

Primary care and accident and emergency departments in an urban area

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SUMMARY. During one year all initial attendance from one Belfast general practice to local accident and emergency departments was studied. Of the 784 attenders, 616 (78.4 per cent) referred themselves; the remaining 168 (21.6 per cent) were referred by the general practitioners. The clinical and social characteristics of both groups are compared. The discussion focuses on the appropriate use of primary care and accident and emergency services.

Introduction

ACCIDENT and emergency departments (AEDs) deal with major trauma and a wide range of emergencies. Especially in urban areas, they also have to cope with an increasing number of patients who refer themselves. In Belfast, the AED of the particular hospital on 'take-in' has the further task of managing patients referred by general practitioners through the emergency bed service. Another local feature is that general practitioners do not have completely open access to simple radiology and therefore send some patients to AED.

For over a decade the development of purpose-built premises and the attachment of paramedical staff have allowed a greater range of conditions to be treated in general practice. Simultaneously, hospital resources have been concentrated into designated AEDs, open 24 hours per day and draining a broad catchment area. It was naively assumed that each facility would attract the appropriate patients. The fact that this has not happened has led to scrutiny of the high proportion of patients who refer themselves to AED who could be treated in general practice. There is a growing appreciation that, apart from clinical conditions, historical, social and, in particular, urban factors have considerable influence on the way patients behave. The vast majority of these reports have been written from a hospital perspective. This report is written from the viewpoint of one general practice.

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Aims

1. To describe characteristics of patients who referred themselves or were referred by the general practitioners to AED.
2. To describe aspects of AED management.
3. To discuss the use being made of AED by the practice.

Method

The practice has a suburban health centre and more traditional premises nearer the city centre. At the time of the study there were some 9,000 patients, the equivalent of four full-time general practitioners and one vocational trainee. The practice does its own out-of-hours work. There are appointment systems at both premises, and surgeries are held throughout the working day (9 a.m. to 6 p.m.). Clerical staffing is satisfactory. There are fully attached health visitors and a full-time senior social worker. Fully qualified nurses service the district and staff the treatment room at the health centre, which is open from 8.30 a.m. until 7 p.m. Direct patient access to the treatment room is encouraged.

The AEDs are attached to the two major Belfast teaching hospitals: the Royal Victoria Hospital on the north-western edge of the practice and the Belfast City Hospital, which is in the inner practice area. Few patients attended any other AED during the survey period.

A structured information sheet (Rutherford and Maynard, 1975) is completed for every patient attending AED. A copy is always sent to the patient's general practitioner. During this survey these sheets were supplemented, where necessary, by information from the patient's medical record, from colleagues in the practice and, on occasion, from the patients themselves. Social and clinical data on the problems and management of each patient were gathered from these sources, assembled on a standard form (copies available from the author) and analyzed by computer.

As soon as the analysis for each patient was complete, I made the following assessments:

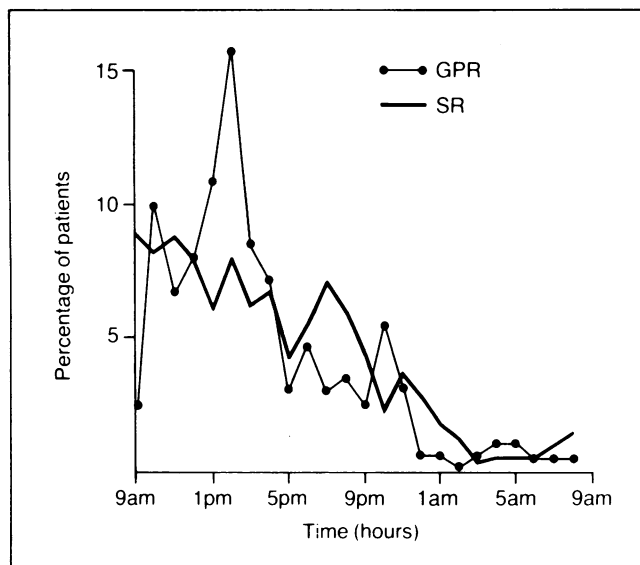


Figure 1. Attendance, time of day.

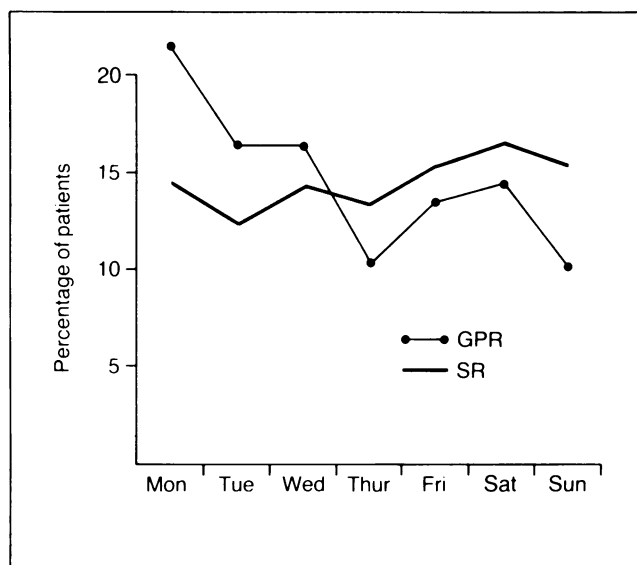


Figure 2. Attendance, day of week.

1. How appropriate was the patient's disposal by AED?
2. What general practice services were needed later, given the AED recommendations?
3. Could the episode have been dealt with by the practice, taking account of the type of problem, as well as its timing and location?

Results

Social and demographic features

During the survey year, 784 patients (8.7 per cent of the practice) attended AED, 616 of whom (6.8 per cent of the practice) referred themselves. During the same period, 6,940 patients (77 per cent of the practice) attended the treatment room, 1,160 of whom (13 per cent of the practice) referred themselves.

Which AED did patients attend?

Nearly all (98 per cent) general practitioner referred (GPR) patients were evenly distributed between the two major teaching hospitals, precise allocation depending on the day of the week and to which one the emergency bed service was sending patients.

Most patients (69 per cent) who referred themselves (SR) went to Belfast City Hospital, which is very convenient for the practice and near bus routes and major roads. The remainder attended the Royal Victoria Hospital (17 per cent) and Lagan Valley Hospital, Lisburn (14 per cent).

Time of day (Figure 1)

GPR patients tended to arrive mid-morning or early afternoon, with smaller peaks during the early evening and just before bedtime. Diminishing waves of SR arrived throughout the day, though the proportion attending after working hours (35 per cent) was considerable.

Table 1. Sex of attenders and of practice population.

	Practice	GPR	SR
Males	4,050 (45)	81 (48)	376 (61)
Females	4,950 (55)	87 (52)	240 (39)
Total	9,000 (100)	168 (100)	616 (100)

Day of week (Figure 2)

There was a decline in GPR patients through the week, from 21 per cent on Mondays to 10 per cent on Sundays. There was no increase at weekends. SR patients showed a slight tendency to increase throughout the week.

Social class, age and sex of attenders

The distribution by social class was the same for both GPR and SR groups and generally reflected that of the practice as a whole. However, patients aged over 65 who were admitted to hospital via AED, whether GPR or SR, were over-represented in social classes I and V.

The age and sex of attenders is given in Table 1 and Figure 3.

The sex distribution of the GPR group did not differ from that of the practice ($\chi^2 = 0.38$ (corrected), $p < 0.05$), but in the SR group there was a marked preponderance of males ($\chi^2 = 55.25$, $p < 0.001$). In terms of age, both the males and females in the GPR group had a similar distribution: both were under-represented in the young age groups and markedly over-represented in the older age groups.

In the SR group, both males and females were under-represented in extreme age and markedly over-represented between the ages of 10 and 40.

Civil status

The distribution of the various categories of civil status is shown in Table 2 and reflects the age distribution of

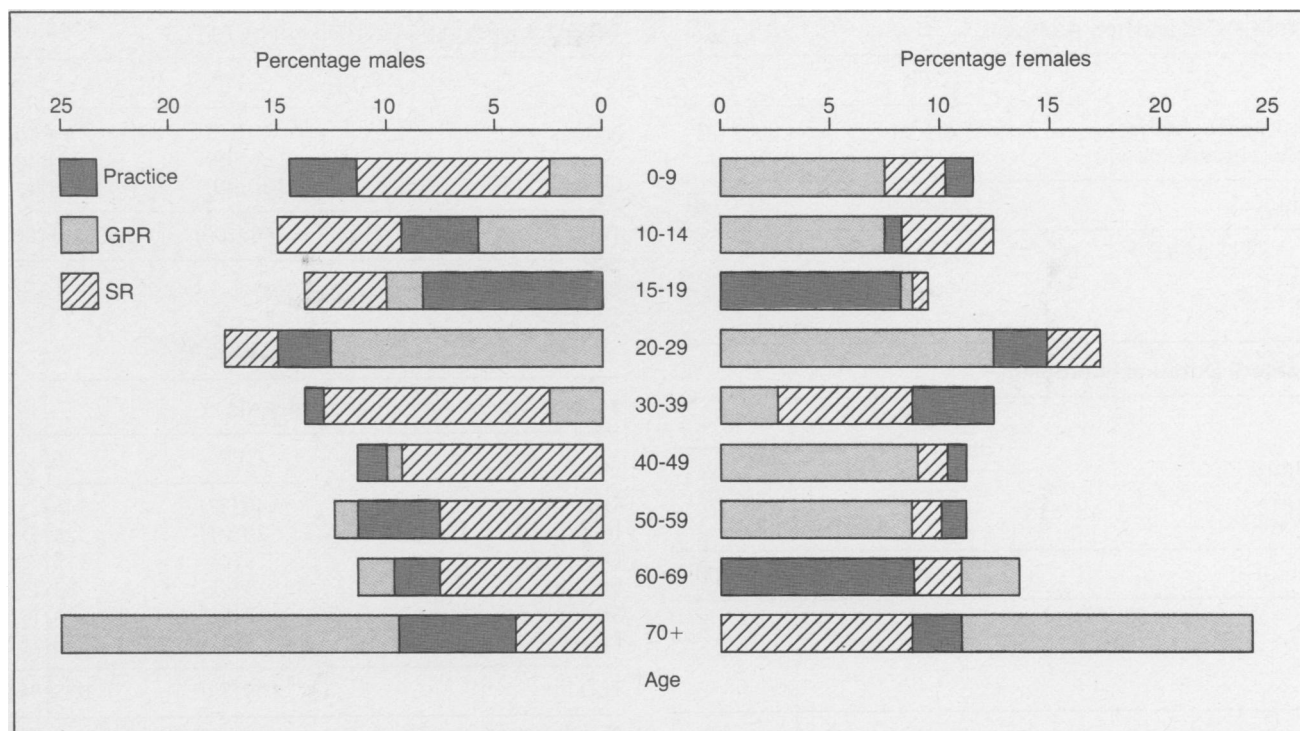


Figure 3. Age and sex of AED attenders and practice population.

each group. The differences between the two groups are significant.

Where patient problems arose

It was not always possible to find out where the patient's problem developed, but the proximity of the hospital or of the practice premises did not appear to be important in deciding where to go for help. Unfortunately, only the location of the patient's house was recorded in relation to practice premises and hospital AED. While this is a reasonable index for some groups of patients, for example, the elderly GPR, it is not sensitive to other groups such as those SR of working age.

Transport (Table 3)

The two groups differed significantly in the mode of transport used to travel to hospital. Because of the serious nature of their problem, over half (54 per cent) of the GPR group used an ambulance. Nearly all the 37 SR patients (six per cent) who used ambulances to get to an AED had been injured in traffic or other accidents. Very few patients rang 999 to contact an ambulance and did not contact the practice.

Clinical features

New and old problems (Table 4)

Among the 90 patients presenting with an old problem, cardio-vascular and gastro-intestinal problems predominated. Half were admitted; the remainder were recalled to AED or referred to the general practitioner. The practice could have dealt with only one third of these

Table 2. Civil status of attenders.

	GPR	SR
Single	50 (30)	339 (55)
Married	76 (45)	246 (40)
Widowed	42 (25)	31 (5)
Total	168 (100)	616 (100)

$\chi^2 = 73.20, p < 0.001.$

Table 3. Transport to AED.

	GPR	SR
Ambulance	91 (54)	37 (6)
Car	59 (35)	456 (74)
Foot/bus	15 (9)	68 (11)
Taxi	3 (2)	55 (9)
Total	168 (100)	616 (100)

$\chi^2 = 237.9, p < 0.0001.$

old problems and disposal by AED was considered appropriate in 83 per cent of these patients.

Duration of problem (Table 5)

Duration of patient problem differed between the two groups. Fewer of the GPR group (49 per cent) had problems of hours' duration than the SR group (82 per cent).

Table 4. Old and new problems.

	GPR	SR
New (never before)	126 (75)	560 (91)
Old (already known)	42 (25)	56 (9)
Total	168 (100)	616 (100)

$\chi^2 = 29.11, p < 0.001.$

Table 5. Duration of problem.

	GPR	SR
Hours	82 (49)	505 (82)
Days	57 (34)	86 (14)
Weeks	29 (17)	25 (4)
Total	168 (100)	616 (100)

$\chi^2 = 81.66, p < 0.001.$

Table 6. Examination carried out by AED.

	GPR	SR
One system	42 (25.0)	400 (65.0)
More than one system	29 (17.0)	96 (15.5)
Full examination	97 (58.0)	120 (19.5)
Total	168 (100.0)	616 (100.0)

Definitions: one system, e.g., wrist; more than one system, e.g., back, plus other aspects of the musculo-skeletal system; full examination, chest, heart, central nervous system, e.g., for a collapsed patient.

$\chi^2 = 99.92, p < 0.001.$

The 54 patients who had problems of weeks' duration tended to be younger and over half were male. Over one third had problems due to accidents or trauma; one quarter were admitted. The practice could definitely have dealt with 60 per cent of this group, but disposal by AED was also thought appropriate in 60 per cent of cases. (These two categories are not mutually exclusive.)

Clinical details

The clinical details of the AED patients have been listed under the broad diagnostic groups I to XVIII of the Royal College of General Practitioners' modification of the International Classification of Diseases (1963). The differences in many of the diagnostic groups, though striking, were not statistically significant. Copies of this list are available from the author.

Management

Examination (Table 6)

A much greater proportion of the GPR patients were fully examined than SR patients. The proportions were reversed in those cases where only one system was

Table 7. Investigation carried out by AED.

	GPR	SR
None	20 (12)	308 (50)
X-rays	66 (39)	277 (45)
Other	82 (49)	31 (5)
Total	168 (100)	616 (100)

$\chi^2 = 22.09, p < 0.001$

Table 8. Treatment carried out by AED.

	GPR	SR
Oral	49 (37)	146 (25)
Infections	28 (21)	28 (5)
Dressings	5 (4)	117 (20)
Sutures	5 (4)	88 (15)
Strapping	12 (9)	88 (15)
Plaster	5 (4)	88 (15)
Total	104 (79)*	555 (95)*

*Totals <100 per cent because patients admitted and/or not treated.

$\chi^2 = 90.91, p < 0.0001.$

Table 9. Disposal by AED.

	GPR	SR
<i>Immediate</i>		
Admission	92 (55)	74 (12)
Observation	6 (3)	62 (10)
Discharge	7 (4)	74 (12)
<i>Follow-up</i>		
Outpatients	13 (8)	43 (7)
Back to general practitioner	25 (15)	111 (18)
Recall to AED	25 (15)	252 (41)
Total	168 (100)	616 (100)

$\chi^2 = 154.38, p < 0.001.$

examined. Among the 217 patients who had full examinations, cerebrovascular accidents, coronary thrombosis, acute abdomen and major trauma predominated. Over three quarters (80 per cent) of these problems were new and of hours' duration; 61 per cent of this group were admitted. Only a quarter of these patients could have been dealt with by the practice and AED disposal was appropriate in 82 per cent of cases.

Investigation (Table 7)

Half of the SR patients had no investigation performed; this was true of only 12 per cent of GPR. A large minority of each group were x-rayed. Half of the GPR but only five per cent of the SR group had several investigations performed. The majority of x-rayed patients were young males who presented during work-

ing hours. Clinically, fractures, trauma, contusions and sprains predominated. Half of these patients were being recalled, but positive findings in the recalled groups were few.

Altogether, 113 patients had several investigations performed. These were older and a slight majority were female. Disposal was appropriate in almost all these cases. The practice could have dealt with only 10 per cent of this group.

Treatments (Table 8)

There were significant differences between the two groups in terms of the treatments. The 93 patients sutured came mostly during working hours and mostly mid-week. These patients were younger, were predominantly male and self-referred. The practice could have dealt with at least half of the sutured patients. AED recalled 66 patients (71 per cent of this sutured group) but it was considered that the practice could have dealt with 58 of these.

Disposal (Table 9)

There are again marked differences between the two groups. The admission rate was over four times greater in the GPR group; this is in keeping with the more serious nature of their problems. Most of the SR group admissions were as a result of trauma and a greater proportion were discharged. Most of these patients had minor conditions.

The 41 per cent proportion of SR patients recalled to AED was remarkably high. The majority of these were young males with new problems, mostly minor trauma. Treatment given by AED consisted of dressings (20 per cent), sutures (25 per cent) and strapping (20 per cent). At least half of this group of 252 patients could have been referred to the practice. Recalling GPR patients to AED was inappropriate in some cases.

Similar proportions of SR and GPR were referred back to their general practitioner. In most cases, those in the SR group should have contacted the practice in the first place. Attendance at AED could have been avoided for many of the GPR group as the majority were referred for x-ray for which there was no direct access at the time of the study.

The rate of cross-referral from AED to OPD was relatively small. It did not seem that AED was being used as a way of getting appointments.

Assessment of management

Appropriateness of disposal by AED (Table 10)

Criteria for assessing AED disposal were drawn up by the author and were based on a knowledge of each case and of the practice services available. Assessment was made as soon as all the information on each case was available. Again, differences between the two groups were significant. Altogether, 449 patients were considered to have been disposed of appropriately, and 335 patients inappropriately. Inappropriate disposal mainly

Table 10. Appropriateness of disposal by AED.

	GPR	SR
Yes	141 (84)	308 (50)
No	27 (16)	308 (50)
Total	168 (100)	616 (100)

$\chi^2 = 60.71, p < 0.001.$

Table 11. Subsequent use of services.

	GPR	SR
Home visit by general practitioner	59 (35)	24 (4)
Patient attended surgery	74 (44)	209 (34)
Nursing service (district or treatment room)	18 (11)	111 (18)
No contact with practice recommended to patient	17 (10)	272 (44)
Total	168 (100)	616 (100)

$\chi^2 = 169.3, p < 0.001.$

Table 12. Episodes which could have been dealt with by the practice.

	GPR	SR
Yes	25 (15)	339 (55)
No	143 (85)	277 (45)
Total	168 (100)	616 (100)

$\chi^2 = 83.95, p < 0.001.$

took the form of patients being recalled to AED, or not being investigated (more specifically, not being x-rayed). Treatment given to the recalled patients could have been carried out in the practice.

Subsequent use of practice services (Table 11)

The Structured Information Sheet from AED indicates the recommendation made to the patient. By noting this and by observing subsequent visits and attendances in the practice, it can be seen that 418 patients either had no recommendation made to them by AED or had some form of nursing service recommended. This figure gives a measure of the extra practice resources needed, especially in relation to the treatment room, where a 36 per cent increase in the number of self-referrals is implied.

Patients who could have been dealt with by the practice (Table 12)

Only a quarter of the GPR patients, but over half of the

SR group, could have been dealt with by the practice. Altogether, the practice could have dealt with 364 patients. (This figure represents what the author thought, just as Table 10 represents what AED thought.) If direct access to radiology had been available, a further 19 patients need not have been sent to AED. As it was, a total of 420 patients could not have been dealt with by the practice. This group tended to be older, with major clinical problems of major trauma.

Discussion

This study of the interface between primary care and AEDs delineates both the largely correct use of the AED by the practice doctors and the appropriate response of AED management. But it also shows that patients continue to refer themselves to AED despite the growth of facilities in the community.

Could and should these patients be dealt with in general practice? The practice studied obviously has the clinical and nursing competence to deal with significant numbers of the AED attenders in the survey. In fact, the practice already sees almost twice as many self-referred patients (1,160) in its own treatment room as appeared in AED as self-referred (616). Using the clinical criteria referred to above, the attendance of the SR group alone could be reduced to less than half (Table 12).

The practice facilities and staff could cope with the volume of patients indicated. An extension of opening hours might have allowed a proportion of patients who presented after 7 p.m. to be dealt with (Figure 2). If the practice facilities remained open until 9 p.m., some of the 135 SR patients and a few of the 15 GPR patients need not have attended AED. It is unlikely that attendances at the practice would justify longer opening hours than these (Dixon and Morris, 1971).

How can patients be educated not to refer themselves for initial medical care at AED unless it is appropriate? In England and Wales, new attendances at AED have increased by over 50 per cent between 1959 and 1971 (DHSS, 1974). This increase in the use of AED is predominantly an urban problem. Fairley and Hewett (1969) noted that 78 per cent of the patients they studied in the London area referred themselves. In the Glasgow conurbation, Patel (1971) and Conway (1976) found self-referral ranges of 59 and 51 per cent respectively. In Dublin, Kaliszer and McCormick (1975) noted a rate of 89 per cent. There is also a high rate in Belfast (78.4 per cent). Many of the demographic and clinical characteristics of this group in this study are confirmed by these reports.

In this study, the SR group of patients was unrepresentative of the practice population. Predominantly young males, they attended in substantial numbers during working hours with little regard to day of week. Social class did not appear to be a critical factor in this group. The majority are single, arrive by car and present with new problems of hours' (rather than days') dur-

ation. The clinical content is varied but not usually life-threatening; accidents and trauma predominate. This is reflected in the amount of examination carried out by AED, with less than one patient in five being fully examined. Half of this SR group have no investigations carried out but the clinical indications alone hardly warrant 45 per cent of the group being x-rayed. The treatments given by AED seemed correct, but aspects of disposal, for example, recall to AED of 41 per cent, seemed to reflect ignorance of primary care services.

These findings partially contradict earlier studies such as Fry (1960), who oversimplifies the case by saying that AED was "misused to a considerable extent both by the public and by the doctor". It appears that, however the SR group of the study practice behaved, the doctors did not misuse the AED services. But the results also show that AED itself could become more efficient. A variety of ways of achieving this have been proposed: Blackwell (1962) suggested circulars, patient education, better hospital-general practitioner relationships and increased access to radiology for general practitioners, so that casual (that is, self-referrals) and unnecessary attendances might be deferred; Crombie (1959) divided his cases into those dealt with by the general practitioner, the nurse or the hospital and noted that the general practitioner could care for between 61 and 80 per cent of the cases seen according to the facilities that were available.

Morgan and colleagues (1974), in a socio-medical study carried out in the Newcastle-upon-Tyne conurbation, observed the part played by social and personal attitudes in the decision to attend AED. General practice organization and the availability of the doctor, as perceived by the patient, played a part in this decision. Holohan and colleagues (1975) explored this area further and included factors such as appointment systems, deputizing services and the doctor's attitude to the problem of inappropriate AED attendances. "Illness for the doctor and accidents for the hospital" seemed to sum up the attitude of many patients. The general practitioners acknowledged that many patients who attend AED constitute a special problem. While accepting that recent developments in practice organization might play a part in maintaining this, they nevertheless attributed the major part of the problem to patient attitudes and, indeed, to those of society in general. Recent work by Wilkinson and colleagues (1977) has indicated the large extent to which "social as well as medical circumstances determine whether or not patients decide to visit AED". It seems that any significant reduction in the work of AED would require a change in the attitude of the public at large.

However, it does not seem likely that the number of minor cases going to AED will be reduced if adequate general practitioner services are available. The type of service assumed desirable and offered by both AED and primary care is being contested by the patient. Given



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that all SR patients have made a lay diagnosis before presenting themselves to AED, it is only to be expected that their attendance reflects more than purely clinical factors. Perception of illness and the need felt to deal quickly with symptoms figure more prominently than doctors' or nurses' appraisal of severity. To blame many SR patients for abusing NHS resources is to expect them to make a medical diagnosis rather than a decision based on social convenience. While acknowledging that resources should be geared to the consumer rather than the provider, the practice must also try to make patients more aware of its services. However, a more urgent task, on the basis of this survey, appears to be to inform AED about primary care facilities.

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Acknowledgements

It is a pleasure to acknowledge the support of my medical and nursing colleagues at Finaghy Health Centre, Belfast. I am most grateful to Professor W. G. Irwin, Department of General Practice, and Mrs M. P. Patten, Department of Extra-mural Studies, Queen's University of Belfast, for their helpful comments. I wish to thank Mr Dennis Clarke of the Computer Centre, Queen's University of Belfast, and Dr J. Harbinson of the Social Research Division, Department of Finance, Government Buildings, Stormont, Belfast, for help with statistics. I also wish to thank the secretarial staff of the Department of General Practice.

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