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RESEARCH ARTICLE

Antidepressant prescriptions and mental health nurses: an observational study in Dutch general practice from 2011 to 2015

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ABSTRACT

Purpose: The purpose of this study was to investigate developments in antidepressant prescriptions by Dutch general practitioners, alongside the national introduction of mental health nurses. Antidepressant prescriptions are very common in general practice, but are often not in line with recommendations. The recent introduction of mental health nurses may have decreased antidepressant prescriptions, as general practitioners (GPs) have greater potential to offer psychological treatment as a first choice option instead of medication.

Material and methods: Anonymised data from the medical records of general practices participating in the NIVEL Primary Care Database in 2011–2015 were analysed in an observational study. We used multilevel logistic regression analyses to determine whether total antidepressant prescriptions and antidepressants prescribed within one week of diagnosing anxiety or depression decreased in the period 2011–2015. We analysed whether changes in antidepressant prescriptions were associated with the employment or consultation of mental health nurses.

Results: Antidepressants were prescribed in 30.3% of all anxiety or depression episodes; about half were prescribed within the first week. Antidepressants prescriptions for anxiety or depression increased slightly in the period 2011–2015. The employment of mental health nurses was not associated with a decreased number of prescriptions of antidepressants. Patients who had at least one mental health nurse consultation had fewer immediate prescriptions of antidepressants, but not fewer antidepressants in general.

Conclusions: Antidepressant prescriptions are still common in general practice. So far, the introduction of mental health nurses has not decreased antidepressant prescriptions, but it may have a postponing effect.

Introduction

Antidepressant prescriptions have increased substantially over the past decades in many Western countries [1–3]. Various explanations have been proposed for this increase. General practitioners (GPs) often start the treatment of patients who have anxiety or depression with medication [4], however, this is not the recommended first step according to guidelines [5–8]. Antidepressants should only be offered if other first choice options, such as psychoeducation or counselling, have turned out to be ineffective, or if patients show very severe dysfunction or suffering [5,6]. Moreover, antidepressant medication is only effective for patients with severe depression, and effects are

minimal or non-existent in patients with moderate symptoms [9]. Pharmacological treatment should therefore be limited to patients with a disorder, as defined by DSM-5 criteria. Once patients have started to use antidepressants, it often becomes long term [3,10–13], although guidelines recommend gradual discontinuation after remission of symptoms. Unnecessary long-term antidepressant use may have unwanted side effects for patients [14], and may result in substantial health care costs.

A major reform of Dutch mental health care was introduced in 2014, aimed at strengthening mental health care in general practice. The main objective of the reform was to increase the sustainability and

efficiency of the mental health care system. Measures were taken to promote substitution of mental health care from generalistic basic mental health care (short-term care provided by primary care psychologists) and from specialized mental health care towards general practice. A new referral model for GPs restricted them to refer patients without a (suspected) diagnosis of a psychiatric disorder to generalistic basic mental health care or specialized mental health care. GPs have been facilitated to treat more patients with mental health problems within general practice. Since 2008, they have been financially enabled to employ a professional with mental health expertise: a mental health nurse.

In 2014, the majority of Dutch collaborated with a mental health nurse [15]. Mental health nurses provide short-term psychological treatment and perform diagnostic assessments, but also improve mental health expertise in general within general practices. Mental health nurses received higher vocational training, and are usually trained as psychiatric nurse, psychologist, or social worker. They mainly treat adult patients with common mental health problems, during a small number of consultations of approximately 40 min [15]. Mental health nurses work under the supervision of the GP. They do not prescribe medication themselves. Dutch persons with mental health problems who seek treatment initially visit their GP, who functions as a gatekeeper in the health care system. The GP decides which patients do not need further treatment, which patients are transferred to the mental health nurse and which patients are referred to a primary care psychologist or specialized mental health care. In general, treatment in mental health care is only covered for patients by the health insurance after referral by the GP.

A Cochrane review concluded that the integration of mental health professionals in primary care decreased psychotropic prescribing [16]. Such changes in the behaviour of primary care providers are seen as beneficial 'side effects'. In line with this review, the introduction of mental health nurses may have decreased antidepressant prescriptions by GPs. By employing mental health nurses, Dutch GPs increased their mental health expertise, but also have more opportunities to offer psychological treatment as a first choice option instead of medication. As a result, Dutch GPs should be better able to adhere to the guidelines. We hypothesised that the introduction of mental health nurses was associated with a decrease in antidepressant prescriptions, especially immediately after diagnosis.

The aim of this study was to investigate developments in antidepressant prescriptions in Dutch general practices alongside the introduction of mental health nurses. Using a national primary care database, we examined: (1) whether the (immediate) antidepressant prescriptions of Dutch GPs had decreased in recent years, (2) how often GPs prescribed antidepressants for patients with mild symptoms and patients with disorders and (3) whether the employment or consultation of mental health nurses in general practices was associated with a decrease in (immediate) antidepressant prescriptions.

Materials and methods

Database

Anonymised data from the 2011 to 2015 electronic medical records of general practices participating in the NIVEL Primary Care Database (NIVEL-PCD) [17] were analysed in an observational study. All non-institutionalised inhabitants of the Netherlands are registered at a general practice. The general practices and their patient populations are representative for Dutch general practices and the Dutch population, although group practices are somewhat overrepresented. Only practices that participated during the five years (2011–2015) and which had the most complete data for the recording of diagnoses (at least 70%; 96% on average) were included in this study ($n = 74$). For practice and patient characteristics, see Supplementary file.

Data

Only patients aged between 10 and 65 years in 2011, who were registered at the practice during the full study period, were selected for this study ($n = 197,512$). Patients older than 65 years were excluded, because they often use a combination of various medicines, which complicates the (new) prescription of antidepressants.

Health care professionals participating in the NIVEL-PCD routinely record data, such as consultations, diagnoses and prescriptions. GPs classify diagnoses according to the International Classification of Primary Care (ICPC), based on their clinical evaluation. We included all patients ($n = 27,044$) with at least one episode involving anxious feelings (ICPC code P01), depressive feelings (P03), anxiety disorder (P74) or depressive disorder (P76). Based on the recorded data, episodes of illness were constructed with a start date and stop date [18]. The start date was the date of the first consultation for a new diagnosis. The stop date was three months (P01 and P03) or six months (P74 and P76) after the date of the last consultation or

prescription related to the diagnosis. Patients could have multiple episodes concerning one diagnosis, if they had a disease free period (without any consultations or prescriptions) of at least three months (the usual time for follow-up prescriptions) in between.

Outcome measures

We included all prescriptions of antidepressant drugs, recorded with the Anatomical Therapeutic Chemical Classification System (ATC) codes: N06AA, N06AB, N06AF, N06AG and N06AX. We determined whether at least one prescription of antidepressants was recorded during each episode. We also determined whether at least one prescription of antidepressants was recorded during the first week of the episode. Data were analysed at episode level, because anxiety and depression are recurrent diseases, and we wanted to analyse the potential influence of mental health nurses during new episodes.

Independent variables

We used the age category (10–19, 19–45 or 45–65 years in 2011) and the sex of the patients as independent variables. To investigate time effects, the starting year of episodes was used as an independent variable. We determined what type of diagnosis was recorded for each episode: psychological symptoms (depressive or anxious feelings), or a psychiatric disorder (depression or anxiety). We investigated whether the episode started after or before the employment of a mental health nurse (the first recorded mental health nurse consultation in the five included years was used as the employment date). To examine the influence of mental health nurse involvement, we considered whether the patient had at least one mental health nurse consultation during the first three months of the episode (yes or no).

Confounders

We identified whether the patient had received any medication in addition to antidepressants in the three months preceding the episode or in the first month of the episode (yes or no). Other medication use was likely to affect the GP's tendency to provide (new) prescriptions of antidepressants, because of a risk for drug interactions.

Episode duration was determined by calculating the difference in days between the start date and the stop date. Because data were available for 2011–2015, episodes that started in 2011 had the highest maximum episode duration, and therefore, analyses were adjusted for episode duration (centred for the average).

Statistical analyses

We performed two multilevel repeated measures logistic regression analyses, using three hierarchic levels: episodes clustered within patients, and patients clustered within general practices. Repeated measures analyses were used to control for the correlation between episodes within a patient. The outcome variable of the first analysis was receiving at least one prescription of antidepressants. The outcome variable of the second analysis was receiving an immediate prescription of antidepressants. Only patients with at least one prescription of antidepressants were included in the second analysis. We calculated the main effects of six independent variables: year, age, sex, type of diagnosis, mental health nurse employment and mental health nurse consultation. To determine whether the effects of mental health nurses varied over time, interaction effects between year and mental health nurse employment and year and mental health nurse consultation were calculated. Only episodes that started between 1 April 2011 and 1 October 2015 were included in the analyses to have complete data on mental health nurse consultation and medication. This excluded $n = 4389$ episodes ($n = 1935$ patients). All episodes were included in the figures provided to maintain comparability between years. The significance level was set at <0.01. All analyses were performed using MLwiN 2.30.

Results

Descriptive statistics

In the period 2011–2015, 27,044 patients from the total of 197,512 registered patients had at least one episode of anxiety or depression (13.7%). Most patients (64.1%) only had one episode of anxiety or depression during 2011–2015. Fewer patients had two (23.2%) or three (7.7%) episodes. Only 5.0% had four or more episodes of anxiety or depression. In total, $n = 42,423$ episodes of anxiety of depression were recorded.

Most episodes concerned anxious feelings (34.7%) or a depressive disorder (26.0%). Fewer episodes concerned depressive feelings (20.5%), or an anxiety disorder (18.9%). Most patients (86.5%) had a single diagnosis.

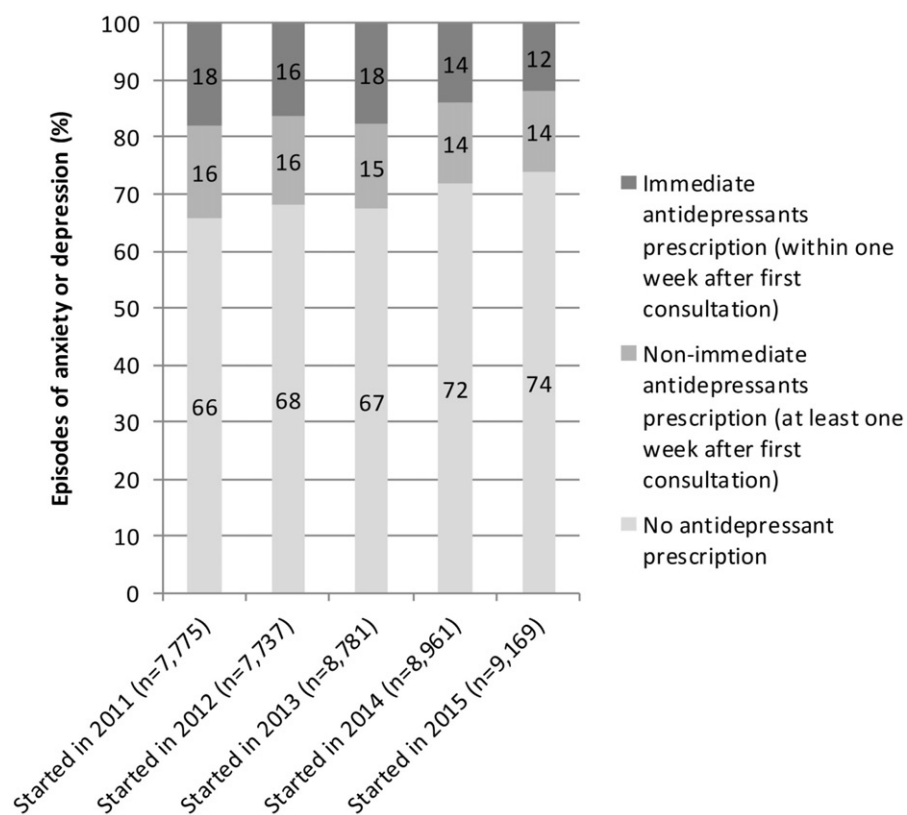In 2011, 41% of general practices employed a mental health nurse. This increased to 88% in 2015 (Supplementary file).

Figure 1. GP antidepressant prescriptions for anxiety or depression in 2011–2015 (not adjusted for episode duration). GP, general practitioner.

Antidepressant prescriptions in 2011–2015

In 2011–2015, patients were prescribed an antidepressant in 30.3% of 42,423 episodes. Patients were prescribed antidepressants within the first week after diagnosis in 15.4% of the episodes. Figure 1 shows the number of episodes for anxiety or depression and how often an antidepressant was prescribed in 2011–2015. After adjustment for episode duration, the rate of antidepressant prescriptions for anxiety or depression showed a slight increase in the period 2011–2015 (Table 1(A)). Time trend analysis showed a significant linear effect. No significant (linear or other) overall time effect was found for immediate antidepressant prescriptions, however, the chance of immediate antidepressant prescriptions was lower in 2015 compared to 2011 (OR = 0.67; 95% CI = 0.58–0.78).

Antidepressant prescriptions for symptoms versus disorders

Figure 2 shows antidepressant prescriptions according to diagnosis in 2011–2015. Patients with an episode of a disorder more often received at least one prescription of antidepressants, compared to patients with depressive or anxious feelings (OR = 2.09; 95%

CI = 1.98–2.21), however, the chance to receive an immediate prescription of antidepressants was relatively low during episodes of a disorder (OR = 0.76; 95% CI = 0.70–0.83).

The association between antidepressant prescriptions and mental health nurses

Figure 3(A) shows how often antidepressants were prescribed in episodes that started before or after the employment of a mental health nurse. Antidepressants were not prescribed less often in episodes that started after a mental health nurse was employed (OR = 1.01; 95% CI = 0.93–1.10; Table 1(A)). How often antidepressants were prescribed immediately also did not differ between episodes that started before or after the employment of a mental health nurse (OR = 1.02; 95% CI = 0.90–1.16; Table 1(B)). No significant interaction effects were found between mental health nurse employment and year.

Figure 3(B) shows how often antidepressants were prescribed in episodes with and without at least one mental health nurse consultation. Patients with at least one mental health nurse consultation received antidepressants as often as patients without mental health nurse consultations (OR = 1.00; 95% CI = 0.90–1.16),

Table 1. Time trends of (total and immediate) antidepressant prescriptions by Dutch general practitioners for patients during episodes of anxiety or depression (2011–2015) and associations with the presence of a mental health nurse, type of diagnosis, and patient's sex and age.

	(A) Receiving at least one antidepressant prescription during an episode			(B) Receiving an immediate antidepressant prescription during an episode		
Number of patients in analyses	$n = 25,109$ GP patients with at least one episode of anxiety or depression			$n = 8,217$ patients with at least one episode of anxiety or depression and at least one prescription of antidepressants		
Number of observations (episodes) in analyses	$n = 38,034$			$n = 11,180$		
	OR	p	95% CI	OR	p	95% CI
Episode characteristics						
Year						
2011 (reference)						
2012	0.94	.13	0.87–1.02	0.95	.42	0.84–1.08
2013	**1.12**	**.006**	**1.03–1.21**	1.16	.02	1.02–1.32
2014	1.04	.35	0.96–1.13	0.99	.86	0.86–1.13
2015	**1.17**	**<.001**	**1.07–1.28**	**0.67**	**<.001**	**0.58–0.78**
Employment of the MHN						
Episode started while no MHN was working in the practice (reference)						
Episode started while an MHN was working in the practice	1.01	.74	0.93–1.10	1.02	.71	0.90–1.16
At least one MHN consultation during the episode						
No (reference)						
Yes	1.00	.90	0.94–1.07	**0.45**	**<.001**	**0.41–0.50**
Type of diagnosis						
Depressive or anxious feelings (reference)						
Depressive or anxiety disorder	**2.09**	**<.001**	**1.98–2.21**	**0.76**	**<.001**	**0.70–0.83**
Patient characteristics						
Sex						
Male (reference)						
Female	1.04	.22	0.98–1.10	0.99	.76	0.91–1.07
Age category						
10–19 years (reference)						
19–45 years	**4.17**	**<.001**	**3.59–4.84**	**2.16**	**<.001**	**1.63–2.85**
45–65 years	**6.67**	**<.001**	**5.74–7.75**	**2.71**	**<.001**	**2.05–3.58**

GP: general practitioner, MHN: mental health nurse, OR: odds ratio. 95%CI =95% confidence interval. An OR higher than 1.0 reflects an increased chance of receiving at least one (immediate) prescription of antidepressants during an episode, compared to the reference group. Analyses were adjusted for other medication use (yes/no), and episode duration centred for the average. Episodes had a duration of 199.9 days (SD = 255.3, max = 1823), or 28.6 weeks, on average. Mean episode duration decreased from 286.7 days for episodes started in 2011 (SD = 417.7) to 122.4 days for episodes started in 2015 (SD = 86.9).

but they received fewer immediate antidepressant prescriptions (OR = 0.45; 95% CI = 0.41–0.50). No significant interaction effects were found between mental health nurse employment and year.

Discussion

Summary

 Dutch prescribed antidepressants for 30.3% of anxiety or depression episodes, and about half of them were prescribed in the first week after diagnosis. Antidepressant prescriptions slightly increased in the period 2011–2015. Immediate antidepressant prescriptions were lower in 2015, compared to 2011. Overall, antidepressants were more often prescribed for disorders than symptoms. The employment of mental health nurses was not associated with a decrease in total or immediate antidepressant prescriptions. In episodes with at least one mental health nurse consultation, fewer immediate prescriptions of antidepressants were provided, but there were as many total antidepressant prescriptions, compared to episodes without mental health nurse consultation.

Strengths and limitations

A major strength of this study is that we were able to analyse antidepressant prescriptions amongst a large number of GP patients for five sequential years. Since this was an observational study, we cannot conclude on causal effects, however, routinely recorded GP data enabled us to compare antidepressant prescription rates before and after the employment of mental health nurses, as in a natural experiment. We do not know whether mental health nurse consultation resulted in fewer immediate antidepressant prescriptions or whether patients who received less antidepressant prescriptions visited the mental health nurse more often.
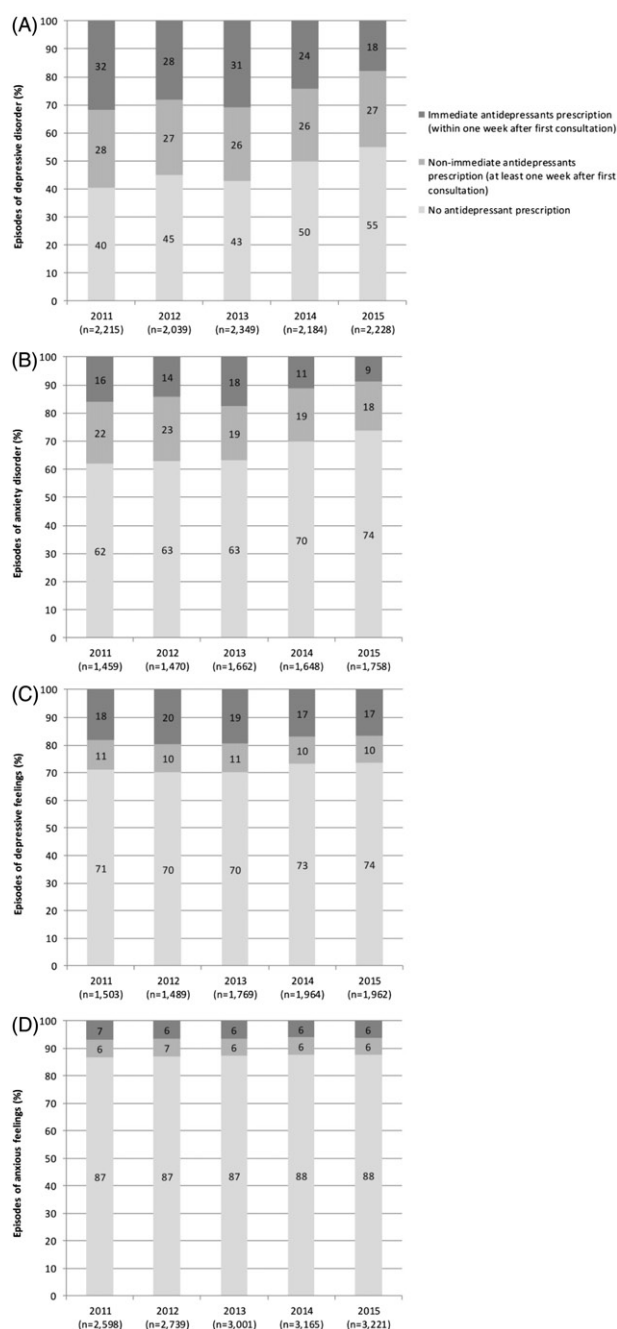
Figure 2. GP antidepressant prescriptions according to diagnosis in 2011–2015 (not adjusted for episode duration). GP: general practitioner.

The lack of an association between mental health nurse employment and antidepressant prescriptions may be partly explained by the fact that we had to use a cut-off point to indicate the start of the mental health nurse. In reality, the integration of mental health nurses in practices probably evolves gradually over time.

Another limitation to the study is that our results are an underestimation of antidepressant prescriptions,

for two reasons. Firstly, patients who had been using antidepressants since 2010 or before and did not have a new episode of anxiety or depression during the study period were not included. Secondly, we could not include prescriptions of antidepressants provided through pharmacies. Patients sometimes receive antidepressants directly from pharmacies, but only after a first prescription is provided by the GP.

Antidepressants are sometimes prescribed for somatic diseases, such as (chronic) pain. It is plausible that some of the antidepressants prescribed during episodes of anxiety or depression were actually mainly prescribed for the treatment of such other diseases. We decided it was useful to include all antidepressant prescriptions, to provide a complete overview, and because it can be reasoned that the prescribed antidepressants were also (intended or not) part of the treatment of depression or anxiety.

Comparison with existing literature

The overall GP antidepressant prescription rates in this study are somewhat lower than the rates reported in other studies on depression [3,19]. This may be due to the inclusion of episodes for mild symptoms, but also to the presentation of our results at episode and not at patient level.

We found a modest increase over time in antidepressant prescriptions. Since 2014, GPs have had to treat more patients with mental health problems, as a new policy aimed at substitution stimulated the shift of patients from specialised to primary care [15]. As a result, GP workload may have expanded, despite the introduction of mental health nurses. High workload could make antidepressant prescription a more attractive (quick) alternative to psychological treatment, since time limitations form a barrier to adhering to guidelines [20].

The antidepressant prescription behaviour of GPs was not always in line with guidelines. GPs frequently prescribed antidepressants for patients with mild symptoms, and antidepressant prescriptions within the first week of an episode were common. Previous studies have already demonstrated that depression and anxiety care provided in clinical practice is sometimes not concordant with guidelines [13,20]. There may be various reasons for GPs to deviate from recommendations, such as patient preferences or the personal history of the patient.

Mental health nurses in general did not seem to decrease antidepressant prescriptions. A Cochrane review concluded that the presence of mental health professionals in primary care decreased the
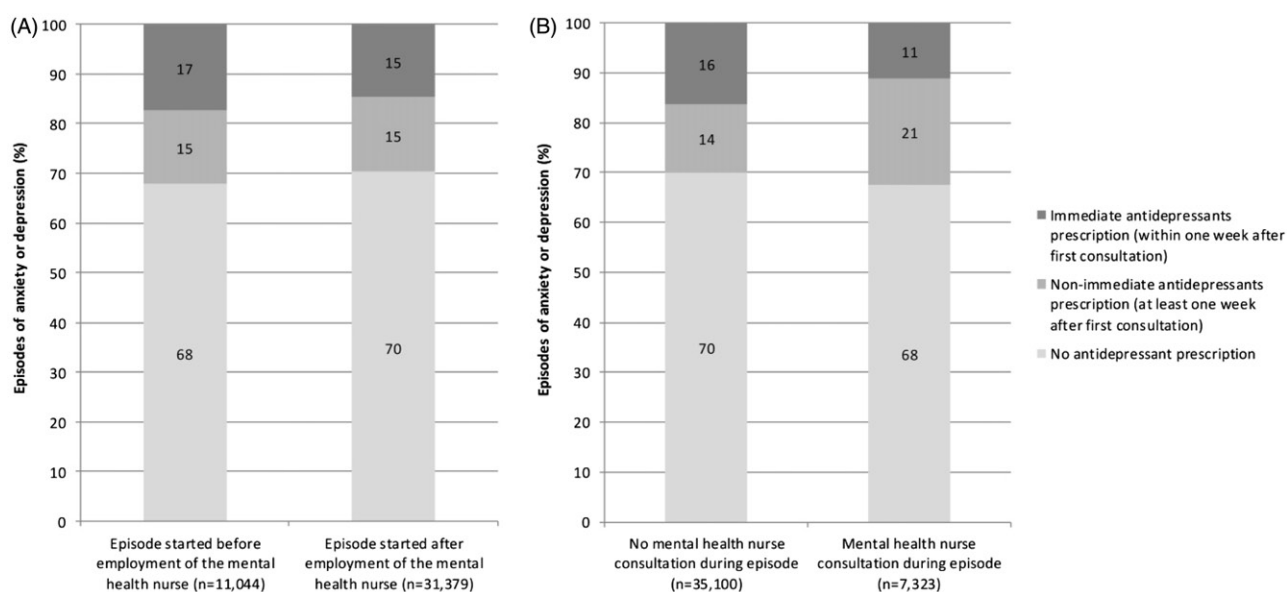
Figure 3. GP antidepressant prescriptions for anxiety or depression: the effect of mental health nurses (not adjusted for episode duration). GP: general practitioner.

prescriptions of psychotropic drugs [16], however, this decrease was only found amongst patients who were actually treated by the mental health professional, and not applicable to the wider practice population. From this point of view, the results of our study are in line with the review, as actual mental health nurse consultation (and not mental health nurse employment) was associated with a decrease in immediately prescribed antidepressants. Mental health nurse consultation was not associated with a decrease in the total number of antidepressants, however. So far, Dutch mental health nurses only seem to have had a postponing effect on GPs' antidepressant prescriptions.

Implications for research

The potential effect of mental health nurses on antidepressant prescriptions might have been limited in the first place. As both depression and anxiety are recurrent diseases, some of the patients in our study, especially older patients, might have had one or more previous episodes. They may already have become long-term antidepressant users, as many antidepressant users do [3,10–13]. The full effect of mental health nurses on GP prescription behaviour should therefore be evaluated over a longer period of time. Future research should also qualitatively investigate the role of mental health nurses in the antidepressant prescription behaviour of GPs and the role of waiting lists for mental health nurse treatment. Moreover, future research should explore the consequences of the integration of mental health nurses in general practice on

outcomes besides antidepressant prescriptions. It is plausible that the integration of mental health nurses in Dutch general practice has had beneficial 'side effects' other than a decrease in antidepressant prescriptions, for example, improved quality of care for patients. Previous research has shown that short-term psychological interventions provided in primary care are also effective in improving patient outcomes [21–23]. Furthermore, the integration of mental health professionals in primary care may reduce referrals to specialized care [16].

Conclusions

Antidepressant prescriptions are still common in general practice. So far, the introduction of mental health nurses has not resulted in a decrease in antidepressant prescriptions as a beneficial side effect, but it may have had a postponing effect.

Ethical approval

Dutch law allows the use of electronic health records for research purposes under certain conditions. According to this legislation, neither obtaining informed consent from patients nor approval by a medical ethics committee is obligatory for this type of observational study, containing no directly identifiable data [24]. This study has been approved by the

applicable governance bodies of the NIVEL Primary Care Database under no. NZR.003.15.041.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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