help are a lack of awareness of symptoms, lack of knowledge or trust in the available services, fear of stigma or the absence of a perceived need for mental health care [10].

In the past decades, general medical care has been influenced by two paradigms: 'evidence-based medicine' and 'patient-centred medicine'[11]. Likewise within the field of psychiatry, evidence-based medicine is playing an important role, as represented in the evidence-based guidelines for various mental disorders. The structured implementation of evidence-based clinical guidelines has been advocated as a method to improve the detection and treatment of common mental disorders and to reduce variations in health care [12]. Equally, patient-centred medicine has gained in popularity since the 1970s when the (psychiatric) patients' rights movement was at its peak. Patient-centred care refers to services in which patients' subjective needs and preferences are seriously taken into account [13]. Nowadays, evidence-based clinical guidelines are widely accepted and used to deliver care that is proven effective and costs no more than necessary, and patients are viewed as 'consumers' playing an active role in their own treatment planning.

As it is known that the public in general can have different views from health professionals about mental disorders and how these should be treated [14,15], recommendations as formulated in evidence-based clinical guidelines for anxiety and depression might be in contrast with patients' self-perceived care needs. A clinical dialogue is therefore needed, and both perceived needs and guidelines can feed this dialogue. However, up to now, cost analyses of guideline-concordant care for anxiety and depression and cost analyses of care that is in accordance with patients' self-perceived needs have scarcely been performed. Although previous studies have described the costs (and effects) of treatment forms that have been shown to be effective [16–18], we could not find any studies that specifically differentiated between patients whose subjective needs were met and those who felt their needs were not met. If, in general medicine, care is being delivered until patients' self-perceived needs are fully met, costs will likely be higher than for care that is restricted to those services that are strictly required from a professional's perspective. When focusing on the field of psychiatry, in particular on anxiety and depression, it is less obvious whether care that fulfils patients' needs is more or less expensive than guideline-concordant care.

As health care systems will spend considerable resources over the coming years on treatment programmes for anxiety and depressive disorders [19], information about health service use and total costs with guideline adherence and when patients' self-perceived care needs are being met might give clues for adapting mental health care for these common mental disorders. Therefore, the aim of this study is to describe health service use, and the corresponding direct and indirect costs for anxiety and depression treated in accordance with evidence-based clinical guidelines or treated in accordance with patients' own needs. More specifically, we aim to determine the influence of perceived need for care and guideline adherence on the societal costs of anxiety and depression, while taking account of the influence of possible confounders. The data of a large naturalistic sample of primary care patients will be used to approximate the best available real-life situation.

METHODS

Study setting and participants

Data on care delivery and mental health status were collected in the Netherlands Study of Depression and Anxiety (NESDA, http://www.nesda.nl). NESDA is a multi-centre study designed to measure the long-term course and consequences of depressive and anxiety disorders [20]. Data from the baseline wave (T0) and the wave 1 year later (T1) were used for the current study.

The NESDA study was approved centrally by the Ethics 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.

Patients with an anxiety disorder or depressive disorder were included in NESDA. Between September 2004 and February 2007 adult patients (aged 18–65 years) were recruited from 67 general practitioners (GPs). Patients who had attended their GP in the previous 4 months, irrespective of their reason for consultation, were sent a screening questionnaire consisting of the Kessler-10 [21] and five additional anxiety questions that have been shown to improve the detection of depressive and anxiety disorders [22]. Those who returned the screener were more likely to be female (59.3% vs. 50.0%) and older (44.4 years vs. 39.0 years) compared with those who did not return it [20]. Screen-positive respondents were interviewed by telephone with the short form of the Composite Interview Diagnostic Instrument (CIDI). Patients who fulfilled the CIDI short form criteria for a current (6-month recency) depressive or anxiety disorder and who met further inclusion criteria (not receiving secondary care treatment; sufficient fluency in Dutch), were asked to participate in NESDA and were invited for a baseline assessment, including a full CIDI interview, WHO version 2.1. A total of 743 patients met the criteria for a current depressive disorder (Major Depressive Disorder, dysthymia) and/or anxiety disorder (generalized anxiety disorder, social phobia, panic disorder, agoraphobia) according to DSM-IV (The DSM-IV is a manual, published by the American Psychiatric Association, listing the official diagnostic classifications of mental disorders.) criteria [23] (see Fig. 1) [20]. Twenty-two patients refused to give informed consent to extract data from their electronic medical record (EMR), and for 153 patients we did not have a complete dataset on health care use and absenteeism. So ultimately 568 patients were included in the current study

[FIGURE 1]

Cost measures

Costs were measured at T0 and T1 for each individual patient from a societal perspective. Costs are divided into direct costs (e.g. costs of GP consultations, visits to a psychiatrist, medication, home care, etc.) and indirect costs (productivity losses) [24]. Because the use of medical services by depression patients is 30–50% higher than for patients without depression [5], all health care costs were taken into account. At T1, patients completed the Trimbos and iMTA questionnaire on Costs associated with Psychiatric illness measuring health care utilization, including number of contacts and loss of productivity at work in the previous year [25]. The data extracted from the GP's EMR included detailed information on number and type of GP visits or contacts, and prescribed medication.

Table 1 presents the cost categories used in the economic evaluation and prices used. Costs were based on Dutch standard costs [26]. Indirect costs caused by production losses were estimated using the friction cost approach [26], based on the mean income of the Dutch population according to age and gender. The cost of medication use was evaluated using prices of the Royal Dutch Pharmaceutical Society (KNMP) [27]. All costs were adjusted to the year 2006 using consumer price indices [28], because the majority of patients in our sample received care during that year.

[TABLE 1]

Actual GP care: guideline-concordant versus non-concordant care

Data on the delivery of care given to patients with a current anxiety and/or depression diagnosis were extracted from GPs' EMRs. The EMRs dating from 1 year prior to inclusion in NESDA to 1 year after

inclusion were used to derive the following data: number and type of contacts, International Classification of Primary Care codes [29], prescribed medication (type and dose), duration of prescription and referrals. These data were used to determine whether patients received guideline-concordant care or not.

In our earlier NESDA study [30], a two-round Delphi technique was used to develop a set of quality indicators, measuring different aspects of depression and anxiety care. Using these indicators we described the extent to which GPs adhered to the evidence-based clinical depression and anxiety guidelines [30], issued by the Dutch College of General Practitioners, in the delivery of care for their depression and anxiety patients [31,32]. Guideline-concordant care was defined as patients having received Psychological support, including at least five consultations in the 15 weeks after documentation of the diagnosis, or counselling (only applicable to depression care), or a prescription for antidepressant medication (including evaluation after 6 weeks of prescription and a minimal duration of 5 months, or cessation in the case of no response to treatment), or a referral to a mental health specialist. Based on the care they had received, patients with a current anxiety and/or depressive disorder were divided into two groups: (1) guideline-concordant care and (2) non-guideline-concordant care.

Perceived need for care: fully met needs versus unmet needs

The Perceived Need for Care Questionnaire assessed the care need from the perspective of the patient [33]. This needs assessment instrument has shown acceptable feasibility, reliability and validity for epidemiological and health services research [34] and can determine whether people had a perceived need for specific health care services in the past 6 months and whether their needs were fully met or were unmet. The categories of perceived need, or possible services were: (1) information about mental illness, its treatment and available services; (2) medication; (3) counselling or psychotherapy to talk about possible causes of symptoms and learn to cope with emotional problems; (4) practical support or 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 to increase one's ability to look after oneself or one's home; and (6) referral to a specialist.

Furthermore, the Perceived Need for Care Questionnaire distinguishes different levels of perceived need: 'No need' (has a mental health problem but did not perceive that they needed help, and did not receive help) versus 'Any need' (perceived need for some kind of help). The 'Any need' category can be further divided into 'Unmet need' (perceived that they needed some type of help, but did not receive any help), 'Partially met need' (received some kind of help, but not as much as they perceive they needed) and 'Fully met need' (received some type of help, and received as much as they perceive they needed). The 'Partially met need' and 'Unmet need' categories were put together, resulting in three groups, that is, those with: (1) fully met care needs; (2) unmet care needs; or (3) no need for care. As more pertinent information is obtained by comparing people who had unmet care needs with those who had their needs fully met, the 'No need' group was left out of the cost analyses. Descriptions of the patient characteristics and health service use of this group will be presented.

Possible confounders

As we found in our earlier studies [35,36] that different patient characteristics (socio-demographics, severity of symptoms, type of disorder) were related to both independent variables (perceived need for care and guideline adherence), these factors were taken into account in the analyses. The presence of chronic somatic conditions was also measured because all health care costs were included in the current study.

Patients' characteristics such as age, gender, education level and severity of symptoms were ascertained by questionnaire during the baseline assessment of NESDA. Somatic co-morbidity was measured with questions about the presence of and treatment received for 20 different chronic somatic conditions. Severity of depressive symptoms was measured by the 30-item Inventory of Depressive Symptoms self-report (scale 0–84), which has shown highly acceptable psychometric properties [37,38]. Anxiety symptoms were assessed with the 21-item Beck Anxiety Inventory (scale 0–63) [39]. Higher scores on both the Beck Anxiety Inventory and the Inventory of Depressive Symptoms indicate more (severe) symptoms.

As mentioned earlier, type of anxiety or depressive disorder was determined by the CIDI interview, according to DSM-IV criteria. To control for type of disorder, three subgroups were formed consisting of anxiety disorder only, depressive disorder only, and co-morbidity of both anxiety and depressive disorder.

Statistical and economic analyses

First, univariate tests (χ^2 and *t*-test for independent samples) were used to compare patients who had received guideline-concordant care with non-guideline-concordant care. The three patient groups of those with fully met care needs, unmet care needs and no need for care were compared using χ^2-tests for categorical variables (gender, education level, type of diagnosis, treatment for medical conditions), and analyses of variance (ANOVA) tests for the interval variables (age, severity scores).

Second, descriptive statistics were used to describe health service use and absenteeism from work for patients who had received guideline-concordant care and non-concordant care on the one hand, and patients who still had unmet care needs and those whose needs were fully met on the other hand. To check whether differences were significant, *t*-tests for independent samples were used.

Third, descriptive statistics were also used to explore the influence of guideline adherence and fully met perceived need for care on direct, indirect and total costs. As health care costs usually have a right-skewed distribution (large numbers of patients incur lower costs, few patients incur higher costs), the bootstrap method was used to correct for this type of bias. To estimate 95% confidence intervals (CIs) around the cost differences, bias-corrected accelerated bootstrapping with 2000 replications was used [40].

Finally, linear regression analyses were performed to estimate the relationship between costs and fully met perceived need for care (vs. unmet need). Severity of symptoms, type of diagnosis and socio-demographic characteristics were included in the models to eliminate the effects of these (possible) confounders. After correcting for socio-demographic characteristics and severity of symptoms in the first two models, guideline adherence and type of disorder were added to model 3 and model 4 respectively. To estimate 95% CIs around unadjusted and adjusted cost differences, again bias-corrected accelerated bootstrapping with 2000 replications was used [40]. For every bootstrap sample the regression coefficient for guideline-concordant care was estimated, and bias-corrected, accelerated 95% CIs were estimated. Analyses were performed in STATA 10 and SPSS for windows 17.0.

RESULTS

Guideline adherence

Of the 568 included patients, 216 patients (=38%) received guideline-concordant care, while 352 patients (=62%) received non-concordant care. There were no significant differences between the two groups with regard to age, gender or receiving treatment for one or more somatic diseases (Table 2). However, patients who received guideline-concordant care were higher educated and suffered more often from co-morbidity of both anxiety and depressive disorders, while they suffered less often from an anxiety disorder only, compared with patients who received non-concordant care. Patients who received guideline-concordant care had on average significantly higher severity scores than the non-concordant care group.

[TABLE 2]

Perceived need for care

More than half (53.7%) of our patient sample had unmet care needs and only 116 (20.4%) had their needs fully met. Although fulfilling CIDI criteria for a current anxiety or depressive disorder, 147 patients (25.9%) reported feeling no need for any form of care (Table 2). Within the group of patients with fully met care needs, 66 (56.9%) had received guideline-concordant care, compared with 129 (42.3%) in the unmet need and 21 patients (14.3%) in the no need groups. Patients with fully met care needs suffered less often from co-morbidity of both anxiety and depressive disorders compared with those who had unmet care needs. Patients who felt no need for care more often had an anxiety disorder only, and less often both anxiety and depressive disorders. This specific 'no need' group also suffered from significantly less severe symptoms. Patients who had unmet care needs showed the most severe symptoms and nearly half of them (45.9%) had both anxiety and depressive disorders. With regard to receiving treatment for somatic conditions, there were no significant differences found between the different 'need' groups.

Resource use

Table 3 lists health care utilization and absenteeism from paid work for patients with guideline-concordant care and non-concordant care, and patients who still had unmet care needs or whose needs were fully met.

Patients who had received guideline-concordant care used significantly more primary care services, except for medication prescriptions and physiotherapist visits, compared with patients who had not received guideline-concordant care. With regard to secondary care, this former patient group also had more consultations with a psychotherapist or psychiatrist. Patients who had received care according to the guidelines more often received home care and had more contacts with a company doctor. When focusing on patients who had unmet and fully met care needs, no significant differences were found in direct and indirect health care use.

[TABLE 3]

Costs of guideline adherence

Patients who received guideline-concordant care generated on average significantly higher total societal costs than patients who received non-concordant care (€3266 compared with €2231) (Table 4). Of the direct costs, primary care costs were €363 higher for patients who were treated according the guidelines, compared with patients treated otherwise or not at all. Patients who had received guideline-concordant care also had significantly higher supportive care costs (€238), than patients who did not receive guideline-concordant care (€30). With regard to the indirect costs, the guideline-concordant care group had higher company doctor costs (€19 compared with €8).

[TABLE 4]

Costs of perceived fully met care needs

No significant cost differences were found between patients who had fully met care needs and patients who had unmet care needs. In general, lost productivity costs were the greatest contributor to total costs, followed by primary and secondary care costs.

As can be seen in Tables 4 and 5 (uncorrected model), total mean costs were €324 higher in the fully met need group with slightly lower direct costs and higher indirect costs, but these differences were not significant. When perceived need for care was put into a regression model with costs as the dependent variable and corrected for age, gender and education level, the total cost difference decreased markedly, which indicates that these patient characteristics were actual confounders. When costs were also corrected for severity of symptoms (model 2), cost differences changed again, meaning that severity of symptoms also exerted some influence on costs. In this model, direct costs were practically the same but indirect costs were €579 higher in the fully met need group compared with the unmet need group. Notwithstanding this seemingly large difference, it did not reach the level of significance. After introducing guideline adherence to the third model, total cost differences between the 'fully met need' and 'unmet need' groups changed again by more than 10%. Guideline adherence could therefore be seen as a confounder as well; however, no significant interaction was found between self-perceived need and guideline adherence. When type of disorder was included in the final model, mean costs and 95% CIs no longer showed much change. Accordingly, patients whose perceived need for care was fully met did not cost society significantly more or less than patients who still had unmet care needs, but socio-demographic characteristics, severity of symptoms and whether or not guideline-concordant care was received all affected the costs for society.

[TABLE 5]

DISCUSSION AND SUMMARY

In this study, we evaluated the costs for society in cases where guideline-concordant care for anxiety or depression was delivered in comparison with non-guideline-concordant care on the one hand, and the costs in cases where patients' self-perceived needs were fulfilled or not on the other hand. Patients who were not treated according to the general practice guidelines used less health services and therefore incurred lower costs than patients who were treated according to these guidelines. Total societal costs of guideline-concordant care for patients were on average €1035 higher per patient than non-guideline-concordant care. No significant cost differences were found between patients who had fully met care needs and patients who had unmet care needs. Although socio-demographics, severity of symptoms and guideline adherence all

seem to exert some influence on cost differences between patients with fully met needs and unmet needs, costs in cases of guideline adherence appear to be unrelated to costs where patients' needs are fully met.

Patients who received guideline-concordant care had higher severity scores than patients who received non-guideline-concordant care. This difference in severity of symptoms was also found between the three 'need' groups, that is, patients whose needs were partially met or unmet suffered from the most severe symptoms. Apparently, patients with the most severe symptoms of anxiety or depression have the highest chance of receiving guideline-concordant care, which was also shown in previous research [41]. However, patients with unmet care needs (who had the most severe symptoms) did not receive guideline-concordant care more often than patients with fully met care needs (42% and 57% respectively). This shows that for many patients who received enough care for their mental health problem according to their own perception, evidence-based clinical guidelines are not being fully adhered to.

One might have expected that non-guideline-concordant care or unmet need for care would result in higher use of services not directly related to anxiety or depression. However, this was not found in our study. Patients who did not receive (sufficient) care for their mental problem, seen from a professional's and a patient's perspective, did not seem to compensate for this by higher use of services such as physiotherapy, secondary somatic care or alternative types of care. The finding that lost productivity costs were relatively high in general has also been found in previous studies examining (societal) costs of patients with anxiety and depressive disorders [2,41,42].

The higher costs for guideline-concordant care are in a sense an artefact, because guideline-concordant care as provided by the GP per definition requires several GP contacts. Guideline-concordant care is associated with seven GP contacts more than non-guideline-concordant care. Some patients without guideline-concordant care did not even see any professional. As the higher costs for guideline-concordant care are mainly generated by primary care costs, one should keep in mind that guideline-concordant care, when provided by the GP, is defined by a number of GP contacts at least. Perceived need for care on the other hand, is less directly related to actual service use or GP contacts. Patients who had availed of certain services, indicating that this was sufficient, and did not have care needs that were unmet, were labelled as 'fully met need'. Consequently, this group of patients received some form of care, but not necessarily more than the other 'need' groups. The 'unmet need' and 'fully met need' groups were different with respect to their own perception of having received what they wanted. Patients with perceived fully met care needs seem to incur as much cost as patients with unmet care needs, which may imply that patient-centred care is not especially expensive. However, a randomized controlled trial (RCT) should further test this as we can not draw such conclusions from the current data collected within a naturalistic cohort study.

No specific studies could be found for the purpose of comparing our findings regarding perceived need for care and costs for society. Most of the studies that investigated costs of several kinds of extra treatment, besides care as usual for depression or anxiety, reported higher costs for guideline-concordant care [43–45]. In all cases these were RCTs. In our case, we are dealing with a naturalistic design with the inherent characteristic that patients who get extra treatment (guideline-concordant care) or have unmet care needs, are the patients with a higher symptom level. Although naturalistic studies should be considered to be complementary to RCTs as they reflect everyday clinical practice and avoid protocol treatment bias, only RCTs can test whether evidence-based care or patient-centred care is more effective or more expensive.

Strengths and limitations

The strengths of this study are the use of a prospective design in collecting data to assess guideline adherence and service use, and its independent assessment of psychiatric status. Diagnoses were established by the widely accepted CIDI interview, and EMR data provides objective information on the delivery of care that is free of recall bias. However, a possible limitation is that cost data were also partly collected by means of questionnaires. People were asked about their health care utilization over the past 12 months, so recall bias might have played some part here.

Furthermore, our cost analyses compared patients who received guideline-concordant care with those who did not receive this, based on predefined criteria. As our data permit a limited number of indicators, guideline adherence is only roughly defined. Besides, the general practice guidelines used for this study contain rather basic recommendations for anxiety or depression care, as guidelines are not strict protocols and GPs' clinical views and knowledge of the specific circumstances should also guide their decisions. Patients' perceived need for care was assessed by a (validated) questionnaire completed by those who

perceived themselves to have a mental problem. Consequently, people with an anxiety or depressive disorder, according to DSM-IV criteria, who did not think they were suffering from a mental health problem, were not asked about their need for care and are therefore missing from the analyses. In addition, 147 patients who did not feel a need for care and indicated not to have received any (the no need group) were not included in the cost analyses, leading to a smaller patient group for the analyses regarding perceived need ($n = 421$) than for guideline adherence ($n = 568$). Nevertheless, we did not aim to compare these two groups (perceived need for care and guideline adherence), which are based on different criteria, as this would have resulted in overlapping patient groups. We only described the costs of these groups from different perspectives: evidence-based medicine and patient-centred medicine, looking for associations and taking account of the influence of possible confounders.

   All health care costs were taken into account as research shows that people with mental disorders use medical services more often than people without mental problems. The presence of other (chronic) medical conditions may have influenced the total costs per subgroup. However, this influence is limited because patients did not differ significantly in receiving treatment for any chronic medical conditions.

CONCLUSION

   Our findings suggest that guideline-concordant care for anxiety and depression costs more than care that is not guideline-concordant, while care that has fulfilled all a patient's needs seems not to be more expensive than care that has not fulfilled all perceived needs. Apart from the costs, evidence-based care for anxiety and depression seems to be unrelated to patient-centred care. If future (RCT) research can confirm our cautiously stated conclusion that patient-centred care is possibly not more expensive than care that does not fulfil patients' needs, one could recommend (from a cost perspective) the provision of care that fulfils patients self-perceived needs.

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TABLES

Table 1 Prices used in the economic evaluation

	Cost (€)
Direct health care costs	
Primary care costs	
General practitioner (per 10 minute consultation)	21.03
General practitioner – home visit (per contact)	42.05
General practitioner – telephone contact (per contact)	10.51
General practitioner – (refill) prescription	10.51
Primary care psychologist, social worker or social psychiatric nurse (visit of max. 1 hour)*	64.78
Physiotherapist (consultation of max. 30 minutes)	23.68
Medication[†]	–
Complementary medicine (per consultation)[‡]	47.12
Secondary care costs	
Psychotherapist (consultation of max. 1 hour)	72.53
Psychiatrist (consultation of max. 1 hour)	79.11
Regional organization for community mental health care (visit of max. 1 hour)	129.08
Medical specialist (per contact)[§]	81.19
General hospital admission (per day)	350.80
Academic hospital admission (per day)	495.49
Psychiatric hospital admission (per day)	260.24
Rehabilitation centre (per day)	349.76
Supportive care costs	
Home care (per hour)	31.96
Indirect health care costs	
Company doctor (consultation of max. 20 minutes)	22.11
Absenteeism paid labour (per day)[¶]	–

*Mean price of all three professionals.

[†] Prices are based on the Royal Dutch Pharmaceutical Society (KNMP).

[‡] Mean price of seven alternative therapy types (acupuncture, chiropractic, homeopathy, haptonomy, manual therapy, osteopathy, spirituality).

[§] Mean price of outpatient visit to general hospital and academic hospital.

[¶] Indirect costs for paid labour were calculated according to the friction cost approach on the basis of the mean income of the Dutch population stratified for age and gender.

Table 2 Patient characteristics of guideline-concordant care versus non-guideline-concordant care and fully met perceived need (FMN), unmet need (UMN) and no need for care (NN) at baseline

	Guideline adherence			Perceived need for care			
	Yes (*n* = 216)	**No** (*n* = 352)	*P*-value	**FMN** (*n* = 116)	**UMN** (*n* = 305)	**NN** (*n* = 147)	*P*-value
Guideline adherence, *n* (%)	–	–		66 (56.9)	129 (42.3)	21 (14.3)	**
Female gender (%)	67.1	72.4	n.s.	80 (69.0)	219 (71.8)	101 (68.7)	n.s.
Age in years, mean (SD)	45.6 (11.3)	45.5 (12.3)	n.s.	45.2 (12.3)	44.7 (11.7)	47.4 (12.0)	n.s.
Education level (%)							
Basic	3.7	9.4	*	4.3	8.5	6.8	n.s.
Intermediate	62.5	57.1		57.8	57.7	63.3	
High	33.8	33.5		37.9	33.8	29.9	
Type of diagnosis (%)							
Anxiety disorder only	31.0	51.7	**	37.9	32.5	72.1	**
Depressive disorder only	20.8	20.7	n.s.	23.3	21.6	17.0	n.s.
Co-morbidity of both depressive and anxiety	48.1	27.6	**	38.8	45.9	10.9	**
Severity of depression symptoms							
(IDS) mean (SD)	29.6 (11.7)	24.4 (10.6)	**	25.7 (11.6)	30.3 (10.4)	18.6 (8.4)	**
Severity of anxiety symptoms							
(BAI) mean (SD)	16.6 (10.0)	14.1 (9.2)	*	16.2 (9.0)	17.0 (10.1)	10.3 (6.9)	**
Receiving treatment for any chronic medical conditions (%)	46.8	42.3	n.s.	46.6	44.3	41.5	n.s.

* *P* ≤ 0.05; ** *P* ≤ 0.001.

IDS, Inventory of Depressive Symptoms; BAI, Beck Anxiety Inventory; n.s., not significant.

Table 3 Health care utilization and absenteeism from work during 12 months of follow-up for patients who had received guideline-concordant care (GCC) and non-guideline-concordant care (NGCC), and patients whose needs were fully met (FMN) and unmet (UMN)

	Guideline adherence		Perceived need for care	
	GCC (*n* = 216)	NGCC (*n* = 352)	FMN (*n* = 116)	UMN (*n* = 305)
	Mean (SD)		Mean (SD)	
Direct health care use				
Primary care				
GP (number of regular consultations)	12.3 (12.4)**	5.7 (7.3)	9.3 (9.8)	8.8 (10.8)
GP (number of home visits)	0.2 (1.2)*	0.1 (0.6)	0.2 (1.0)	0.2 (1.0)
GP (number of telephone contacts)	3.7 (5.0)**	1.6 (2.7)	3.0 (4.2)	2.6 (4.3)
GP (number of prescriptions)	2.1 (5.6)	1.5 (4.5)	1.4 (3.6)	2.2 (5.8)
Primary care psychologist, social worker or SPN (number of consultations)	2.6 (5.9)**	0.8 (2.7)	2.0 (4.5)	1.8 (5.0)
Physiotherapist (number of consultations)	6.8 (28.2)	4.6 (13.6)	4.3 (12.1)	6.4 (26.2)
Secondary care				
Psychotherapist or psychiatrist (number of consultations)	2.0 (6.5)*	1.0 (4.6)	1.5 (4.7)	1.9 (6.6)
Regional institute for community mental health care (number of visits)	0.8 (2.8)	0.6 (6.3)	0.2 (1.6)	1.0 (7.0)
Medical specialist (number of consultations)	1.4 (3.8)	1.6 (3.5)	1.2 (2.2)	1.6 (4.0)
General or academic hospital admission (number of days)	0.4 (2.9)	0.7 (5.8)	0.3 (1.3)	0.4 (2.7)
Psychiatric hospital admission (number of days)	0.4 (6.1)	0.0 (0.0)	0.03 (0.4)	0.3 (5.2)
Rehabilitation centre (number of days)	0.0 (0.0)	0.2 (3.7)	0.0 (0.0)	0.0 (0.0)
Alternative care				
Alternative therapist (number of consultations)	1.1 (3.0)	1.1 (4.9)	0.7 (2.0)	1.2 (4.0)
Supportive care				
Home care (number of visits)	3.0 (17.7)*	0.4 (3.7)	3.5 (22.3)	1.0 (6.2)
Indirect health care use				
Company doctor (number of consultations)	0.9 (2.1)**	0.4 (1.3)	0.8 (1.9)	0.6 (1.8)
Absenteeism paid labour (number of days)	9.0 (29.5)	6.3 (26.4)	8.4 (21.8)	7.8 (32.3)

* $P \leq 0.05$;   ** $P \leq 0.001$

GP, General practitioner; SPN, social psychiatric nurse.

Table 4 Mean (SD) total costs (€) of guideline adherence (GCC vs. NGCC) and perceived need for care (FMN vs. UMN) and differences in mean costs (95% CIs)* during follow-up of 12 months

Cost category	Guideline adherence			Perceived need for care		
	GCC (n = 216)	NGCC (n = 352)	Δ Costs (95% CI)	FMN (n = 116)	UMN (n = 305)	Δ Costs (95% CI)
Direct costs	1742 (2856)	1252 (4043)	490 (−124; 1013)	1331 (2216)	1478 (2480)	−147 (−586; 371)
Primary care costs	684 (868)	321 (442)	363 (264; 531)	484 (475)	530 (813)	−47 (−184; 72)
Secondary care costs	649 (2085)	669 (3679)	−20 (−562; 402)	416 (901)	656 (2043)	−240 (−571; 4)
Medication costs	118 (383)	180 (705)	−62 (−178; 13)	117 (336)	159 (464)	−41 (−117; 42)
Supportive care costs	238 (1415)	30 (299)	208 (75; 507)	283 (1782)	78 (498)	205 (−2; 871)
Indirect costs	1524 (4603)	979 (3478)	545 (−83; 1371)	1612 (4401)	1141 (3926)	472 (−292; 1547)
Company doctor	19 (47)	8 (29)	11 (4; 19)	17 (43)	14 (41)	3 (−5; 14)
Lost productivity costs	1505 (4583)	971 (3467)	534 (−107; 1311)	1595 (4374)	1127 (3913)	468 (−326; 1476)
Total costs	3266 (5977)	2231 (6193)	1035 (42; 2149)	2943 (4941)	2619 (5159)	324 (−624; 1557)

Figures in bold $P \leq 0.05$.

*95% CIs obtained by bootstrapping.

GCC, guideline-concordant care; NGCC, non-guideline-concordant care; FMN, fully met need; UMN, unmet need.

Table 5 Linear regression models evaluating the relationship between costs (€) during follow-up of 12 months and perceived need for care (FMN vs. UMN)

	Direct costs	Indirect costs	Total costs
	ΔC (95% CI)*	ΔC (95% CI)*	ΔC (95% CI)*
Uncorrected model	−147 (−562; 448)	472 (−286; 1652)	324 (−667; 1454)
Model 1	−162 (−600; 376)	379 (−438; 1476)	217 (−793; 1452)
Corrected for age, gender, education			
Model 2	1 (−412; 513)	579 (−246; 1842)	580 (−421; 1817)
Corrected for age, gender, education, severity of symptoms			
Model 3	−112 (−519; 396)	521 (−353; 1633)	410 (−651; 1584)
Corrected for age, gender, education, severity of symptoms, guideline adherence			
Model 4	−108 (−529; 367)	504 (−294; 1648)	396 (−661; 1580)
Corrected for age, gender, education, severity of symptoms, guideline adherence, type of diagnosis			

Figures presented are mean costs in cases of fully met need compared with unmet need.

*95% CIs obtained by bootstrapping.

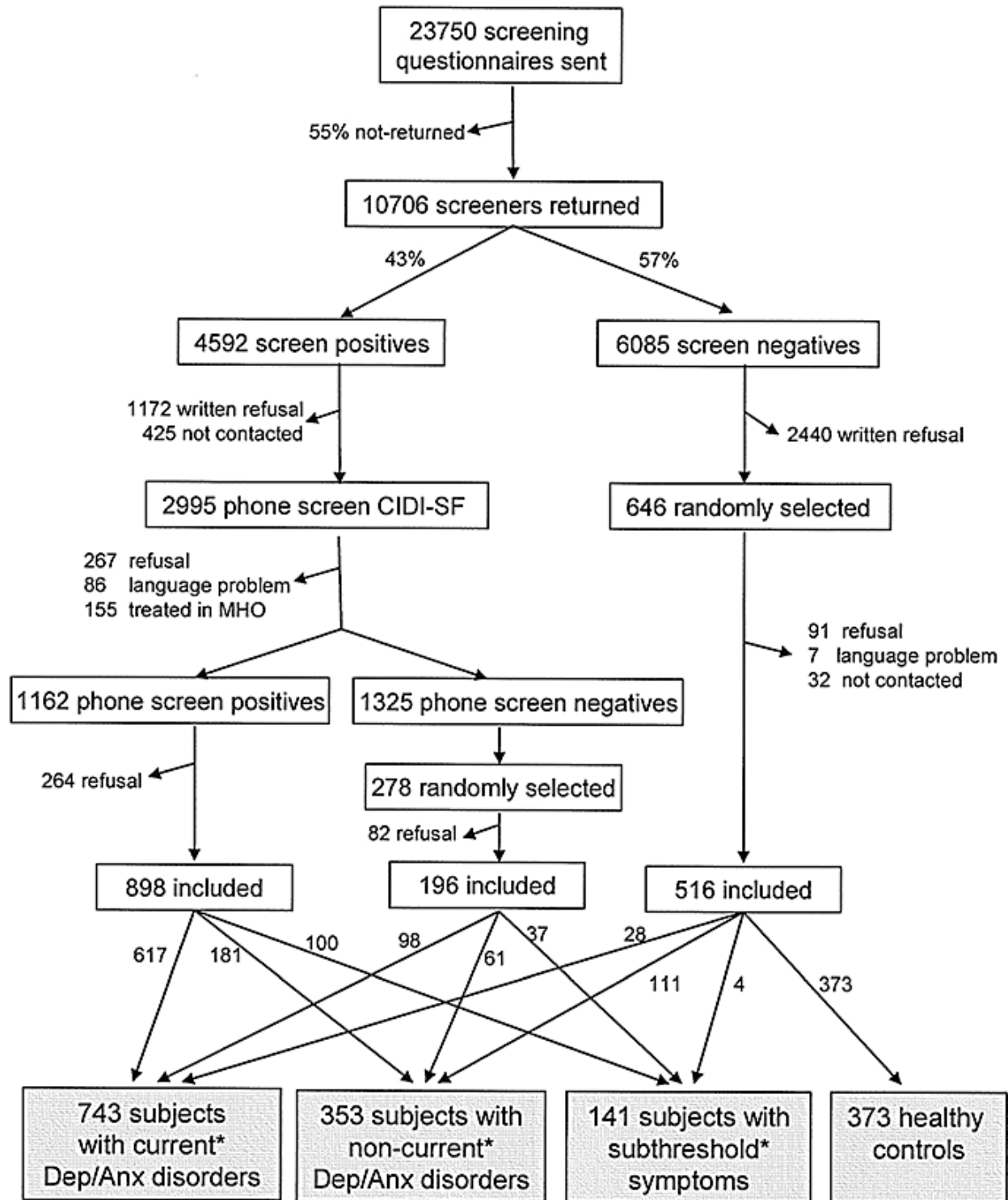FMN, fully met need; UMN, unmet need.

FIGURES

Figure 1 Recruitment flow of the Netherlands Study of Depression and Anxiety (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 Composite Interview Diagnostic Instrument (CIDI) interview. MHO, mental health organizations.