# An evaluation of practice nurses working with general practitioners to treat people with depression

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## SUMMARY
**Background.** The diagnosis and treatment of depression constitutes a signficant component of a general practitioner's workload. A pilot study has suggested that the practice nurse may have an important contribution to make in the care of patients with depression.
**Aim.** To evaluate an extended role for practice nurses in improving the outcome of depression through two specially-designed interviews running in parallel.
**Method.** Two naturalistic, random allocation studies took place concurrently over four months. Study 1 evaluated the effectiveness of standardized psychiatric assessment by a practice nurse and feedback of information to the general practitioner (GP). Study 2 evaluated the above assessment and feedback combined with nurse-assisted follow-up care. Twenty general practices participating in the Medical Research Council General Practice Research Framework took part in the study. Subjects included general practice attenders identified as depressed by their GP. The main outcome measures were a change in Beck Depression Inventory (BDI) scores and in the proportion of patients fulfilling DSM-III criteria for major depression.
**Results.** A total of 577 patients were recruited; 516 [89% (95% CI = 86–92%)] were rated as depressed on the BDI and 474 [82% (95% CI = 79–85%)] met criteria for DSM-III major depression. Altogether, 524 (91%) patients completed follow-up at four months. All groups of patients showed improvement, but no difference in the rate of improvement was shown for the nurse intervention groups. BDI mean scores fell from 18.54 (95% CI = 17.53–20.06) to 11.53 (95% CI = 10.02–13.04) in Study 1, and from 21.01 (95% = CI 20.26–21.86) to 10.62 (95% CI = 9.73–11.51) in Study 2. The proportion of patients fulfilling criteria for DSM-III major depression in Study 1 fell from 80% (95% CI = 73–87%) to 30% (95% CI = 22–38%), and in Study 2 from 80% (95% CI = 76–84%) to 27% (95% CI = 23–31%). Prescription rates of antidepressant medication were higher than expected, ranging between 63% and 76% in the two studies.
**Conclusion.** There was an increase in the rate of antidepressant prescription, but no additional benefit could be adduced for patients who received a nurse intervention.

*Keywords: nurses; general practitioners; workload; depression.*

## Introduction

THE diagnosis and treatment of depression constitutes a significant component of a GP's workload. In consequence, specialist mental health attachments, such as psychologists and counsellors, have seen a steady growth,[1] although only a minority of patients can be so referred. A pilot study has suggested that the practice nurse, given a brief special training, may also have an important contribution to make in the diagnosis and treatment of patients with depression.[2]

In order to evaluate an extended role for practice nurses in improving the outcome of depression, we designed two studies to run in parallel.

### Study 1

Practice nurses would complete a standardized assessment of the patient and report the findings to the GP for a randomly selected half of the patients. We hypothesized that this would lead to improved outcome for the patients for whom the GP received information from the nurses.

### Study 2

In addition to the assessments and feedback to GPs, the nurses would provide follow-up sessions to a random half of the patients. We hypothesized that the clinical outcome would be better in the half of the sample who received nurse-assisted care.

## Method

The two studies involved random allocation intervention and control groups designed to run concurrently for four months.

### Setting

Twenty general practices participating in the Medical Research Council General Practice Research Framework,[3] and distributed throughout England, collaborated in the study. A total of 56 GPs and 21 practice nurses participated.

### Recruitment of sample

As the study was intended to be naturalistic, it was left to the GPs to refer those whom they thought were depressed. The resulting sample would include patients with depression of varying severity and chronicity, to be defined later by the use of standard measures.

Patients, aged 18–74 years, who had been depressed for at least four weeks, were recruited from routine general practice attenders. Those currently receiving treatment from their GP for depression or presenting with a new episode were included. Patients excluded were those with suicidal ideation, those whose depression represented a phase in a manic-depressive psychosis, and those currently receiving treatment for depression from specialist psychiatric services. Recruitment began in October 1991 and ended in April 1993, the last follow-up occurring in August 1993.

### Study designs

Patients were prerandomized by the same method in both studies.

Patient files were numbered consecutively and were randomly allocated to groups by random number tables until the required numbers were reached for Study 1 (1:1) and Study 2 (2:1). A sealed envelope placed in each patient assessment file concealed the randomization key. This was opened only at the end of the first assessment interview.

### Procedures

*Study 1.* Recruitment by the GP was followed by referral of the patient to the practice nurse for a standardized psychiatric assessment and completion of the Beck Depression Inventory (BDI). Practice nurses reported the results of the interview to the GP in a random half of these patients (the intervention group) and left a summary in the notes. For those patients whose assessment was not reported to the GP, the nurse could advise the patient to report any specific problems to the GP or she could seek advice from the research team on whether or not to report particular information to the GP. GPs were expected to treat both groups of patients according to usual practice. Contacts for all patients during the four-month follow-up were recorded on a specially devised card in the medical records.

*Study 2.* Patients were recruited and assessed as for Study 1. The nurse discussed each patient with the GP, who decided upon treatment. Then patients were randomized to either nurse follow-up (the intervention group) or to normal GP care.

For the intervention group, the nurse worked to a specially devised manual and was advised to see the patient regularly during the first month, but with no specific regime thereafter. A total contact time of eight hours per patient over four months was recommended, including initial and final assessments. Patients could see the GP at any time at their own, the GP's, or the nurse's request. The nurse could discuss a patient with the GP at any time, all such contacts being recorded. At each follow-up visit, the nurse recorded the content of her interview, categorizing according to the headings: monitoring change in mental state, encouraging compliance, providing education, or facilitating a social intervention.

In the control group, patients were treated according to the GP's usual practice; consultations during the four months were recorded on a form in the medical records.

### Assessments and measures of outcome

The main outcome measures in both studies at four-month follow-up were change in BDI scores[4,5] and change in the proportion of patients fulfilling DSM-III criteria for major depression derived from the Nurse Assessment Interview (NAI).

The NAI, a semi-structured standardized interview to assess depression, was devised and tested during the pilot study.[2] It includes ratings of the severity of mood change, biological symptoms, morbid ideation, relevant social factors, current physical health, and previous treatment history. A computer algorithm enables a diagnosis of DSM-III major depression to be made.

The NAI provides a clinical profile of depression, with the relevant accompanying factors, for report to the GP and as the basis for clinical management. A summary can be provided for the patient's notes. The interview takes 30–40 minutes. An abbreviated version was created for monitoring change in mental state during the intervention phase. Details of inter-rater reliability are given in Appendix 1.

### Doctors' and nurses' attitudes to depression

At the beginning and end of the study, participating GPs and nurses completed the Depression Attitudes Questionnaire (DAQ),[6] comprising 21 visual analogue scales. The effects of trial participation were assessed by comparing scores on individual items.

### Training of practice nurses

None of the 21 nurses had specific experience in assessing or treating psychiatric illness before the study. Training took place over four six-hour sessions at the Institute of Psychiatry covering depression, its assessment, and management. Nurses were provided with reading material for use between visits to the Institute. Two nurses who had participated in the pilot study became supervisors of the newly recruited nurses. Training in the use of the NAI was by videotape, followed by live practice with pseudopatients. During the study, the nurses were recalled for refresher courses.

For Study 2, nurses were provided with a detailed manual (Appendix 2) for guidance in follow-up sessions with the intervention group.

### Sample size requirements

It was assumed that 30% of patients would recover within four months under standard GP management.

*Study 1.* Eighty-three patients were required in each arm to detect a 20% advantage in the nurse assessment group with 75% power and a 5% level of significance.

*Study 2.* One hundred and twenty-four patients were required in each arm to demonstrate a further 20% advantage of nurse monitoring over nurse assessment with 90% power and a 5% level of significance. Randomization was conducted in a ratio of 2:1 in favour of the nurse monitoring group to allow for further investigation of nurse activity in relation to outcome.

### Data analysis

Data management and analysis were carried out using SPSS/PC+.[7] Between-group comparisons for continuous and discrete variables were carried out using *t*-tests and chi-squared tests respectively. These were supplemented by ANOVA and ANCOVA where necessary. Measures of agreement between categorical variables were calculated using Cohen's kappa, and between categorical and continuous variables by Spearman's rho. Analysis of repeated measures was carried out by MANOVA.

## Results

### Recruitment

A total of 655 patients from the 20 practices were invited to participate in the two studies: 28 (4%) refused and 50 (8%) did not attend for first assessment. In all, 577 patients entered the studies over 18 months. Five practices contributed to Study 1, recruiting 158 patients with a range of 14–51 patients per practice. Nineteen practices contributed to Study 2, recruiting 419 patients with a range of 5–47 patients per practice.

## Demographic characteristics

There were no demographic differences between those recruited to the two studies. Of the 577 patients, 450 (78%) were female with a mean age of 43.1 years (SD = 15.3). The mean age of the 127 men was 48.3 years (SD = 13.7). Altogether, 54% of women and 69% of men were married or cohabiting, 10% of women and 3% of men were widowed, 19% of women and 13% of men were single, and 17% of women and 14% of men were divorced. Some 45% were in social classes I, II, or III (non-manual); 25% in III (manual), IV, or V; 8% were retired; 9% were housewives; and 14% were not classified. A total of 59% of men and 58% of women were currently in employment.

## Baseline assessments

*Past episodes.* Overall, 375 (65%) of the sample had consulted with a 'new' episode of depression at recruitment. A higher proportion of patients with a new episode were recruited to Study 1 than to Study 2 126 (80%) vs 243 (58%); $\chi^2$ = 24.44; $P$ = 0.001). A total of 388 (67%) patients reported previous episodes of depression, for which 229 (59%) had been treated solely in primary care. Forty-four (11%) patients had been psychiatric inpatients, and a further 39 (10%) had been referred to psychiatric outpatients. The majority had received antidepressant medication only, although seven patients reported that they had received electroconvulsive therapy.

*Beck Depression Inventory.* Altogether, 516 (89%) scored at or above a cut-point of 10, indicating the presence of at least mild depression; 298 (52%) scored 20 or more, indicating at least moderate levels of depression; and 93 (16%) scored 30 or more, indicating severe depression.

*NAI assessment.* A total of 474 (82%) reported symptoms that met criteria for DSM-III major depression. The association between BDI score and DSM-III criteria for major depression was 0.45 ($P$ < 0.001), as measured by Spearman's correlation coefficient.

Those in Study 1 had a lower mean BDI score at outset than those in Study 2 [19.0 (SD = 9.20) vs 21.2 (SD = 8.50); $t$ = 2.56, $P$ < 0.01]. However, this difference was not shown in the proportions of patients with DSM-III major depression recruited to each study.

*Physical illness.* Some 234 (41%) patients were currently being

treated for physical illness.

*Social problems.* During the NAI, problems at work were reported by 55%, in social life by 47%, in family relationships by 46%, with finances by 33%, with intimate relations by 31%, and in housing by 21%. Married patients had significantly ($t$ = 4.28; $P$ < 0.001) lower scores on the BDI [19.25 (SD = 8.27)] than those without partners [22.36 (SD = 9.06)]. Those reporting relationship problems had higher BDI scores [21.58 (SD = 8.61) vs 17.22 (SD = 8.35); $t$ = 5.17; $P$ < 0.001].

*Use of alcohol, drugs, and other remedies.* Overall, 13% reported that their alcohol intake had increased with the onset of depression. Some 56% were trying other remedies, increasing cigarette consumption, or using compounds available at chemists, such as vitamins.

*Additional health service and social agency contacts.* At entry, 19% (112) were in contact with another helping agency: 4% (22) were seeing a counsellor, 1% (8) a CPN, 3% (15) a voluntary agency, 0.5% (3) were seeing a psychiatrist, and 3% (17) a psychologist.

## Outcome at four months

*Study 1.* A total of 65/76 (86%) patients in the intervention group and 74/82 (90%) in the control group completed follow-up.

*Study 2.* A total of 251/272 (92%) patients in the nurse-assisted care group completed follow-up, as did 134/148 (91%) in the control group.

There was no difference in depression scores between completers and non-completers in either study.

All four groups of patients showed improvement in mean scores at four months.

*Study 1.* BDI scores fell from a mean of 18.54 (± 9.09) to a mean of 11.53 (± 9.11). The proportion of patients meeting the criteria for DSM-III major depressive episodes fell from 80% to 30%.

*Study 2.* BDI scores fell from a mean of 21.00 (± 8.49) to a mean of 10.62 (± 8.90). The proportion with DSM-III criteria for a major depressive episode fell from 80% to 27%.

An intention-to-treat analysis based on DSM-III criteria confirmed the above results. Table 1 compares outcomes for intervention and control groups in the two studies. No significant dif-

**Table 1.** Changes in Beck Depression Inventory (BDI) score over four months, comparing intervention with control groups in Study 1.

|  | Number | | Entry | | Outcome | |
|---|---|---|---|---|---|---|
|  | Entered | Completed | DSM-III (%) | BDI mean | DSM-III (%) | BDI mean |
| Control | 82 | 74 | 78 | 18.47 | 24 | 11.53 |
| Intervention | 74 | 65 | 86 | 18.62 | 27 | 11.52 |

Analysis of score by MANOVA: significant effects. All groups show mean improvement ($P$ < 0.001).

**Table 2.** Changes in BDI score over four months comparing intervention with control groups in Study 2.

|  | Number | | Entry | | Outcome | |
|---|---|---|---|---|---|---|
|  | Entered | Completed | DSM-III (%) | BDI mean | DSM-III (%) | BDI mean |
| Control | 148 | 134 | 86 | 20.75 | 27 | 10.15 |
| Intervention | 271 | 251 | 80 | 21.14 | 31 | 10.87 |

Analysis of BDI score by MANOVA: significant effects. All groups show mean improvement ($P$ < 0.001).

ferences in the rate of improvement is shown between groups in either study.

Although there was no superior benefit from practice nurses' intervention in the 20 practices participating in Study 2 (Table 2), there was a wide range of BDI score reduction achieved by the nurses, ranging from 4.8 to 13.65 (test of heterogeneity, $P < 0.09$).

## Subgroup analyses

Secondary analyses were then carried out to see whether the nurse interventions helped specific groups of patients. No effect of intervention was shown when comparisons were made between men and women, older and younger patients, married and unmarried, those with and without social problems, those with and without physical illness, those with and without a history of depression and those who were in treatment at outset and those who were not.

## Antidepressant medication

*Study 1.* Antidepressant medication was prescribed proportionately more often in the intervention group (nurse feedback to GP) than in the control group (no feedback to GP): 58/76 (76%) vs 52/82 (63%); $\chi^2 = 3.10$; $P < 0.08$).

*Study 2.* There was no difference in antidepressant prescribing between the two groups: 198/271 (73%) for nurse-assisted care group vs 112/148 (76%) for control group ($\chi^2 = 0.34$; $P < 0.6$).

Combining data from both studies, antidepressant medication was found to be prescribed significantly more frequently for subjects in the three nurse-involved groups than for those in the control group of Study 1 who received assessment only (368/495 (74%) vs 52/82 (63%); $\chi^2 = 4.24$; $P < 0.04$).

## Contact with GPs in the four months

*Study 1.* No significant difference in mean number of visits to the GP occurred between nurse feedback and control groups: 3.63 visits (range 1–11) compared with 3.29 (range 1–10) respectively.

*Study 2.* For those seeing the GP alone, there was a mean of 3.92 visits (range 1–12) compared with 3.83 (range 1–12) for those receiving additional nurse-assisted care.

## Practice nurse interventions in Study 2

During the four-month follow-up, 802 visits were made to the practice nurses by 243 patients; 29 patients did not visit the nurse at all. The median number of visits was three (range 0–10). Nurse assessment interviews had a mean duration of 51 minutes for initial assessment (range 15–195 minutes) and a mean of 66 minutes for follow-up interviews (range 13–390 minutes). Of the 272 patients followed up by practice nurses, 73% were prescribed an antidepressant, of whom 90% complied with the dose prescribed by the GP. During the follow-up, 45% of patients were advised a change in dose, and 84% of these dose changes were initiated by the nurse after consulting with the GP. A total of 71% of patients reported side-effects to the nurse during follow-up. The nurse provided advice or educational materials on depression to 88% of the patients. Referrals were made for 38% of these patients: 33% of referrals to a voluntary agency, 22% to a counsellor, and 10% to a social worker. Psychiatry, psychology, and CPN services each received fewer than 10% of the referrals.

## GP and practice nurse attitudes to depression

Fifty-six GPs and 17 nurses completed the DAQ at the outset of the study; 42 GPs and 12 nurses completed questionnaires at the end. As questionnaires were anonymous, the initial responses of those who did not complete questionnaires at the end of the study could not be compared with those who did. At the outset, nurses had much less confidence than doctors that depression had a biochemical basis and that antidepressants were effective (questions 4 and 17). On the other hand, more GPs than nurses reported finding depressed patients heavy going (question 13). No other statistical differences in responses emerged between the groups. The mean estimate from GPs was that 16.7% of patients were depressed and for 31% of the depressed to be prescribed an antidepressant.

Some statistically significant shifts in attitude occurred during the study, particularly among nurses, who changed their minds to disagree with the following statements: depressive disorders in general practice improve without medication (question 3), it is difficult to differentiate depression from unhappiness (question 5), depressed patients are heavy going (question 13). They also showed a much stronger belief that depression is treatable (question 10). For GPs, the shifts in attitude were towards disagreement with the statements that most depressive disorders respond without medication (question 3), and that psychotherapy would be, if freely available, more beneficial than antidepressants (question 16). They also disagreed to a greater extent with a statement that most depression arises from patients' misfortunes (question 2).

## Discussion

We evaluated two interventions by practice nurses working alongside GPs in the treatment of depressed patients. The interventions involved standardized psychiatric assessment and feedback of information to GPs in Study 1, and the additional intervention of nurse-assisted follow-up care in Study 2. At four months, all groups of patients showed marked improvements in mean BDI scores and reductions in the percentage fulfilling DSM-III criteria for major depression. Although no added benefit was shown for the nurse intervention groups, these patient outcomes are very similar to those found in other general practice treatment trials for depression. Katon *et al*[8] found a 50% reduction in major depression at four months in a random allocation treatment trial of antidepressant medication. In a later treatment trial of more intensive intervention by both GPs and a visiting psychiatrist, 74% of patients with major depression showed substantial improvement at four months compared with 44% in the control group.[9] Similarly, the findings from the Edinburgh primary care depression study,[10] in which antidepressant medication, cognitive behaviour therapy, and counselling were compared with routine GP care, indicated marked improvement in all groups at four months with only small clinical advantages from specialist interventions.

## General practitioners

The GPs were similar in demographic details, estimations of prevalence of depression among patients, and estimated frequency of antidepressant prescription to those in the study by Botega *et al*.[6] However, present participants claimed to be more comfortable in dealing with depressed patients and felt that a nurse could be helpful. During the study, antidepressant medication was prescribed more often by GPs after they had discussed the assessment with the nurse. The mechanism for the increase in the rate of prescription remains unclear, but may reflect raised awareness of the severity of depression through this discussion. However, nurse-assisted care did not save time for the GP; there were no significant intergroup differences in the number of patient visits to GPs during the follow-up months. There was some evidence of a change to a positive attitude during the peri-

od of the study for both nurses and doctors. Belief in the treatability of depression and the benefits of antidepressant medication increased in both groups, although there was no statistically significant shift in GPs' estimates of the prevalence of depression or of antidepressive prescribing.

## Methodological limitations

Given that the nurses were trained to carry out follow-up that would normally constitute good care for depression, it is worth examining why, in this study, the nurse interventions failed to produce more beneficial outcomes. First, the high rate of prescription of antidepressant medication was not predicted. Approximately 70% of those identified as depressed received a prescription; a rate higher than the GPs themselves estimated as their usual practice and higher than that usually recorded in primary care for depressed patients, and the control groups benefited from antidepressant medication as much as the intervention groups. In retrospect, a better design would have been to randomize practices to nurse intervention or control, thereby eliminating any treatment effects carrying over to the control groups through a change in the practice culture. This would have required a much larger sample of practices. Secondly, the rural location of many of the practices in the study meant that the nurses had limited access to local community support agencies and made few such referrals. Thirdly, there was variability between nurses in the outcome for patients in the nurse-assisted care groups; we are reporting a mean of the changes between 20 nurses.

## Conclusion

In one of the largest evaluations of the treatment of depression in general practice, we found that training practice nurses to work alongside GPs in assessing patients and providing follow-up care was associated with excellent outcomes for both intervention and control groups.

Although with this study design no benefit was shown from the addition of nurse follow-up, we still suggest that brief training for practice nurses produces a shift in attitudes and management that is beneficial for the outcome of depression.

## Appendix 1

*Inter-rater reliability of the Nurse Assessment Interview (NAI)*

This was assessed on visits to the surgeries by a psychiatrist so that the results of 20 nurse interviews could be compared at the time with those of the psychiatrist. For the principal variables of the NAI (those used for DSM-III classification and the summary variables), a kappa statistic was calculated. There was agreement for all variables; kappa coefficients ranged between 0.61 and 1.00 with a mean of 0.86 (SD = 0.12). Kappa for the diagnosis of DSM-III depression was 0.76. During the study, the 20 nurses were also asked to co-rate two video-recordings of a psychiatrist conducting the NAI. Here again, good agreement was observed between the 20 nurses. The percentage agreement for items of the NAI between the 20 nurses and the psychiatrist's ratings lay between 85% and 100%, with a mean of 97% (SD = 4.8).

## Appendix 2

*Manual of nurse assisted follow-up care*

A manual was assembled for nurse-assisted care in Study 2. This made clear that, during the follow-up period, the nurse acted as an adjunct to the GP, and she was instructed to refer back to the

GP any information that might enable the GP to make changes in management. Throughout, she was instructed to explain to the patient that her role was to monitor progress, not to counsel or to replace the doctor's treatment.

In the manual, the NAI was followed by sections that covered the following areas:
● Strategies to improve compliance. The nurse was advised to explain the rationale of treatment by medication, to help manage side-effects, and to discuss dose changes with the GP.
● Education of patients. Royal College of Psychiatrists' and Mental Health Foundation leaflets on depression were included in the manual for nurses to explore and explain depression and, if necessary, provide to patients.
● Initiation of social interventions. Each nurse was asked at the outset to search out and make contact with local support agencies that might help depressed patients, e.g. CRUSE, RELATE, Alcoholics Anonymous. Nurses were also asked to make contact with the local specialist psychiatric services for information and to clarify referral procedures.

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