balancing in the randomisation takes place rather than a simple randomisation. This trial does not describe whether such balancing was attempted.

Secondly, there was a notable delay from randomisation to commencement of treatment in that those who did not have abdominal surgery were excluded from the trial. This has a number of disadvantages in that the only groups that we know on average will be similar are the groups as created at randomisation whereas exclusions after randomisation can lead to bias. It is to avoid this type of bias that many trials have an "intention to treat" approach to the design and analysis. The authors claim that this trial is analysed on this basis but with the exclusions this contradicts the definition of "intention to treat."

Thirdly, given that there are effectively two trials

then an overall sample size calculation is no longer sensible. It would be very much better to look at the necessary sample sizes separately in the low risk and high risk groups. This might even be the case when the intervention and control groups were treated identically in the low and high risk strata since the event rate (complication rate in this instance) may be quite different in the two strata and so comparisons in one stratum may have sufficient power but not in the other. As can be seen in the footnote to table 3 the 95% confidence intervals in each stratum include 10% differences between the groups so that the sample sizes do not exclude the difference stated to be clinically important. This is not always consistent with the conclusions about relative effectiveness of the treatments that are drawn by the authors.

Depression and other psychiatric morbidity in carers of elderly people living at home

Gill Livingston, Monica Manela, Cornelius Katona

Abstract

Objective—To describe the mental health of a community sample of carers of elderly people with dementia, depression, or physical disability and to compare that with the mental health of other adults living in the household and of those living alone.

Design—Assessment of psychiatric morbidity and physical disability with standardised questionnaire in randomly selected enumeration districts; subjects were interviewed at home.

Setting—London Borough of Islington.

Subjects—700 people aged ≥ 65 and other co-residents.

Main outcome measure—Depression measured with standardised interview.

Results—The prevalence of depression was not significantly higher in carers overall (15%) than in coresidents (11%). Being a woman carer was a significant predictor of psychiatric illness. Depression was more common in the carers of people with a psychiatric disorder than in coresidents (24% v 11%, $P < 0.05$) and in those living alone (19%). Depression was most common (47%) in women carers of people with dementia.

Conclusion—The increase in psychiatric morbidity reported in carers of people with psychiatric disorders may reflect the lack of a confiding relationship.

Introduction

Nearly two million people in the United Kingdom provide essential care to elderly and disabled people living at home.¹ The needs of carers have recently been recognised in law,² influenced in part by studies reporting increased stress, burden, and psychiatric illness among carers of people with dementia.

These studies used, however, selective and unrepresentative samples, such as members of the Alzheimer's Disease Society³ and people known to social and medical services⁴ or referred to an old age psychiatry service.⁵ The specificity of increased psychological morbidity to the burden of caring for someone with dementia also remains unresolved. Indeed, similar findings have been reported in carers of physically disabled people.^{6,7}

Only two studies have reported findings on community samples of carers of elderly people.^{8,9} Both

focused on carers of people with dementia and used global measures of psychological morbidity rather than identifying cases or making specific diagnoses. In the earlier study,⁸ 274 elderly married couples completed the general health questionnaire¹⁰; no significant relation was found between being a carer and cognitive impairment in the spouse. Psychological distress was, surprisingly, slightly greater in those married to the subjects with cognitive impairment. In the later study 120 carers of people with dementia showed no greater psychological distress than controls. Thus, although in clinical practice (and in clinically derived samples) carers seem psychologically vulnerable, community studies do not confirm this impression.

The discrepancy may reflect an association between distress of carers and service use. A recent overview confirmed this and found that distress of carers correlated with patient factors including mood disorder and behavioural problems and with the carer being a woman, but not with severity of illness.¹¹

We aimed in a representative community sample (a) to describe the prevalence of depression and other psychiatric morbidity in those caring for elderly people with dementia, depression, or physical disability; (b) to compare this with the prevalence of morbidity in coresidents who were not carers and in people living alone; and (c) to consider the effect of the carer's sex.

Methods

SAMPLE SELECTION

We conducted the survey in the London Borough of Islington, the sixth most deprived of the 403 local government areas in England and Wales.¹² We selected enumeration districts in Islington randomly. We delivered an introductory letter to every address in each selected district explaining that a doctor interested in the health and services received by elderly people would visit. We made an appointment to interview all people aged 65 years and over. If no one was in, the interviewer called again until the subject was located. This technique has previously been reported as an accurate sampling technique to use in inner city areas.¹³

We defined carers as those living with an elderly person with major psychiatric illness (dementia or depression) or with physical disability as defined below. We classified the carers into subgroups by the diagnosis of the person for whom they cared. We

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reached diagnoses using a hierarchical, mutually exclusive system,¹⁴ with dementia at the apex, followed by depression and then physical disability (defined as limited activity in the absence of psychiatric morbidity). This generated mutually exclusive comparison groups of carers and enabled a group needing care for purely physical reasons to be identified.

Coresidents were defined as those living in the same household as an elderly person without such psychiatric morbidity or physical disability. Anyone (irrespective of his or her age) living in the same household as an elderly person was thus either a carer or a coresident.

THE INTERVIEW

All subjects were interviewed by a trained, medically qualified interviewer (MM), with the following interview schedules (diagnoses of the same condition generated by either method were regarded as equivalent).

For those aged ≥ 65 we used (a) the shortened version of the comprehensive assessment and referral evaluation,¹⁵ a valid and reliable semistructured questionnaire with diagnostic scales for depression and dementia, screening scales measuring sleep disorder, somatic symptoms, and subjective memory problems, and an activity limitation scale (designed to identify those needing help with daily living)¹⁶; and (b) an anxiety disorder scale¹⁷ validated against clinical diagnosis¹⁸ and generating diagnoses of generalised and phobic anxiety. Further details are given in an earlier paper.¹⁹

For those aged < 65 we used the revised clinical interview schedule,²⁰ a valid and reliable measure of psychiatric morbidity for adults in that age group. Additional questions were added to enable specific diagnoses according to ICD-10 (international classification of diseases, 10th revision) to be made.²¹

DATA ANALYSIS

Carers and coresidents were divided by sex before

Table 1—Number (percentage; 95% confidence interval) of subjects aged ≥ 65 years with specific psychiatric diagnoses, sleep disturbance, or limited activity

Disorder	Subjects (n=700)
Dementia	39 (5.6; 3.9 to 7.3)
Depression	104 (14.9; 12.2 to 17.5)
Limited activity	235 (33.6; 30.1 to 37.1)
Generalised anxiety	33 (4.7; 3.1 to 6.3)
Phobic disorder	84 (12.0; 9.6 to 14.4)
Any anxiety disorder	105 (15.0; 12.4 to 17.7)
Sleep disturbance	243 (34.7; 31.19 to 38.24)
Subjective memory impairment	172 (24.6; 21.38 to 27.76)
Somatic symptoms	189 (27.0; 23.71 to 30.29)

Table 2—Depression in carers (by diagnosis in person being cared for), coresidents, and people living alone. Values are numbers (percentage; 95% confidence interval) in subjects

	Women	Men	Total
Carers of people with:			
Dementia	7/15 (47; 21.42 to 71.91)**	0/7	7/22 (32; 12.35 to 51.28)**
Depression	2/15 (13; 0.00 to 30.54)	4/18 (22; 3.02 to 41.43)†	6/33 (18; 5.02 to 31.34)
Psychiatric disorder	9/30 (30; 13.60 to 46.40)	4/25 (16; 1.63 to 30.37)	13/55 (24; 12.41 to 34.86)*
Limited activity	1/34 (3; 0.00 to 8.62)†	4/29 (14; 1.24 to 26.34)†	5/63 (8; 1.26 to 14.61)
All carers	10/64 (16; 6.73 to 24.52)	8/54 (15; 5.34 to 24.29)	18/118 (15; 8.77 to 21.74)
Coresidents	18/148 (12; 6.90 to 17.43)	12/129 (9; 4.29 to 14.31)	30/277 (11; 7.17 to 14.49)
People living alone	50/263 (19; 14.27 to 23.75)	13/75 (17; 8.77 to 25.90)	63/338 (19; 14.49 to 22.79)***

In all groups of carers (and in people living alone) comparisons are with corresponding depression rate for coresidents; in coresidents the comparison is with corresponding depression rate for carers.

†Exact confidence interval.

* $P < 0.05$; ** $P < 0.005$; *** $P < 0.001$.

further analysis as men and women differ in vulnerability to the psychological effects of caring.¹¹ Data were analysed with SPSS-PC+.²² Initial univariate analyses were carried out with χ^2 test or Fisher's exact test (confidence intervals calculated with Cornfield's or Fisher's exact test) with subsequent logistic regression analysis.

Results

DEMOGRAPHIC

We approached 782 subjects aged 65 and over, of whom 700 (90%) were interviewed. Of the 82 people who refused, eight lived with a spouse who agreed to be interviewed. In addition, we approached 79 people aged under 65, of whom 60 (76%) agreed to be interviewed.

Of the 700 subjects aged ≥ 65 (range 65-100; mean 75.7) years who were interviewed, 447 were women, 338 lived alone, 307 lived with a spouse (although two of these lived not only with a spouse but also with another person), and 55 lived only with someone other than a spouse.

In all, 118 out of the 760 subjects interviewed were carers, of whom 86 were aged ≥ 65 and 32 < 65 . Their ages ranged from 39 to 90 (mean 70.3) years. Sixty four of the carers were women. Of the 277 coresidents (of whom 249 were aged ≥ 65 and 28 < 65 ; age range 47-95 (mean 72.6) years), 148 were women. Analysis of variance comparing mean age, with carer or coresident status and sex as covariates, showed that coresidents were older than carers ($P < 0.05$) but that sex was not significantly related to carer or coresident status.

Of the 91 carers who were spouses, 78 were aged ≥ 65 and 13 < 65 . Nineteen carers (18 aged < 65) cared for a parent and eight cared for a more distant relative. The coresidents comprised 237 spouses (212 aged ≥ 65 years and 25 < 65), 21 children (20 aged < 65 years and one aged ≥ 65), and 19 more distant relatives (17 aged ≥ 65 years and two < 65).

DISEASE AND ILLNESS IN SAMPLE AGED ≥ 65

Table 1 shows the proportion of subjects aged ≥ 65 years with specific psychiatric diagnoses, sleep disturbance, or limited activity.

CLASSIFICATION OF CARERS

Of the 118 carers, 22 (15 of whom were women) cared for people with dementia, 33 (15 women) for people with depression, and 63 (34 women) for physically disabled people.

DEPRESSION IN CARERS, CORESIDENTS, AND PEOPLE LIVING ALONE

Table 2 shows the prevalence of depression in the carers, coresidents, and people living alone. Among the carers of people with dementia, depression was

Key messages

- Nearly two million people in Britain provide essential care informally to elderly and disabled people living at home
- Although in clinical practice carers seem psychologically vulnerable, studies of representative community samples provide little evidence to support this
- This study shows that being a carer of an older person is not in itself a risk factor for psychiatric illness or for important psychological symptoms
- Carers of older people with psychiatric disorders (particularly women carers of people with dementia) have an increased risk of depression
- Increased psychiatric morbidity in carers of people with psychiatric (rather than physical) illness may be mediated by the lack of a confiding relationship

found in nearly half of the women but in none of the men. Only 8% of the carers of people with limited activity were depressed. The women who cared for people with dementia were significantly more likely to be depressed than women coresidents ($P<0.005$). Depression was also significantly more likely in the carers of people with any psychiatric morbidity than in the coresidents ($P<0.05$) but not than in those living alone. The people living alone were, however, more likely to be depressed than the coresidents ($P<0.01$).

Although the rates of depression in the carers of people with limited activity were relatively low, they were not significantly lower than in the non-carers or the coresidents. Women caring for disabled elderly people, however, were less likely to be depressed than women living alone ($\chi^2=4.40$, $P<0.05$, odds ratio 0.13).

Among the carers of people with dementia the women were significantly more likely to be depressed than the men ($P<0.05$). No other significant associations of sex with psychological morbidity were found.

PSYCHIATRIC DIAGNOSES AND PSYCHOLOGICAL SYMPTOMS IN CARERS, CORESIDENTS, AND THOSE LIVING ALONE

Table 3 shows the overall rates of functional psychiatric diagnosis (depression, generalised anxiety, and phobic disorder) and psychological symptoms (sleep disturbance, somatic symptoms, and subjective memory disorder). Univariate analysis showed differences between the groups in psychiatric diagnosis ($\chi^2=12.53$, $P<0.05$).

With a backward stepwise logistic regression analysis—considering the effect of sex and status as coresident, carer (divided into carers of someone with a psychiatric illness and carers of someone with

physical illness), or living alone—only being a woman ($P<0.001$) and being a carer of someone with a psychiatric diagnosis ($P<0.09$) remained predictors of psychiatric illness. The same analysis with symptoms as the outcome retained being a woman ($P<0.01$) and not being a coresident ($P<0.05$) as predictors.

Discussion

Our study suggests that being a carer of an elderly person is not in itself a risk factor for either psychiatric illness or psychological symptoms. The discrepancy with previous studies probably reflects the difference between representative samples of carers (such as ours) and selected samples of carers recruited from lists from voluntary organisations or day care centres. Neither of the previous "community" carer studies used formal psychiatric diagnoses or compared carers of people with dementia with carers of people with functional psychiatric disorder or those living alone.^{8,9}

Our results also suggest that caring for physically disabled people may even decrease the risk of depression. Living with someone who needs help in daily living tasks but who is neither depressed nor demented, may encourage intimacy without jeopardising a confiding relationship. Caring, if appreciated, may also enhance self esteem. Thus giving support may be as beneficial as receiving it.

In contrast, the overall rate of depression was significantly higher in carers of someone with a psychiatric illness (24%) than in coresidents (11%) but only a little higher than in people living alone (19%). This higher rate is largely accounted for by the higher risk of depression in women carers of people with dementia, is consistent with other reports that being a woman is a risk factor for depression in carers of people with dementia,²³ and rebuts the axiom that women adapt more "naturally" to the role of carer.

In our study, coresidents were significantly less likely to be depressed or have psychological symptoms than those living alone. Thus coresidence may protect against depression, perhaps through availability of a confidant. In keeping with this, the lack of any association between depression and caring for a relative with only physical disability may reflect preservation or reinforcement of the psychological gains from a close relationship. The increased risk of psychological morbidity in carers of people with psychiatric morbidity may, in contrast, be linked to loss of such a relationship.

METHODOLOGY

Our study achieved a high response rate in a community sample of all individuals aged ≥ 65 living in randomised districts throughout an inner London borough; the sample is therefore likely to be representative of an urban elderly population. This is borne out by the similarity between the prevalences for dementia and depression in our sample and those reported in similar studies.^{13,24} Our population was, however, older and of a lower social class than the elderly population in the United Kingdom as a whole.²⁵

Despite the relatively large cohort of carers, the study had only limited power to identify associations with psychiatric morbidity in carers because of the small numbers in each category of carer. Our study was designed on the assumption of higher overall rates of psychiatric morbidity in all carers, as had been reported in previous studies.

CONCLUSION

This study suggests that, in a representative community sample, caring for people with psychiatric (rather than physical) illness predisposes to depression. This increased rate in such carers is apparent

Table 3—Morbidity in carers, coresidents, and people living alone. Values are numbers (percentages) of subjects

	Psychiatric disorder*	Psychological symptoms†
Carers:		
Men (n=54)	12 (22)	25 (46)
Women (n=64)	20 (31)	31 (48)
Coresidents:		
Men (n=129)	20 (16)	59 (46)
Women (n=148)	40 (27)	79 (53)
People living alone:		
Men (n=75)	17 (23)	40 (53)
Women (n=263)	82 (31)	174 (66)

*Depression, phobic disorder, generalised anxiety disorder.

†Somatic symptoms, sleep disturbance, subjective memory disorder.

in comparisons with coresidents but not with people living alone. Further studies are under way to identify whether intervention can help to prevent depression in carers.

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Fetal growth and cardiovascular risk factors in Jamaican schoolchildren

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Abstract

Objective—To determine relation between schoolchildren's blood pressure, glycated haemoglobin level, and cholesterol concentration and their anthropometry, socioeconomic status, and birth measurements.

Design—Retrospective cohort study.

Setting—27 schools closest to University Hospital of the West Indies, Kingston, Jamaica.

Subjects—2337 children aged 6-16 years who were born at university hospital were recruited, and their birth records were recovered: 1610 had suitable records, 659 had records including birth length, and 610 of these were prepubertal.

Main outcome measures—Blood pressure, glycated haemoglobin level, serum cholesterol concentration, anthropometry at birth, current anthropometry, and socioeconomic status.

Results—Multiple regression analysis showed that children's systolic blood pressure was inversely related to their birth weight ($P < 0.0001$) and directly related to their current weight. Glycated haemoglobin level was higher in children with thicker triceps skinfolds ($P < 0.001$) and who had been shorter at birth ($P = 0.003$). Serum cholesterol concentration was inversely related to current height ($P = 0.001$) and to length at birth ($P = 0.09$) and was directly related to triceps skinfold thickness and higher socioeconomic status ($P < 0.001$).

Conclusions—Blood pressure in childhood was inversely related to birth weight and directly to current weight. Glycaemic control and serum cholesterol were related to short length at birth, height deficit in childhood, and childhood obesity.

Introduction

Hypertension and diabetes mellitus contribute substantially to cardiovascular mortality in the Caribbean. Fetal growth retardation has recently been added to the list of established risk factors for these diseases.¹⁻⁸ Thus, blood pressure in adults was inversely related to birth weight, blood glucose concentration after an oral glucose challenge was inversely related to birth weight and to weight at 1 year, and serum cholesterol concentration was inversely related to abdominal circumference at birth.⁴⁻⁸

The underlying mechanisms are largely unknown. Continued exposure to risk factors associated with poor socioeconomic circumstances might explain associations between weight and proportions at birth and disease in adulthood.⁹ Alternatively, poor maternal nutrition might curtail fetal growth and thus affect the control of blood pressure and concentrations of blood glucose and serum lipids in later life.¹⁰ In Caribbean communities the prevalence of hypertension and diabetes is high, and both social deprivation and poor maternal nutrition are common. Describing how social deprivation and "fetal programming" affect the prevalence of hypertension and diabetes is important for public health.

Retardation of fetal growth has been linked with blood pressure in adults and children.^{4,6,11-13} However, there are few data for glycated haemoglobin and serum cholesterol concentrations in childhood.¹⁴ In this study we determined how blood pressure, glucose tolerance (glycated haemoglobin level), and serum cholesterol concentration in Jamaican schoolchildren were related to socioeconomic status, body size and composition, anthropometry at birth, and maternal blood pressure and anthropometry.

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