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Long term outcomes from the IMPACT randomised trial for depressed elderly patients in primary care

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Abstract

Objective To determine the long term effectiveness of collaborative care management for depression in late life.
Design Two arm, randomised, clinical trial; intervention one year and follow-up two years.
Setting 18 primary care clinics in eight US healthcare organisations.
Patients 1801 primary care patients aged 60 and older with major depression, dysthymia, or both.
Intervention Patients were randomly assigned to a 12 month collaborative care intervention (IMPACT) or usual care for depression. Teams including a depression care manager, primary care doctor, and psychiatrist offered education, behavioural activation, antidepressants, a brief, behaviour based psychotherapy (problem solving treatment), and relapse prevention geared to each patient's needs and preferences.
Main outcome measures Interviewers, blinded to treatment assignment, conducted interviews in person at baseline and by telephone at each subsequent follow up. They measured depression (SCL-20), overall functional impairment and quality of life (SF-12), physical functioning (PCS-12), depression treatment, and satisfaction with care.
Results IMPACT patients fared significantly ($P < 0.05$) better than controls regarding continuation of antidepressant treatment, depressive symptoms, remission of depression, physical functioning, quality of life, self efficacy, and satisfaction with care at 18 and 24 months. One year after IMPACT resources were withdrawn, a significant difference in SCL-20 scores (0.23, $P < 0.0001$) favouring IMPACT patients remained.
Conclusions Tailored collaborative care actively engages older adults in treatment for depression and delivers substantial and persistent long term benefits. Benefits include less depression, better physical functioning, and an enhanced quality of life. The IMPACT model may show the way to less depression and healthier lives for older adults.

Introduction

Among the one in 10 older primary care patients with depression,[1][2] only a small fraction receives adequate treatment in primary care[3][4] or sees a mental health specialist.[2][5][6] Although treatment of depression in primary care has improved,[7–13] few improvements deal with the specific needs of elderly patients.

In 2002, one year findings were published from the "Improving Mood Promoting Access to Collaborative Care Treatment" programme (IMPACT), an intervention designed specifically to tackle unmet needs of elderly depressed patients.[3] Patients randomised to collaborative care received more antidepressants and counselling, experienced less depression, functioned better, had better lives, and were more satisfied with their care than patients receiving usual care. Bruce et al also reported less depression in older patients receiving collaborative care.[14] However, since depression is chronic and recurrent, and many patients experience residual symptoms and relapse, understanding the long term effects of collaborative care is important.

We report the long term (18 month and 24 month) results of the IMPACT trial. Our hypothesis was that, even a year after the intervention ended, intervention patients would experience more enduring health benefits than controls.

Methods

The IMPACT trial was conducted at 18 diverse primary care clinics across the United States. The 1801 study participants were self referred or referred by their doctor, or identified by systematic depression screening.[3][15] Patients were aged 60 or older and met criteria for major depression or dysthymia, or both, according to the structured clinical interview for DSM-IV axis I disorders (SCID).[16] We excluded patients with current drinking problems, bipolar disorder or psychosis, severe cognitive impairment, acute risk of suicide, or ongoing psychiatric treatment.[3][15] After a structured baseline interview, patients were randomised to IMPACT collaborative care or usual care.

Intervention

Acute depression care
IMPACT care[3][15] was delivered by a team: a depression care manager (usually a primary care nurse), the patient's primary care doctor, a consulting psychiatrist, and a liaison primary care doctor. For 12 months, IMPACT patients received proactive depression treatment in primary care.

Treatment options included pharmacotherapy, behavioural activation, and problem solving treatment (a brief, behaviour based psychotherapy). Treatment was adjusted according to a stepped care protocol[3][15] during weekly reviews by the depression care manager and psychiatrist. Consulting psychiatrists saw about 10% of patients, typically treatment non-responders. During the intervention year, 73% (618) of IMPACT patients used antidepressants, 70% (589) used psychotherapy or specialty mental health care, and 90% (753) received either antidepressants or psychotherapy.

Relapse prevention
Patients whose depression improved (a decrease of 50% or more in the severity of depression and fewer than two DSM-IV depres-

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sion symptoms) during the intervention period created a relapse prevention plan with their depression care manager. It stressed continuing care, observing early warning signs (such as changes in sleep or appetite or isolation) and coping strategies such as discussing problems with others, taking medications as prescribed, reducing stress, scheduling positive activities, and contacting their depression care manager or primary care doctor if symptoms re-emerged. The depression care manager and patient then had monthly telephone appointments during the remainder of the 12 month intervention and a final meeting in the 12th month to review the relapse prevention plan. This plan focused on maintaining gains made during the intervention and was shared with the patient's primary care doctor.

Usual care

Usual care patients received notification, along with their primary care doctor, that they met study criteria for depression. They could use all treatments available in usual care (antidepressants, counselling by the doctor, and referral to specialty mental health care). During the initial year, 57% (470) of these patients used antidepressants, 25% (211) reported using psychotherapy or specialty mental health care, and 62% (517) reported using either antidepressants or psychotherapy.

Data collection and outcome measures

Interviewers, blinded to treatment assignment, conducted interviews in person at baseline and by telephone at follow-up. Outcome variables included self-reported use of antidepressants and psychotherapy, satisfaction with care, SCL-20 depression scores, treatment response ($\geq 50\%$ decrease from baseline SCL-20 score), remission (SCL-20 score < 0.5), quality of life, overall functional impairment, and physical functioning (physical component score, PCS-12) from the short form 12 (SF-12) health related quality of life measure.[3] [15]

Statistical analyses

We used all randomised subjects who were alive and interviewed at 12, 18, or 24 months to compute intention to treat analyses of unadjusted group differences, with t test or χ^2 statistics and 95% confidence intervals. When outcomes are proportions, differences are reported as odds ratios. The clinical effect of IMPACT can be expressed in terms of the number needed to treat (NNT). It indicates how many patients have to be offered IMPACT to achieve a treatment response (50% reduction from baseline in depression on SCL-20) in one more patient than in usual care. For comparison, we report differences between the IMPACT and usual care groups at baseline and at the end of the intervention, as well as six and 12 months after the end of the intervention. Sensitivity analyses that imputed missing data and controlled for covariates (not reported here) produced similar results.[17–20]

Results

Population

The sample (n = 1801) at baseline[3] was 65% female (1168 participants), with an average age of 71.2 (SD = 7.5). About 23% (415) were African American, Hispanic, or from other non-white ethnic backgrounds; 79% (1425) had at least a high school diploma. Seventy per cent (1259) had major depression, 53% (953) major depression with dysthymia, and 30% (542) dysthymia alone. Thirty five per cent (683) had mild cognitive impairment on the basis of a six item screening test[21] derived from the mini-mental state examination. The mean SCL-20 depression score was 1.7 (SD = 0.6), indicating moderate to severe depression. On average, patients had 3.2 (SD = 1.7) of 11

Table 1 Depression care by study group at baseline, 12 months, 18 months, and 24 months (6 and 12 months after the end of the intervention). Values are numbers (percentages) of patients unless otherwise indicated

Depression care	Usual care (n=895*)	Intervention (n=906*)	Difference in percentage points between groups (95% CI)	P value
Any antidepressant medication				
Baseline	379 (42.49†)	391 (43.20)	0.72 (−3.86 to 5.29)	0.7592
12 month follow-up	347 (47.6)	506 (66.06)	18.46 (13.52 to 23.40)	<0.0001
18 month follow-up	310 (45.12)	434 (59.86)	14.74 (9.58 to 19.89)	<0.0001
24 month follow-up	279 (41.15)	386 (55.06)	13.91 (8.69 to 19.14)	<0.0001
Any specialty mental health visits or psychotherapy				
Baseline	68 (7.63)	82 (9.07)	1.44 (−1.12 to 4.00)	0.2707
12 month follow-up	112 (15.41)	333 (43.59)	28.18 (23.79 to 32.57)	<0.0001
18 month follow-up	100 (14.39)	105 (14.46)	0.07 (−3.58 to 3.73)	0.9682
24 month follow-up	91 (13.34)	99 (14.06)	0.72 (−2.90 to 4.34)	0.6971
Any depression treatment (antidepressant medication or psychotherapy)				
Baseline	405 (45.40)	422 (46.63)	1.23 (−3.38 to 5.83)	0.602
12 month follow-up	383 (52.61)	599 (78.30)	25.69 (21.03 to 30.35)	<0.0001
18 month follow-up	335 (48.62)	462 (63.81)	15.19 (10.07 to 20.31)	<0.0001
24 month follow-up	309 (45.51)	415 (59.29)	13.78 (8.55 to 19.00)	<0.0001

*Total numbers of patients randomised to each study group at enrolment. Numbers of respondents at each follow-up varied and were less that 895 for the group receiving usual care and less than 906 for the intervention group because of missing data. Numbers of respondents for any one item ranged from a total (usual care and intervention patients combined) 1379 to 1797 because of missing data.
†Percentage of patients who answered the item at baseline.

chronic medical illnesses. During the previous three months, 43% (769) of the sample took antidepressants and 8% (151) received specialty mental health care or psychotherapy. At baseline the groups did not differ significantly on any of these variables.

Depression care

Table 1 shows depression care at baseline, 12, 18, and 24 months. A significantly higher proportion of IMPACT patients reported taking antidepressants at each follow-up (a difference in the percentages of 18 percentage points at 12 months,[3] 15 at 18 months, and 14 at 24 months, all P < 0.0001). Differences in use of counselling or specialty mental health care observed during the intervention[3] disappeared after the first year. Thus, significantly higher rates of depression treatment at 18 and 24 months were accounted for entirely by pharmacotherapy.

Depression and other outcomes

At all three follow-up times, IMPACT patients fared significantly better than controls on every outcome, except overall functional impairment at 24 months (table 2). The greatest differences were at 12 months. IMPACT patients also reported significantly greater confidence in managing their depression (self efficacy) at 24 months (P < 0.0001). IMPACT patients had significantly lower SCL-20 depression scores at each follow up. Even a year after the intervention ended, a significant difference in SCL-20 scores remained (0.23, $t = 6.42$, P < 0.0001). The NNT is 4 at 12 months, 6 at 18 months, and 9 at 24 months.

We found no significant interactions of intervention status with participating healthcare organisation, recruitment method,

Table 2 Depression outcomes by study group at baseline, 18 months, and 24 months. Values are means with standard deviations for the first six outcomes and numbers with percentages for the last three outcomes

Depression outcomes	Usual care (n=895*)	Intervention (n=906*)	Difference in percentages between groups (95% CI)	P value
SCL-20 depression score (range 0-4):				
Baseline	1.67 (0.61)	1.68 (0.61)	0.01 (-0.05 to 0.07)	0.7368
12 month follow-up	1.39 (0.68)	0.97 (0.67(	−0.42 (−0.49 to −0.35)	<0.0001
18 month follow-up	1.37 (0.68)	1.08 (0.64)	−0.29 (−0.35 to −0.22)	<0.0001
24 month follow-up	1.34 (0.68)	1.11 (0.63)	−0.23 (−0.30 to −0.16)	<0.0001
Overall functional impairment (range 0-10):				
Baseline	4.59 (2.56)	4.68 (2.65)	0.09 (−0.15 to 0.33)	0.4690
12 month follow-up	4.51 (2.74)	3.49 (2.78)	−1.03 (−1.31 to −0.74)	<0.0001
18 month follow-up	3.93 (2.52)	3.46 (2.65)	−0.47 (−0.74 to −0.19)	0.0009
24 month follow-up	3.80 (2.66)	3.69 (2.86)	−0.11 (−0.41 to 0.19)	0.4632
Overall quality of life (range 0-10):				
Baseline	5.33 (1.94)	5.35 (2.01)	0.02 (-0.16 to 0.20)	0.8302
12 month follow-up	6.02 (2.14)	6.62 (2.16)	0.60 (0.38 to 0.82)	<0.0001
18 month follow-up	5.94 (2.13)	6.29 (2.11)	0.36 (0.14 to 0.58)	0.0015
24 month follow-up	6.08 (2.22)	6.34 (2.21)	0.26 (0.03 to 0.49)	0.0296
General health (range 1-5; 5 is worst):				
Baseline	3.33 (1.09)	3.29 (1.06)	−0.05 (−0.15 to 0.05)	0.3694
12 month follow-up	3.47 (0.99)	3.15 (1.00)	−0.32 (−0.42 to −0.22)	<0.0001
18 month follow-up	3.45 (0.96)	3.26 (1.00)	−0.19 (−0.29 to −0.09)	0.0002
24 month follow-up	3.40 (0.99)	3.23 (0.99)	−0.17 (−0.27 to −0.06)	0.0015
PCS-12 (range 0-100):				
Baseline	40.36 (6.33)	40.18 (6.44)	-0.18 (−0.78 to 0.43)	0.5648
12 month follow-up	39.26 (7.21)	40.98 (7.33)	1.72 (0.96 to 2.47)	<0.0001
18 month follow-up	39.61 (7.42)	40.74 (7.44)	1.14 (0.34 to 1.93)	0.0050
24 month follow-up	39.51 (7.64)	40.34 (7.56)	0.83 (0.01 to 1.64)	0.0481
Confidence in managing depression (range 0-10)†:				
12 month follow-up	6.17 (2.14)	6.94 (2.20)	0.77 (0.55 to 0.99)	<0.0001
24 month follow-up	6.28 (2.17)	6.67 (2.20)	0.39 (0.16 to 0.62)	0.001
Response (at least 50% drop in SCL-20 depression score from baseline):				
12 month follow-up	134 (18.41)	348 (45.25)	26.85 (22.34 to 31.35)	<0.0001
18 month follow-up	146 (21.01)	277 (38.00)	16.99 (12.34 to 21.64)	<0.0001
24 month follow-up	157 (22.99)	239 (33.85)	10.87 (6.16 to 15.57)	<0.0001
Remission (SCL-20 depression score <0.5):				
Baseline	20 (2.24)	15 (1.66)	−0.58 (−1.86 to 0.69)	0.3699
12 month follow-up	62 (8.49)	200 (25.97)	17.48 (13.78 to 21.18)	<0.0001
18 month follow-up	64 (9.18)	135 (18.49)	9.31 (5.77 to 12.85)	<0.0001

Depression outcomes	Usual care (n=895*)	Intervention (n=906*)	Difference in percentages between groups (95% CI)	P value
24 month follow-up	70 (10.22)	112 (15.86)	5.65 (2.12 to 9.17)	0.0018
Satisfaction with depression care (excellent, very good)‡:				
Baseline	137 (49.10)	161 (52.79)	3.68 (−4.43 to 11.79)	0.3738
12 month follow-up	231 (48.23)	518 (76.18)	27.95 (22.45 to 33.45)	<0.0001
18 month follow-up	234 (51.09)	326 (65.20)	14.11 (7.91 to 20.30)	<0.0001
24 month follow-up	211 (49.30)	287 (62.26)	12.96 (6.48 to 19.44)	0.0001

*Total numbers of patients randomised to each study group at enrolment. Numbers of respondents at each follow-up varied and were less than 895 for the group receiving usual care and less than 906 for the intervention group because of missing data. Numbers of respondents for any one item ranged from a total (usual care and intervention patients combined) of 1379 to 1797 because of missing data.
†Assessed only at 3, 12, and 24 months.
‡Assessed only in individuals who reported depression care in past three months at baseline (n=584) and individuals who reported depression care in past six months at follow-up (at 18 months: n=958; at 24 months: n=889).

age, sex, baseline cognitive impairment, depression severity, or several comorbid medical illnesses.

Discussion

IMPACT collaborative care delivered long term improvements in antidepressant use, patient satisfaction, and clinical outcomes. For two years, IMPACT patients were less depressed, functioned better physically, enjoyed a better quality of life, and were more satisfied with their depression care. This was true for both sexes, all age groups, ethnicities, degrees of depression, and physical comorbidities. Although the benefits of IMPACT attenuated at 18 and 24 months, significant health benefits endured even one year after IMPACT resources were withdrawn.

Possible mechanisms of action

IMPACT actively engaged an often reluctant[22] population in effective depression treatments. Patients appreciated receiving medical and psychological care in primary care. They benefited from an ongoing, therapeutic relationship with a depression care manager, who followed a stepped care treatment protocol driven by clinical outcomes. Perhaps because of IMPACT's emphasis on relapse prevention, even 12 months after the intervention ended, IMPACT patients reported higher rates of antidepressant use, greater self efficacy in managing their depression, and better depression outcomes than controls. IMPACT's NNT of 4 at 12 months shows a strong clinical effect. The later numbers needed to treat—6 at 18 months, and 9 at 24 months—although higher, show that the clinical effect was substantial and sustained.

Other studies

Two studies showed that IMPACT's success may hinge on its seamless integration into primary care and, perhaps more importantly, the patient's relationship with the depression care manager. The PRISMe study[22] showed that older patients are more likely to engage in depression treatment when it is offered in primary care. The nurse telehealth study[8] showed the importance of a therapeutic relationship with a skilled and empathetic care manager in primary care. Two trials in mixed aged populations[11 12 23] show that collaborative care can reduce depression over the long term, two to five years. IMPACT extends these findings to elderly populations. IMPACT also improved physical functioning and quality of life.

Research

What is already known on this topic

People over age 60 often receive inadequate treatment for depression in primary care

Organised, multifaceted, and tailored depression treatment programmes are promising. IMPACT produced favourable results during the one year intervention

It is not known if these promising results endure

What this study adds

Tailored collaborative care actively engages people over age 60 in depression treatment and delivers important benefits that persist at least one year after the completion of the intervention programme

IMPACT may show the way to less depression and healthier lives for millions

Limitations

Study limitations include self report of antidepressant, psychotherapy, or specialty mental health use and the possibility that IMPACT improved treatment of usual care participants. The latter is because the same primary care doctors treated patients in the intervention and usual care, both groups were repeatedly surveyed about depression and depression care, and patients found at high risk for suicide received additional clinical attention regardless of group assignment.[3] Finally, our study design makes it impossible to determine which intervention components led to enduring health benefits.

In the US, the President's *New Freedom Commission on Mental Health* designated IMPACT to be a model programme.[24] Researchers are currently disseminating IMPACT in diverse health care organizations with support from the John A Hartford Foundation.

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