PRACTICE OBSERVED

Practice Research

Effect of health visitors working with elderly patients in general practice: a randomised controlled trial

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Abstract

Health visitors were employed specifically to care for two years for a random sample of patients in general practice who were aged over 70. Independent assessments made at the beginning and end of the study showed that the health visitor in an urban practice had some impact on her caseload of patients; she provided more services for them, their mortality was reduced, and their quality of life improved, though the last measure just failed to be statistically significant. The health visitor working in a rural practice had no such effect.

Introduction

Over the past few years there has been a growing emphasis on the care of elderly people in the community, in particular on surveillance of such groups to detect early symptoms of disease. In the Health Service the main group of professionals concerned with surveillance are health visitors. At present almost 90% of health visitors' time is taken up with mother and baby care, but as the birth rate has fallen there has been a growing opinion among health visitors that they should give elderly patients more attention.

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Health visitors are the only group of health or social service professionals who regularly visit their patients without being referred to them or called by them. This is important when treating elderly people, for they often report symptoms late, attributing them to the normal changes that occur with age. Similarly, they may have difficulty travelling to the practice or have problems understanding the complexities of the practice appointments system.

We set up a study to test the effectiveness of health visitors' visiting and monitoring of a caseload of elderly people in their respective general practices.

Method

STUDY POPULATION

The study was replicated in two general practices. All patients were born in 1909 or before, were living at home, and were randomly selected from the age-sex register of the two general practices. The figure shows the overall design of the study in each practice. All of the patients over 70 were selected from a practice of four partners covering a wide area in southern Powys. Two part-time health visitors, who had worked little with elderly people and had no regular visiting schedule, were already employed by the practice. From a larger practice of six partners in Gwent 682 patients were randomly selected. Three full-time health visitors were already employed by the practice. Again they concentrated on the age group 0-5 years with only occasional visits of elderly people.

INITIAL INTERVIEW

Each member of the study group was visited at home by independent interviewers and asked a series of semistructured questions about their physical, mental, and social characteristics. A wide ranging questionnaire was thought to be necessary because of the

intervention group and 102 for the controls in Powys, 73 and 125 in Gwent.

There were no significant differences in physical disability using the Townsend measure between the intervention and control groups in either area. Mobility as measured by the proportion who were bedfast, housebound, or able to go out only with difficulty showed no differences between intervention and control groups in either practice (Cox's test for trend for survivors: Powys ≤ 0.03 not significant, Gwent ≤ 0.75 not significant).

There were no significant differences in the scores for anxiety between the intervention and control groups over the two years in either area (table 1). A score for depression similarly showed no significant difference. Proxy interviews were excluded from this set, hence the higher number of missing values. In general, these people were too severely ill to answer questions directly.

Table 111 shows the patient's change in his or her subjective view of life overall. Both intervention groups reported a higher quality of life than the control groups, and in Gwent considerably so. These differences were not significant at the 5% level.

We were concerned that a two year intervention with surveillance visits made yearly might not be sufficient to affect outcome, mortality, or morbidity. The processes by which a health visitor might be expected to bring about change were therefore examined—firstly, the services gained by the intervention and control groups over the period of the study. There was no difference between the groups for contacts with the general practitioner in the month before the two interviews—for either home or surgery visits. Table IV shows use of district nurses. In Gwent significantly more people had visits from a district nurse in the intervention group. A similar significant difference was found for the use of chiropody services in Gwent (test for trend: $\chi^2 = 2.8$, $p = 0.02$). In Powys there was no difference between the intervention and control groups for either service.

The number of elderly people who had a regular home help was significantly greater in those visited by the health visitor in Gwent (table V). No difference was observed in Powys. The provision of meals on wheels showed only minor differences. Attendance at lunch clubs was again significantly higher in the intervention group in Gwent (test for trend: $\chi^2 = 1.9$, $p < 0.05$).

Health visitors also give people information about benefits and allowances. The intervention group in Gwent showed some advantage because more of them gained a supplementary pension during the study than the controls, though this just failed to be significant. Similarly, a higher proportion of the Gwent intervention group than the controls learnt whether or not they were entitled to a

TABLE I—Physical disability 1980-2

State	Powys		Gwent	
	Intervention	Control	Intervention	Control
No (%)	No (%)	No (%)	No (%)	No (%)
Improved	26 (49)	18 (46)	14 (51)	17 (48)
No change	140 (100)	124 (100)	133 (100)	142 (100)
Worse	68 (124)	84 (131)	107 (37)	82 (28)
Dead	41 (116)	47 (117)	35 (12)	31 (21)
Total No	279 (99)	270 (100)	289 (100)	291 (100)
Missing	2	3	7	7
Overall total	281	273	296	298

Cox's test for trend: Powys $\chi^2 = 1.49$ not significant; Gwent $\chi^2 = 1.00$ not significant.
* Survivors versus deaths: Powys $\chi^2 = 0.0$ not significant; Gwent $\chi^2 = 7.0$ $p = 0.01$.

TABLE II—Change in anxiety score 1980-2

State	Powys		Gwent	
	Intervention	Control	Intervention	Control
No (%)	No (%)	No (%)	No (%)	No (%)
Improved	20 (10)	14 (17)	34 (14)	32 (15)
No change	140 (100)	124 (100)	133 (100)	142 (100)
Worse	26 (13)	29 (14)	50 (21)	49 (18)
Total No	206 (101)	202 (100)	241 (100)	219 (101)
Deaths	45	45	35	60
In residential care or missing	12	12	19	11
Overall total	281	273	296	298

Test for trend: Powys $\chi^2 = 0.97$ not significant; Gwent $\chi^2 = 0.56$ not significant.

TABLE III—Subjective view of life overall 1980-2

State	Powys		Gwent	
	Intervention	Control	Intervention	Control
No (%)	No (%)	No (%)	No (%)	No (%)
Improved	26 (100)	25 (33)	33 (14)	19 (7)
No change	119 (39)	126 (15)	127 (54)	110 (32)
Worse	46 (16)	84 (10)	61 (26)	81 (26)
Total No	201 (100)	199 (100)	237 (100)	210 (100)
Deaths	45	45	35	60
Missing	35	29	24	28
Overall total	281	273	296	298

Test for trend: Powys $\chi^2 = 0.98$ not significant; Gwent $\chi^2 = 1.72$, $p = 0.08$ not significant.

TABLE IV—Use of district nurse 1980-2

State	Powys		Gwent	
	Intervention	Control	Intervention	Control
No (%)	No (%)	No (%)	No (%)	No (%)
Increased	11 (4)	6 (4)	28 (12)	9 (4)
No change	214 (100)	210 (100)	215 (87)	211 (91)
Decreased	5 (2)	4 (2)	8 (3)	7 (3)
Total No	230 (100)	223 (100)	251 (100)	227 (100)
In hospital or missing	6	5	8	11
Overall total	281	273	296	298

Test for trend: Powys $\chi^2 = 0.0$ not significant; Gwent $\chi^2 = 2.44$, $p = 0.14$.

TABLE V—Use of a home help 1980-2

State	Powys		Gwent	
	Intervention	Control	Intervention	Control
No (%)	No (%)	No (%)	No (%)	No (%)
Increased	11 (4)	14 (6)	29 (12)	11 (5)
No change	205 (95)	210 (94)	215 (87)	211 (91)
Decreased	5 (2)	8 (4)	2 (1)	5 (2)
Total No	224 (100)	218 (100)	247 (100)	227 (100)
Deaths	45	45	35	60
In residential care or missing	12	12	19	11
Overall total	281	273	296	298

Test for trend: Powys $\chi^2 = 0.0$ not significant; Gwent $\chi^2 = 2.78$, $p = 0.095$.

pension during the study. No differences between the groups were recorded in Powys. Details of the state of housing, which health visitors might have changed, particularly aids and adaptations, showed no significant differences in favour of the intervention group in Gwent, but none at all in Powys.

There were no differences detected in any of the social variables measured, particularly contacts with relatives and friends, or loneliness. Patients in the intervention group in Gwent, however, often remarked on the excellent service that the health visitor had provided and requested further visits from her.

It was felt that some of the variables, in particular the use of the Health Service and social services, which showed a significant excess in the district nurse, chiropody, home help, and lunch clubs—might have shown significant differences because of an interaction between them—that is, in referral to one agency might lead to referral to others. Cross tabulations between these four services were therefore performed for the intervention group in Gwent to show whether the patients who gained services as a result of the health visitors' intervention were the same individuals throughout. Of the use of each of cross tabulations from the four services only two showed any significant relation: home help service with chiropody and district nurse with lunch clubs. The related services are administered separately, thus it is likely that the extra services have been allocated independently of each other in response to the needs of the patients.

We then examined the reasons why one of the two health visitors

breadth of expertise practised by health visitors: health education and prevention, referral to the whole range of services, and follow up of these services.

Of the several outcome measures used, physical disability was measured using an index developed by Townsend,¹ a measure of functional incapacity based on the ability of an old person to perform nine activities of self care and house care when alone or without help. Mental disability was measured using standard questionnaires for anxiety and depression based on those developed by Foulds and Bedford.^{2,3} This method allowed us to use a series of common symptoms and signs characteristic of patients with such neuroses. Social characteristics measured included composition of the household, frequency of social contacts, use of medical and social services,

financials in the practice if one of their patients had any difficulties. The health visitors were instructed to interview patients and to keep notes of the results of their visits. In addition, a problem sheet and procedure form had to be completed at each interview. These were copied on to a card which was placed in the patients' practice notes, and this acted as a means of communication between the practitioners and the health visitor. No major changes in either the membership of the general practices or of their policies with regard to elderly patients occurred during the study.

The initial interview was repeated by the independent interviewers after two years; 524 interviews were completed and there were 103 deaths out of an original 630 patients in Powys. In Gwent 542 interviews were completed at the second visit and 104 people

and the availability of and characteristics of the person caring for the old person. The type and quality of housing and subjective feelings of quality of life were also measured. Completed responses were obtained from 630 people in Powys and 656 in Gwent—a response rate in both areas of 96%.

RANDOMISATION AND INTERVENTION

The people in the study were then randomly allocated by household to a group receiving intervention or a control group. The randomisation was performed by household because it was thought that it would be impossible for a visiting health visitor to intervene on behalf of one household member but not on behalf of another. There were no complaints from patients to the general practitioners during the study to suggest that any of the elderly people in the practices felt deprived of the new service.

The intervention group (281 patients in Powys and 296 in Gwent) was presented to one health visitor in each practice as their caseload. They were employed specifically to work in the practices on the study. Seventy six people in Powys and 62 in Gwent were randomly allocated to a third group. These were sent a nine page questionnaire developed by Barber,⁴ which was used instead of the initial visit by the health visitors. Data on these cases have not yet been analysed. The health visitors were restricted to making one unsolicited visit a year, for frequent visits would allow the health visitor to manage only a small caseload. On the other hand, visits too far apart were unlikely to be effective. They followed up patients who were in trouble at that visit, and they were also alerted by the other pro-

Results

The randomisation was first checked by looking at the initial interview data. No appreciable differences in age, sex, or disability rating were found between the intervention and control groups in either practice. Table 1 shows changes in physical disability and deaths during the study—that is, between the first and second interviews. There was no significant trend for differences between the intervention and control groups in Gwent. There was, however, a significant difference in the number of deaths recorded in the intervention group compared with the control group at the 1% level. There was no significant difference between the intervention and control groups in Powys.

The difference in mortality was unexpected and was therefore further checked by standardising the figures for the Gwent intervention and control groups by age and sex of each population and by the initial disability figures—both good predictors of mortality. The difference between the two groups was unaffected. Thus the standardised mortality ratio in the Powys practice by eight subdivisions by age and sex was 97 for the intervention group and 103 for controls, and in the Gwent practice was 76 for the intervention group and 123 for controls. When standardisation was performed by four initial disability categories the figures were similar—98 for the

had an effect in providing more services for the elderly people whom she cared for but the other did not. Although there were variations in the services available in the two areas, there was no overall disadvantage to Gwent or Powys. There was no important difference in the initial morbidity of the two intervention groups, which may have resulted in the differences in effectiveness of the health visitor in Gwent over the health visitor in Powys.

The population in Powys had a higher socioeconomic status than that in Gwent, thus they may have been less likely to use services. But when asked if they required more services 5% of the Powys population said they would like more home help and 6% more meals on wheels. In Gwent the proportions were 8% and 2%, respectively—one county not consistently different from the other.

The health visitors' notes showed that the health visitor in Gwent made more visits—464 compared with 528 by the health visitor in Powys—in the two years of the study. Table VI shows that the health visitor in Gwent also made twice as many referrals—357 compared with 185—to a wider range of services. Thus the health visitor in Powys tended to concentrate on general practitioner referrals.

TABLE VI—Health visitor referrals to services

Services	Powys		Gwent	
	No	No	No	No
General practitioner	142	92	142	92
Other primary care worker (district nurse, chiropodist)	2	2	2	2
District services (home help, district nurse, day care)	2	2	2	2
Social work residential care (home, holiday relief, day)	1	1	1	1
Other	1	1	1	1
Housing (telephone, electricity)	0	0	0	0
Friends, volunteers	0	0	0	0
Others (dentist, optician)	5	22	5	22
Total No of visits made (No of patients)	528 (281)	864 (296)	528 (281)	864 (296)

Discussion

Many attempts have been made to identify medical and social problems early in elderly people. In most studies many previously unknown conditions and disabilities have been reported.⁴⁻⁶ Two studies attempted to evaluate the effect of regular unsolicited visits on these conditions by a controlled trial. The results of both trials showed much less disability in the visited group compared with the controls, but in one study the small number of people made this statistically inconclusive.⁴ The second study relied on a routine monthly visit by the health visitor to all of the patients.⁴ This would make unrealistically harsh demands on the time of a health visitor in most general practices.

In our study the overall effect of a health visitor in the inner city practice was to increase considerably the number of services made available to disabled elderly people. This seems to have had a beneficial effect on mortality, but none on morbidity, though some changes were detected in subjective state of health. Long term physical and mental morbidity may be relatively intractable problems requiring more than two years of improving services to bring about the desired effect. On the other hand, such services may not be particularly effective at preventing disability. An improvement in mortality as a result of improving domiciliary services to elderly people has been reported,^{4,6} but the benefit was not sustained beyond the first year.

Changes in the provision of services in Gwent were brought about with one unsolicited visit a year and the follow up resulting from that visit. This suggests that diverting the work of health visitors towards elderly people may bring appreciable improvement in the number of services that they receive. The important effect on use of home help and lunch clubs was particularly pleasing, for these are run by social services; our health visitor had obviously managed to pierce the sometimes seemingly impenetrable barrier between the health and social services.

There was no evidence of overprovision of domiciliary ser-

vices to the intervention group in Gwent; it is unlikely that a well trained health visitor would provide such services where they were not needed. Moreover, most domiciliary services make their own assessment of need, for they are under pressure to treat more cases than they can manage, so that services tend to be withdrawn if it is thought that patients do not require the service. As the second independent assessment was made after the withdrawal of the health visitors, it is likely that excess services would rapidly diminish.

The health visitor in the urban area (Gwent) made more visits to patients and made more referrals than the health visitor in the rural area (Powys). This may be due to differences in the distances that the rural health visitor was required to travel, though our independent interviewers had no corresponding difficulty; indeed, the urban practice often presented problems with finding patients. The elderly people in rural areas may have been more independent and therefore reluctant to accept the advice of the health visitor, though there was no evidence of this. Thus a similar proportion of people in both areas made requests for extra services.

The rural health visitor made many more referrals to her general practitioners than the urban one. This rarely resulted in referral to other services. The health visitor in Powys may have been better at identifying medical problems than social and environmental ones and therefore made greater use of the general practitioners rather than the other services.

A health visitor making an annual unsolicited visit and related follow up visits to patients over 70 in an urban general practice increased the provision of services to those people. This was associated with a reduction in their mortality and minor improvements in their quality of life. The other health visitor in the rural practice had no such effect. It is not clear why this difference occurred. Further work is required to identify which, if any, environments or individuals might be consistently effective in altering both process and outcome to the advantage of elderly people.

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