

Contacts to general practice and antidepressant treatment initiation after screening for anxiety and depression in patients with heart disease

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ABSTRACT

INTRODUCTION: Anxiety and depression are found in 20–30% of all persons with heart disease, and depression is known to impact mortality. This paper aimed to describe the effect of systematic screening of this population in terms of use of general practice, psychological therapy and antidepressant treatment.

METHODS: A population-based cohort study was conducted in 2011–2013 comprising 1,658 people with heart disease treated at a Danish regional hospital. Collected data were based on Danish national registers and patient questionnaires.

RESULTS: Patients with heart disease and anxiety or depressive symptoms had more general practitioner (GP) contact rates than patients without anxiety or depressive symptoms both before and after the screening. Furthermore, patients with depressive symptoms increased their GP contact rate significantly in the first month after the screening, while this was not the case for patients with anxiety symptoms. Finally, patients with heart disease and anxiety or depressive symptoms more frequently initiated treatment with antidepressants than patients with heart disease without anxiety or depressive symptoms, whereas therapy sessions with a psychologist were rarely used.

CONCLUSIONS: Heart patients with depressive symptoms may benefit from screening for depression, information about the screening result and a subsequent recommendation to consult their GP in case of signs of depression. However, the observed effect seems to be modest.

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several Western countries [7–9]. The Danish guideline stipulates that all patients with acute coronary syndrome should be screened systematically for anxiety and depression during hospital-based rehabilitation six weeks after discharge [10]. Nevertheless, this is rarely done [11]. We set up an automated system using questionnaire screening for anxiety and depression in all patients treated at hospital for heart disease. We subsequently recommended that patients with a high risk of anxiety or depression consulted their general practitioner (GP) for further diagnostics and treatment, if needed. The aim of this paper was to describe the effect of the screening procedure in terms of contacts to general practice, use of psychological therapy and initiation of antidepressant treatment.

METHODS

We conducted a population-based cohort study in patients with heart disease treated at the Regional Hospital West Jutland in Herning, Denmark, by using data from nationwide registers and a patient questionnaire.

Study population

We consecutively invited all persons aged 18 years or more who had been treated at the hospital for atherosclerotic heart disease, cardiomyopathy or heart failure in the period from 1 July 2011 to 31 December 2013. Included cases were identified in the Business Intelligence Register in the Central Denmark Region which holds information on discharge diagnoses classified according to the tenth version of the International Classification of Diseases (ICD-10) for all patients treated at the hospital. We received data every four weeks on patients discharged with atherosclerotic heart disease (codes I20–25), cardiomyopathy (code I42) and heart failure (codes I50, I51.8 and I51.9). Information on name, current address and vital status was obtained from the Danish Civil Registration System.

Screening procedure

A questionnaire was mailed to all included patients after their treatment at the hospital. They could freely choose

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Anxiety and depression are present in 20–30% [1, 2] of all patients with heart disease, and anxiety and depression markedly affect their quality of life. Anxiety seems to have no impact on the mortality in patients with heart disease [3, 4], whereas depression appears to double the mortality within two years [5, 6]. Therefore, routine screening for depression in patients with heart disease is recommended in the guidelines adopted by



TABLE 1

Characteristics of patients treated for heart disease from 1 July 2011 to 31 December 2013 (N = 1,332).

Age, yrs, mean (\pm SD)	67.6 (\pm 12.4)
<i>Age groups, n (%)</i>	
< 50 yrs	112 (8.4)
50-59 yrs	227 (17.0)
60-69 yrs	383 (28.8)
70-79 yrs	370 (27.8)
\geq 80 yrs	240 (18.0)
<i>Sex, n (%)</i>	
Female	534 (40.1)
Male	798 (59.9)
<i>Diagnosis, n (%)</i>	
Atherosclerotic heart disease	1,075 (80.7)
Cardiomyopathy	79 (5.9)
Heart failure	178 (13.4)
<i>HADS scores, n (%)</i>	
HADS-A \geq 8	363 (27.2)
HADS-D \geq 8	235 (17.6)
HADS-A/D \geq 8 ^a	402 (30.2)

A = anxiety; D = depression; HADS = Hospital Anxiety and Depression Scale; SD = standard deviation.

a) HADS-A/D \geq 8 consists of those who score HADS-A \geq 8 or HADS-D \geq 8. Due to overlap between A and D symptoms, HADS-A/D \geq 8 is not the sum of HADS-A \geq 8 and HADS-D \geq 8.

to answer either an included paper-based questionnaire or a web-based version. Non-responders received a reminder after 17 days. After scoring for anxiety and depression, all patients received a letter with information about their personal screening result. If the result indicated symptoms of anxiety or depression, we recommended that the patient should contact his or her GP and bring the letter. The data collection, scoring procedure and response letter was handled by the WestChronic system; details hereof have been described elsewhere [12].

Anxiety and depression

Anxiety and depressive symptoms were measured using the Hospital Anxiety and Depression Scale (HADS) [13]. This scale was developed to identify states of anxiety and depression among hospital outpatients and it is widely recommended as the preferred screening tool in cardiovascular settings [14]. To avoid potential confounding by somatic illness, the construct excludes somatic symptoms such as insomnia and loss of energy [13]. The HADS consists of two subscales: an anxiety scale (HADS-A) and a depression scale (HADS-D). Each subscale includes seven items rated on a four-point rating scale (0-3); higher scores indicate more symptoms. Symptoms of anxiety and depression are assessed by summing the points within each subscale (0-21). Several studies conducted in the general population in different

medical settings have shown that an optimal balance between sensitivity and specificity is achieved when symptoms of anxiety or depression are defined by scores of at least eight in both the HADS-A and the HADS-D [15].

Outcome measures

Outcome was defined as either GP consultation, initiation of antidepressant treatment or publicly subsidised therapy with a psychologist.

Information on GP or psychologist consultations was collected from the Danish National Health Insurance Service Register (NHSR). Records in the NHSR are used for public remuneration of healthcare services provided in Denmark. Variables include type of service and week/year of each provided service. Only consultations involving face-to-face contact were selected (for GPs: service codes 0101, 0120, 0121 and 0411-0491).

Drug prescription data were obtained from the Danish National Prescription Register [16]. The Register provided information on all reimbursed antidepressants (Anatomical Therapeutic Classification code N06A), including dispensing date, packet size and number of packets.

Statistical measures

Categorical data are presented as numbers (percentages), while normally distributed continuous data are presented as means, standard deviations and ranges. Respondents' and non-respondents' characteristics were compared using a t-test for continuous variables and a chi-squared test for categorical variables. For each week after treatment, cumulative sum curves were used to count the percentage of patients who had consulted their GP. The average number of consultations per month is presented along with incidence rate ratios (IRR) for positive versus negative screeners. The IRRs were derived from negative binomial regression analysis (with number of visits as the outcome variable and a one-month period as the input) and were modelled by an interaction term between a one-month period and a dummy for positive versus negative screening result. All statistical tests were two-sided, and $p < 0.05$ was considered statistically significant.

Trial registration: none.

RESULTS

Half of the 1,658 eligible patients received the questionnaire within 63 days (interquartile range: 53-78) after their treatment. Overall, 1,374 (82.9%) answered the questionnaire and a valid score was available for 1,332 (80.3%). Web-based response was chosen by 6.8%. The median response time was 13 days (interquartile range: 9-17).

The mean age for respondents was 67.6 years (interquartile range: 59-77); 798 (59.9%) were men and 1,075 (80.7%) had atherosclerotic heart disease (Table 1). The mean age for non-respondents was 65.6 years (interquartile range: 55-77) ($p = 0.02$); 154 (54.2%) were men ($p = 0.08$), and 209 (73.6%) had atherosclerotic heart disease ($p = 0.02$).

Overall, 402 (30.2%) of the patients reported anxiety symptoms (HADS-A ≥ 8) or depressive symptoms (HADS-D ≥ 8) and were recommended to contact their GP (Table 1).

Consultations with the general practitioner

During the six months before the screening, patients with anxiety or depressive symptoms had 26% more GP contacts than patients without anxiety or depressive symptoms (adjusted IRR: 1.26, 95% confidence interval (CI): 1.15-1.37). This difference increased to 50% in the first month after the screening (adjusted IRR: 1.50, 95% CI: 1.31-1.72) and decreased again to 30% within the following six months (adjusted IRR: 1.29, 95% CI: 1.18-1.43) (Figure 1).

For patients with anxiety or depressive symptoms, the average number of GP contacts per month increased from 1.36 (95% CI: 1.22-1.50) in the month before screening to 1.47 (95% CI: 1.31-1.62) in the first month after the screening ($p = 0.177$) (Figure 1).

During the six months before the screening, patients with anxiety symptoms had 23% more GP contacts than patients without anxiety symptoms (adjusted IRR: 1.23, 95% CI: 1.12-1.34). This difference increased to 50% in the first month after the screening (adjusted IRR: 1.50, 95% CI: 1.30-1.72) and decreased again to 30% within the following six months (adjusted IRR: 1.29, 95% CI: 1.18-1.44) (Figure 1).

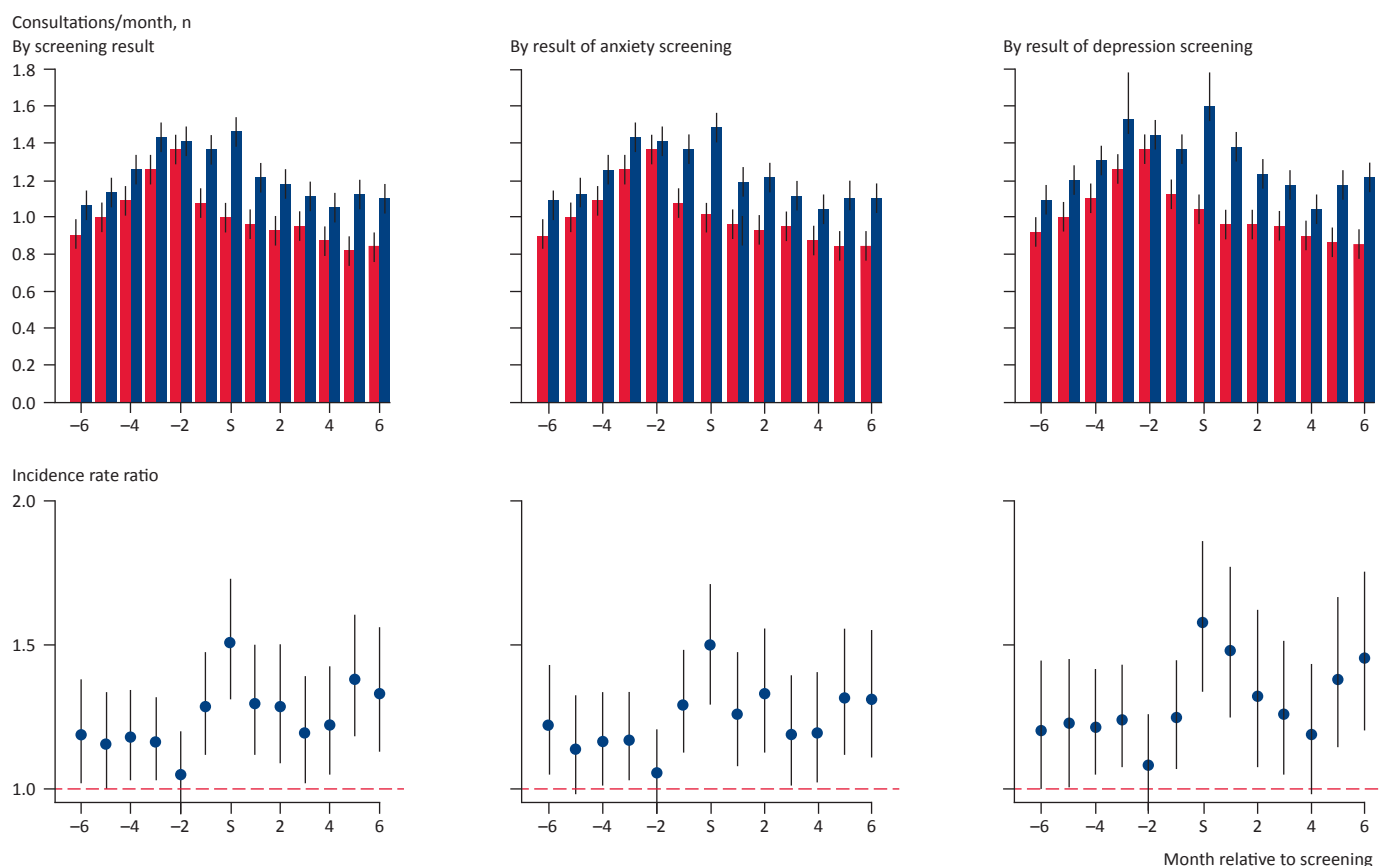
For patients with anxiety symptoms, the average number of GP contacts per month increased from 1.37 (95% CI: 1.22-1.52) in the month before screening to 1.48 (95% CI: 1.32-1.65) in the first month after the screening ($p = 0.202$) (Figure 1).

During the six months before the screening, patients with depressive symptoms had 29% more GP contacts than patients without depressive symptoms (adjusted IRR: 1.29, 95% CI: 1.17-1.43). This difference



FIGURE 1

Use of general practice before and after screening for anxiety and depression according to symptoms of anxiety and/or depression.



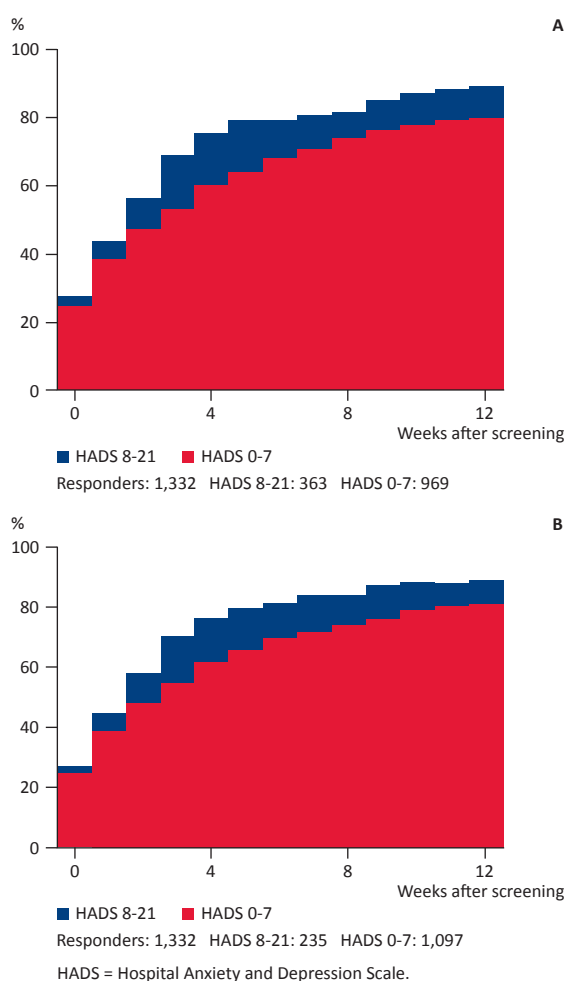
increased to 57% in the first month after the screening (adjusted IRR: 1.57, 95% CI: 1.34-1.85) and decreased again to 36% within the following six months (adjusted IRR: 1.36, 95% CI: 1.21-1.53) (Figure 1).

For patients with depressive symptoms, the average number of GP contacts per month increased significantly from 1.36 (95% CI: 1.19-1.54) in the month before the screening to 1.59 (95% CI: 1.37-1.81) in the first month after the screening ($p = 0.045$) (Figure 1).

During the first four weeks after the screening, 75% of the patients with anxiety symptoms and 60% ($p < 0.001$) of the patients without anxiety symptoms had seen their GP, whereas 76% of the patients with depressive symptoms and 62% ($p < 0.001$) of the patients without depressive symptoms had seen their GP (Figure 2).

FIGURE 2

Cumulative sum curves showing the percentage of patients having consulted their general practitioner after screening for anxiety (A) and depression (B) according to symptoms of anxiety or depression.



Treatment with antidepressants

During the six months before the screening, 226 (17.0%) of the patients had redeemed a prescription for antidepressants. Among the remaining 1,106 patients, 33 (3.0%) started treatment within three months after the screening. After the screening, antidepressant treatment was initiated for 23 (9.1%) of the patients with anxiety symptoms and for 18 (11.9%) of the patients with depressive symptoms (Table 2).

Consultation at a psychologist

During the six months before the screening, 13 (1.00%) of the patients had consulted a psychologist after referral from their GP. Among the remaining 1,319 patients, five (0.38%) initiated consultations at a psychologist within three months after the screening.

DISCUSSION

In this population-based cohort study, we found that automatic questionnaire-based screening for anxiety and depression among heart patients was possible within a reasonable time frame and with a high response rate. We found that more of the patients with anxiety or depressive symptoms than patients without anxiety or depressive symptoms visited their GP within the first four weeks after the screening. Heart patients with anxiety and depressive symptoms had higher GP contact rates than patients without anxiety or depressive symptoms, both before and after the screening. Even so, we found that the patients with depressive symptoms increased their GP contact rate significantly in the first month after the screening, while this was not the case for patients with anxiety symptoms. Finally, heart patients beneficial with anxiety or depressive symptoms more frequently started treatment with antidepressants than heart patients without anxiety or depressive symptoms, whereas consultations with a psychologist were rarely used.

No previous studies have examined heart patients' contacts to general practice and initiation of antidepressant treatment after screening for anxiety and depression. Depressive symptoms in patients with heart disease have consistently been associated with mortality [5, 6], whereas anxiety symptoms have not [3, 4]. This difference in prognosis may be explained by more severe illness and more risk factors, but it may also be related to the use of healthcare [17]. The long-term chronic care management of heart disease and depression primarily takes place in general practice. Patients with depressive symptoms would be expected to need more contact to their GP as they have higher prevalence of risk factors and a poorer prognosis, but the ideal contact rate is unknown. Our study indicates that a three-phase intervention consisting of screening for depres-



TABLE 2

Treatment with antidepressants in patients with heart disease before and after screening for anxiety and depression according to screening result. The values are n (%).

	Treatment initiated within	
	6 months before screening (N = 1,332)	90 days after screening (N = 1,106)
HADS-A		
< 8	116 (12.0)	10 (1.2)
≥ 8	110 (30.3)	23 (9.1)
HADS-D		
< 8	142 (12.9)	15 (1.6)
≥ 8	84 (35.7)	18 (11.9)
HADS-A/D		
< 8	106 (11.4)	8 (1.0)
≥ 8	120 (29.9)	25 (8.9)
All	226 (17.0)	33 (3.0)

sion, information about the screening result and a subsequent recommendation to consult the GP for further diagnostic assessment (if needed) may lead to higher contact rates for patients with depressive symptoms. Whether this result has a clinical impact and is cost beneficial is unknown. Patients with moderate to severe depression usually benefit from treatment with antidepressants [18], but we do not know such treatment improves their prognosis [19]. In our study, 11.9% of those with depressive symptoms started treatment with antidepressants after their screening. Whether they had initiated this treatment without the screening is unknown.

Strengths and limitations

A major strength of the present study is the population-based nature of the cohort. Our response rate was high (80.3%), and information on outcome was collected without loss to follow-up. Information on heart disease diagnoses was collected prospectively and did not rely on patient memory. The diagnoses were based on the current European Society of Cardiology Criteria and were coded by the physician responsible for the treatment. Myocardial infarction is known to have a high specificity, whereas e.g. angina pectoris has a lower specificity. We also reduced the risk of information bias by using high-quality register data and a previously translated and validated scale (HADS) [13, 15]. Still, we realise that a diagnosis of anxiety or depression should ideally be based on a diagnostic interview. The sensitivity and specificity of the HADS in heart patients varies in different studies, but we identified 27.2% with anxiety symptoms and 17.6% with depressive symptoms, which is in keeping with the prevalence of anxiety and depression among heart patients identified by structured clinical interviews in other studies [1]. We had information

on the number of healthcare contacts, but not on the reasons for encounter or the contents of consultation.

CONCLUSIONS

Heart patients with depressive symptoms may benefit from screening for depression, information about the screening result and a subsequent recommendation to consult their GP in case of signs of depression. However, the observed effect seems to be modest and the clinical impact is unknown.

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