

Health service use by adults with depression: community survey in five European countries

Evidence from the ODIN study

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Background Little is known about patterns of healthcare use by people with depression in Europe.

Aims To examine the use and cost of services by adults with depressive or adjustment disorders in five European countries, and predictive factors.

Method People aged 18–65 years with depressive or adjustment disorders ($n=427$) in Ireland, Finland, Norway, Spain and the UK provided information on predisposition (demographics, social support), enablement (country, urban/rural, social function) and need (symptom severity, perceived health status) for services. Outcome measures were self-reported use Client Services Receipt Interview and costs of general practice, generic, psychiatric or social services in the past 6 months.

Results Less frequent use was made of generic services in Norway and psychiatric services in the UK. Severity of depression, perceived health status, social functioning and level of social support were significant predictors of use; the number of people able to provide support was positively associated with greater health service use.

Conclusions Individual participant factors provided greater explanatory power than national differences in healthcare delivery. The association between social support and service use suggests that interventions may be needed for those who lack social support.

Declaration of interest None.

Depression is a common problem among working-age adults in Europe (Ayuso-Mateos *et al*, 2001). Although pharmacological and psychological treatments are available, many people who fulfil diagnostic criteria for depression do not access health services (Chisholm *et al*, 2003). Those who do, but are not diagnosed as having a depressive illness, may incur greater healthcare costs than those who are diagnosed and treated for depression (Katon *et al*, 1995; Lave *et al*, 1998; Carta *et al*, 2003). It is therefore important to identify reasons why people with depression do or do not make use of the health services that are available to them.

Health service use, according to the Anderson behavioural model (Anderson & Bartkus, 1973), is a function of three sets of variables: predisposing, enabling and need. Predisposition includes demographic factors such as gender, age and occupational status, social factors such as networks, support and household composition and cultural factors such as education, attitude and beliefs. Enabling factors include individual social functioning, the availability of services and their costs relative to available income. The third variable, need, is the most complex: it may involve individual, professional and societal perceptions, and include the capacity to benefit (Stevens & Gillam, 1998). For the purposes of this study, need is defined following Dunlop *et al* (2000) as the combination of perceived health status, number of health-related problems and available support.

One of the aims of the Outcomes of Depression International Network (ODIN; Dowrick *et al*, 1998) was to examine patterns and predictors of health service use across western Europe. The network is unique in its ability to deploy a common methodology to examine how a range of individual, social and economic factors may impinge on patterns of health service use in nine urban and rural communities across Europe.

METHOD

The methods we employed in the ODIN study have been described elsewhere (Dowrick *et al*, 1998). We began with a two-phase survey to identify people in the community meeting diagnostic criteria for depression (Ayuso-Mateos *et al*, 2001), with participants randomly selected from sampling frames based on either community or health services. The first phase included the Beck Depression Inventory (BDI; Beck *et al*, 1961) to assess depressive symptoms (higher scores indicate increased symptoms), the 36-Item Short Form General Health Survey (SF-36; Stewart *et al*, 1988) to assess disability and general functioning (higher scores indicate less disability and higher levels of functioning), and the Oslo Social Support Scale (Nosikov & Gudex, 2003) to assess the presence and extent of informal social support.

We invited all respondents who scored 13 or above on the BDI, and 5% of those who did not, to take part in a second-phase interview. Among other measures this interview included the Schedule for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1994) for psychiatric diagnosis. Respondents diagnosed with depressive or adjustment disorders according to ICD-10 (World Health Organization, 1992) or DSM-IV (American Psychiatric Association, 1994) were invited to participate in the third phase of the study. This included a randomised controlled trial of two psychological interventions (Dowrick *et al*, 2000) and two further interviews 6 months and 12 months after the baseline assessment.

Client Service Receipt Inventory

The second-phase interview also deployed the Client Service Receipt Inventory (CSRI; Knapp & Beecham, 1993). This gathers information from participants about accommodation and income, use of hospital in-patient services, other hospital services, community services, medication and informal care, with reference to the 6 months preceding the interview. We used the data from the CSRI in three ways. First, we grouped the number of contacts under four headings:

- (a) Primary healthcare: general practitioner and community nurse;
- (b) Generic healthcare (i.e. specialist, non-psychiatric): physiotherapy, chiropody,

in-patient and out-patient accident and emergency services and day hospital;

- (c) Psychiatric care: community mental health team, community psychiatric nurse, psychiatrist, psychologist, in-patient and out-patient care, accident and emergency services and day hospital;
- (d) Social care: social services and voluntary day centres, drop-in, social worker, home-help or care worker, befriender, advice and counselling.

Use of psychotropic medication, including antidepressants, was examined separately.

Second, we combined all the CSRI data into a three-level ordinal hierarchy:

- (a) no service use;
- (b) primary care only, with or without antidepressant use;
- (c) all other services, with or without primary care.

Third, we ascribed standardised costs to service and medication use. Service costs were based on the Unit Costs of Health and Social Care (Netten & Curtis, 2000). Drug costs were derived from the *British National Formulary* (British Medical Association & Royal Pharmaceutical Society of Great Britain, 2000). Service and medication use was therefore costed in sterling irrespective of the country from which the data were collected. This has the advantage of facilitating cost comparisons between countries but does not allow discussion on the affordability of services, either privately by the individual or publicly by the state, as this was not one of the aims of the study. The costings used were current at the time the data were collected, in line with standard practice in health economics studies.

Analysis

Extent of service use could not be modelled as there were high percentages of no service use. Instead, logistic regression was used to examine the dichotomy of service use or not both overall and for the four groups of services mentioned above (primary care, generic, psychiatric and social). Ordinal logistic regression was used to model the dependent variable, hierarchy of use. Multiple linear regression was used to model cost of service use and of psychotropic drug use.

The same independent variables were used in each analysis in line with the Anderson model. Participants' predisposition to use services was measured by age, gender,

marital status and number of people able to provide support. Enabling factors were urban/rural environment, country and centre, which were taken as proxies for health-care supply. Level of need was taken as scores from the SF-36 domains for social functioning, general health, physical functioning, pain, mental health and energy/vitality, number of life events, and a variable that combined life events and perceived level of help with those events and baseline BDI scores. Our decision to use standardised rather than site-specific costs (Chisholm *et al*, 2003) enhanced the analytical power of the study, allowing analysis to be pooled. All analyses were conducted using Stata statistical software release 8.0.

RESULTS

Sample description

In the first phase of the survey we contacted 14 387 people, and had an overall effective response rate of 65%. A second-phase interview was offered to 1767 people, of whom 1135 (64%) accepted. Non-responders at each stage were more likely to be male, young, socio-economically disadvantaged and from rural Ireland (Ayuso-Mateos *et al*, 2001). We identified 427 people with a diagnosis of ICD-10 or DSM-IV depressive or adjustment disorders, and defined them as study participants. Table 1 shows the national distribution of key characteristics for these people. There was no significant national difference according to gender, marital status or age. Significant national

differences existed in mean BDI score, with Finland and Norway having a mean score 4.6 points lower than Ireland and the UK (95% CI 2.6–6.6).

Service use

Overall contact and psychotropic medication

Three hundred and fifty (82%) study participants reported contact with one or more health or social care services in the preceding 6 months, and 162 (38%) reported using prescribed psychotropic medication during the same period. Ireland and UK had the highest levels of contact, and Norway and Spain the lowest (Table 2). Ireland had the lowest level of psychotropic medication and Spain the highest. These differences were significant at the 5% level using chi-squared testing.

Table 3 shows the number of days or visits for each service, by country, and Table 4 shows the extent of service use relative to the UK calculated from the mean number of days or visits per person with depression. There was no national difference in mean use of generic or psychiatric services when tested. National differences were observed in social care, with participants from Finland and Spain using significantly fewer services than those from the UK, and in primary care, with participants from Finland and Norway again using significantly fewer services than those from the UK. However, when the dichotomy 'service use or not' was modelled using logistic regression, country was no longer an important factor. Higher SF-36 social

Table 1 Sample characteristics

	Ireland (n=38)	Finland (n=97)	Norway (n=128)	Spain (n=30)	UK (n=134)	Total (n=427)
Female, %	63	74	61	77	60	65
Married, %	54	69	62	57	51	59
Rural dwelling, %	40	52	48	0	37	41
Age, years: mean	45	45	44	48	45	45
BDI score: mean	25	21	21	22	25	23

Table 2 Overall use of services and psychotropic medication

	Ireland (n=38)	Finland (n=97)	Norway (n=128)	Spain (n=30)	UK (n=134)	All (n=427)
Service use, %	90	84	72	74	90	82
Psychotropic use, %	24	30	31	57	50	38

Table 3 Service use categorised by country

	Ireland	Finland	Norway	Spain	UK
Primary care					
Days or visits per service					
GP	85	138	288	89	473
Community nurse	40	89	3		37
Total	125	227	291	89	510
Per person (mean)	3.3	2.3	2.3	3	3.8
Generic care					
Days or visits per service					
Occupational therapist					
Physiotherapist	3	107	218		77
Chiroprapist	10		14		36
In-patient	31	64	98	47	113
Out-patient	36	45	19	45	141
A&E	7	4	2	21	24
Day hospital	2		1		18
Total	89	220	352	113	409
Per person (mean)	2.3	2.3	2.8	3.8	3.1
Psychiatric care					
Days or visits per service					
Community mental health team					33
Community psychiatric nurse	5	34	26		18
Psychiatrist	16	40	49	3	18
Psychologist	10	100	116		36
In-patient	114	21	21		51
Out-patient	22	16	38	12	9
A&E	1	1	2	1	1
Day hospital	20		42		
Total	188	212	294	16	166
Per person (mean)	5	2.2	2.3	0.5	1.2
Social care					
Days or visits per service					
Social service day centre			28		
Voluntary day centre					1
Drop-in centre	24				
Social worker		8		1	19
Volunteer or befriender		1			
Home help or care worker		11	53		36
Advice or counsellor	25		3		216
Total	49	20	84	1	272
Per person (mean)	1.3	0.2	0.7	0.03	2
Not costed					
Optician	9	8	11	2	29
Adult education		6			39
Employment	21	43	10		
Other	35	69	134	13	2
Total	65	126	155	15	70

GP, general practitioner; A&E, accident and emergency.

nor a community nurse in the 6 months prior to interview; 269 (63%) consulted either or both 1–8 times; the remaining 26 (6%) consulted either or both 9–31 times. Higher SF-36 general health scores were associated with reduced use of primary care (OR=0.98 per unit increase, 95% CI 0.97–0.99). Greater use of primary care was associated with a higher number of life events in the previous 6 months (OR=1.37, 95% CI 1.01–1.86 for each additional event), with the increase in the likelihood of using the services rising to 2.6 times for three events, 6.6 times for six events and 17 times for nine events. Being married rather than single was also associated with a greater use of primary care services (OR=2.16 95% CI 1.03–4.53).

Generic health services

Almost two-thirds (64%) of the study participants ($n=273$) did not use generic health services in the 6 months preceding their interview; 98 (23%) used one or more of these services 1–4 times, and the remainder used them 5–81 times. The main factors implicated in not using generic services were increased social function scores (OR=0.99 per unit increase), living in Norway (OR=0.27, 95% CI 0.08–0.88) and an increase in BDI score (OR=0.96 per unit increase). The only factor implicated in increased use of generic services was informal social support: the greater the number of people who could be counted on to offer support, the greater the likelihood of using generic services (OR=1.4, 95% CI 1.1–1.8).

Psychiatric services

Over four-fifths (82%) of participants ($n=350$) did not use any psychiatric service in the 6 months preceding their interview; 51 (12%) used one or more of these services 1–8 times and the remainder used them 9–92 times. Participants who lived in the UK were less likely to use psychiatric services than those who lived in Ireland (OR=0.15, 95% CI 0.02–1.0). Increased SF-36 social functioning scores (OR=0.98) and increased general health scores (OR=0.98) were also associated with reduced likelihood of using psychiatric services. Participants were more likely to use psychiatric services if they had higher SF-36 mental health scores (OR=1.03) and if they had higher BDI scores (OR=1.05 for each additional point, 95%

function and general health scores were associated with lower service use (OR=0.98 per unit increase, 95% CI 0.96–0.99).

Primary care

A total of 132 (31%) study participants consulted neither a general practitioner

Table 4 Extent of service use per depressed person by country relative to UK

Service	Ireland	Finland	Norway	Spain	UK
Primary	0.9	0.6	0.6	0.8	1.0
Generic	0.7	0.7	0.9	1.2	1.0
Psychiatric	4.2	1.8	1.9	0.4	1.0
Social	0.7	0.1	0.4	0.02	1.0

CI 1.01–1.10) with a risk increased to 1.6 for an increase of 10 points.

Social care

Most participants (92%; $n=392$) did not use social services in the 6 months preceding their interview; the remainder used these services 1–48 times. Increased SF-36 general health scores were associated with less likelihood (OR=0.98 per unit increase) of using social care services.

Psychotropic drug use

Two hundred and sixty-five (62%) study participants reported no use of psychotropic drugs in the 6 months prior to their interview. Factors implicated in the use of drugs were increased age (OR=1.04 per year, 95% CI 1.02–1.07), with a 10-year increase in age increasing the likelihood of drug use to 1.62, and increase in BDI score (OR=1.05 per point), with a 5-point higher BDI score increasing the risk to 1.2. Being female was associated with an increase in drug use (OR=2.04, 95% CI 1.18–3.54). In addition falling in the category of having life events and lots of help with those events increased the likelihood of receiving psychotropic medication by nearly three times (OR=2.9, 95% CI 1.2–7.2). Factors associated with reduced likelihood of using psychotropic medication were SF-36 social function and general health perception scores (OR=0.98 per unit increase).

Ordinal hierarchy of use

In the 6 months prior to interview, 77 (18%) study participants had no contact with any service (lowest level of use), 132 (31%) contacted only their general practitioner or community nurse (mid level), and the remaining 218 (51%) contacted one or more of the other services (highest level of use). Lower levels of service use were more likely with higher social function scores, higher general health scores and living in Norway. Higher levels of

service use were more likely with an increase in the number of people offering informal social support.

Cost of service use

Total cost

Table 5 shows the total cost of service use by country in UK pounds sterling, including the mean cost per person, and Table 6 shows total cost for each centre relative to the UK. Costs were substantially higher in Ireland than in the other four countries, this difference being mainly accounted for by the higher number of in-patient days reported by Irish study participants. Each unit increase in SF-36 general health score was implicated in a cost reduction of £9.34 (95% CI 1.67–17.00) as was each unit increase in social function score (cost reduction £9.38, 95% CI 3.20–15.56). Living in the UK was also implicated in a total cost reduction of £890.75 (95% CI 22.88–1758.61). Each unit increase in mental health score was implicated in a cost increase of £18.90 (95% CI 7.87–29.94). Again, being in the category of having both life events and lots of help was implicated in greater cost: an additional £692.99 (95% CI 164.11–1221.87).

Psychotropic drug cost

When drug use was examined separately the only two factors implicated in costs were BDI score and marital status. With each unit increase in BDI score, mean drug cost increased by £2.02 (95% CI 0.78–3.26). Being widowed was implicated in an increase of drug costs of £58.53 (95% CI 8.32–108.74).

DISCUSSION

National patterns

Variations in patterns of service use were apparent across the five different national centres involved in this study. Participants from Norway and Spain were least likely to have used any service in the previous 6

months, whereas those from Ireland and the UK were most likely to have done so. Participants from Ireland were more likely to have received direct psychiatric care, and less likely to report taking psychotropic medication, than those from other countries. Participants from the UK were more likely to have been in contact with primary care, and reported greater use of social care, particularly counselling. Those from Spain were most likely to have been in contact with generic care services, and also most likely to report using psychotropic medication.

The ODIN study cannot be taken as a direct indication of national patterns in the use of health services by people diagnosed with depressive adjustment disorders: the urban and rural communities surveyed were not representative of their national populations and there were systematic demographic biases in response rates. Those who did not respond were younger, male and socio-economically disadvantaged: since these groups are less likely to be in contact with health and social care services, our findings are likely to have overestimated mean service use among the populations we surveyed. We considered alternative methods of accounting for random and non-random response bias (Rubin *et al*, 1988; Schafer & Graham, 2002), but concluded that their application to the data-set would not significantly enhance our results. Importantly, this diverse pattern of healthcare use by people with depressive and adjustment disorders is comparable with the results of other European studies.

The Eurobarometer study (European Opinion Research Group, 2003) found considerable national variation in help-seeking for mental health problems, being highest in Belgium and The Netherlands and lowest in Italy and Spain. The European Study of the Epidemiology of Mental Disorders (ESEMED) survey (Alonso *et al*, 2004; Kovess-Masfety *et al*, 2006) assessed life-time prevalence of mental disorder and healthcare use in France, Germany, Italy, Belgium, The Netherlands and Spain (the last being the only one to overlap with the ODIN set of countries). In relation to mood disorders, this survey found that respondents from Italy had the lowest consultation rates for mood disorders, and those from The Netherlands the highest. In relation to psychotropic medication, the survey confirmed our findings that the highest levels of prescribing were in Spain.

Table 5 Costs of service use

	Ireland (n=38) £ ¹	Finland (n=97) £	Norway (n=128) £	Spain (n=30) £	UK (n=134) £
Primary care					
GP	1530	2484	5184	1602	8514
Community nurse	640	1424	48		592
Total	2170	3908	5232	1602	9106
Per person (mean)	57	40	41	53	68
Generic care					
Physiotherapist	42	1498	3052		1078
Chiroprapist	90		126		324
In-patient	6913	14 272	21 854	10 481	25 199
Out-patient	2448	3060	1292	3060	9588
A&E	455	260	130	1365	1560
Day hospital	140		70		1260
Total	10 088	19 090	26 524	14 906	39 009
Per person (mean)	265	197	207	497	291
Social care					
Social service day centre			952		
Voluntary day centre					34
Drop-in centre	408				
Social worker		664		83	1577
Volunteer or befriender		16			
Home help or care worker		111	534		363
Advice or counsellor	665		80		5746
Total	1073	791	1566	83	7720
Per person (mean)	26	8	12	3	58
Psychiatric care					
CMHT					1815
CPN	305	2074	1586		1098
Psychiatrist	3984	9960	12 201	747	4482
Psychologist	610	6100	7076		2196
In-patient	16 644	3066	3066		7446
Out-patient	2354	1712	4066	1284	963
A&E	65	65	130	65	65
Day hospital	1240		2604		
Total	25 202	22 977	30 729	2096	18 065
Per person (mean)	663	237	240	70	135
Psychotropic medication					
Total	821	4741	3855	1326	6799
Per person (mean)	22	49	30	44	51
Total cost	39 354	51 507	67 906	20 013	80 699
Per person (mean)	1036	531	531	667	602

A&E, accident and emergency; CMHT, community mental health team; CPN, community psychiatric nurse; GP, general practitioner.

1. All costs given in UK £ (2000).

We found that overall costs of care in the ODIN study were similar in four of the five countries, ranging from £531 per person in Norway and Finland to £667 per person in Spain. However, they were substantially higher in Ireland, with a mean of £1036 per person. Given that

6- and 12-month outcomes for ODIN study participants in Ireland were no better than those in the other study centres (Dowrick *et al*, 2000) there may be implications for health policy, particularly whether the additional costs of specialist psychiatric care can be justified with this group.

Costs of care in the ODIN study cannot be directly compared with those published from the Longitudinal Investigation of Depression Outcomes (LIDO) study (Chisholm *et al*, 2003), although both used the CSRI as the core data collection instrument. The LIDO team investigated a more heterogeneous psychiatric population – cases of subclinical and clinical depression, with or without medical comorbidity – than that in ODIN, and LIDO only reported costs of untreated depression. The two studies also made different decisions about how to analyse their CSRI data-sets: LIDO combined medical outpatient and primary care service use, took a 3-month rather than a 6-month perspective, and calculated costs primarily in national currency units. Nevertheless, it is of interest to note that differences in overall costs of care were less than two-fold between the five ODIN centres, whereas LIDO found a twenty-fold variation between their highest-cost centre (Seattle, USA) and the lowest-cost centre (St Petersburg, Russia).

Predictors of health service use

In our study these national or centre differences in patterns of service use were mostly explained by other variables, when analysed in combination with other factors of relevance on the basis of the Anderson model.

Need variables

Scores on SF-36 domains demonstrated consistently significant associations with service use. In general, the higher the score on general health and social function, the less likely a participant was to use any type or level of service, or to take psychotropic medication, and the lower the costs incurred. Increased mental health and BDI scores were associated with increased use of psychiatric services and cost. Increased BDI scores were also associated with increased use of psychiatric services and psychotropic medication and with a reduction in the use of generic services.

Our findings were, as expected, consistent with the Anderson model and with other mental health studies. In the UK, Bebbington *et al* (2000a,b) found symptom severity to be the major determinant of treatment access for mental health problems. The LIDO team found health service use to be correlated with higher depressive symptom scores and lower SF-12 scores (Herrman *et al*, 2002).

Table 6 Cost of service use per depressed person: analysis by country relative to the UK

	Ireland	Finland	Norway	Spain	UK
Primary care	0.8	0.6	0.6	0.8	1.0
Generic	0.9	0.7	0.7	1.7	1.0
Social	0.5	0.1	0.2	0.1	1.0
Psychiatric	4.9	1.8	1.8	0.5	1.0
Medication	0.4	1.0	0.6	0.9	1.0
Total cost	1.7	0.9	0.9	1.1	1.0

Our study methods did not allow us to address all possibly relevant need variables. Simon *et al* (1995) and Chisholm *et al* (2003) have clearly identified medical comorbidity – defined by self-report of at least one of 12 major chronic medical conditions – as a major determinant of health costs for people with depressive disorders. Psychiatric comorbidity, including alcohol-related disorders, was associated with increased likelihood of service use in the US National Co-morbidity Survey (Wu *et al*, 1999).

Enabling variables

The ODIN data-set did not allow us to model accessibility of services directly, either geographically or in terms of out-of-pocket expenses. Country was the only enabling variable implicated in health service use, and then only in terms of a reduction.

Predisposing variables

Among our predisposing variables, being married was associated with greater use of primary care services, whereas older people and women were more likely to report use of psychotropic medication. The gender discrepancy in reported use of psychotropic medication was also noted in the ESEMED survey (Alonso *et al*, 2004; Kovess-Masfety *et al*, 2006). This is not just a European phenomenon. In the USA Sherbourne *et al* (2004) found that women with depression were more likely than men with depression to receive a variety of treatments, including medication and psychotherapy. This may reflect a persisting perception, among both patients and primary care physicians, that depression is predominantly a female condition (Maxwell, 2005).

The number of people able to provide support was positively associated with an increase in the use of generic services, and also with increasing levels of service use when assessed as an ordinal hierarchy.

Perceived high levels of support with life events were associated with increased drug use and total costs of services. This unexpected finding of an association between increased levels of informal social support and increase in service use is discussed below.

Social support and health service use

Our working assumption was that people who had less access to informal social support would make greater use of health and social care services. We were aware of the Dutch study conducted by Ten *et al* (2002), who found that low levels of social support were associated with increased healthcare use by people with mental health problems. However, we found the opposite to be the case: the presence of social support, as measured by the number of people to be counted on for help, was associated with more rather than less service use.

The impact of social support on patterns of service use by people with mental health problems has rarely been studied, and published findings are ambiguous or contradictory. The findings of McGrady *et al* (2003) are consistent with the model proposed by Ten *et al* (2002): among family practice patients in Ohio, negative affect increased but social support decreased the likelihood of service use. However, Abe-Kim *et al* (2002) found no relationship between family support and service use in a cohort of Chinese Americans experiencing emotional distress, a result partly explained by specific cultural norms in this community against use of formal health and social services.

Two studies provide partial, indirect support for our findings. In a survey of ageing families of adults with severe and enduring mental illness in Ohio, Smith (2003) noted a positive association between service use and extent of social support. An Australian study of predictors of service use by older people found that women (but not

men) with anxiety were more likely to access primary care services, whereas men (but not women) who lacked social support were less likely to access these services (Korten *et al*, 1998).

Why might an increased level of social support increase healthcare use by people with depression? Such people by definition lack motivation and self-esteem. This combination may lead many to conclude that they have neither the energy nor the right to seek professional help for their problems (Gask *et al*, 2003). Family and friends may well encourage people with depression to seek help, motivated either by altruistic desire for the individual's improvement, or else by a felt need to reduce their own burden of care (Watson & Andrews, 2002).

Sørgaard (1999) points to a 'Greek chorus' effect of social networks in encouraging help-seeking. Social networks can contribute ideas and information about help-seeking, passing on experiences of health services and different kinds of help-seeking strategies. For people with first-episode psychosis, Cole *et al* (1995) have documented the importance of having family members who could negotiate help, and Rickwood & Braithwaite (1994) found that young people with emotional problems were more likely to seek professional help if they knew someone else who had already done so.

Our finding of a direct association between social support and healthcare use may be important for health and social care providers. It needs replication in other studies. It will also be important to establish whether this combination of factors has an impact on outcome. Those without informal support – who we already know are at greater risk of becoming and remaining depressed – are also less likely to receive services and interventions that might be of benefit to them. Informal and professional support do not tend towards a zero-sum, but rather appear to act additively.

If our findings are replicated, and if they are shown to have an adverse effect on health outcomes, then there would be a demonstrable need for active identification of individuals with depression who have fewer people to count on for support, followed by concerted efforts to offer the former effective interventions. Such activity could be considered either as a stand-alone programme, or as an additional component within established quality improvement initiatives (Dietrich *et al*, 2004).

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