

THE RESEARCH UNIT REPORTS

Going to the doctor

FROM
THE RESEARCH UNIT,
ROYAL COLLEGE OF GENERAL PRACTITIONERS,
BIRMINGHAM
and
THE DEPARTMENT OF ENGINEERING PRODUCTION,
UNIVERSITY OF BIRMINGHAM

THIS survey, followed one by Hutchinson (1969) and sought information about the planning of new health centres and associated facilities. Items of interest include the influence of various practice characteristics such as list size, location and use of appointment systems on patient variables such as distance travelled, mode of travel, time of attendance and whether or not patients were accompanied. Clearly such information is relevant to the design of car parks and waiting rooms. In addition, administrative procedures such as appointment systems and time and manning of consulting sessions could be aided.

Hutchinson's (1969) survey consisted of records of the attendance of all patients during a two-week period in semi-rural practices. It was thought that such practices would provide a representative spread of travelling distances. In all, data from about 3000 attendances, out of a list total of 35,000 were recorded.

This survey was carried out by the Research Unit of the Royal College of General Practitioners, and consisted of a record of various characteristics of attendances for a sample of about 100 patients at each of 34 practices (Table 1). The practices were selected on a basis of their known organisation and experience.

Two forms of collecting data were used (Appendices 1 and 2). The first form asked for various practice details such as size, location, use of ancillary staff and use of appointment systems. The second was concerned with patient-orientated details such as time and mode of attendance and distance that the patient had to travel.

TABLE 1
CLASSIFICATION BY TYPE OF PRACTICE AND LIST SIZE

| <i>List size</i> | <i>Rural</i> | <i>Rural-urban</i> | <i>Urban-residential</i> | <i>Urban-industrial</i> | <i>Total</i> |
|------------------|--------------|--------------------|--------------------------|-------------------------|--------------|
| <2500 | 1 | 0 | 1 | 3 | 5 |
| 2501-5000 | 0 | 1 | 3 | 3 | 7 |
| 5001-7500 | 1 | 2 | 0 | 4 | 7 |
| 7501-10,000 | 1 | 2 | 1 | 3 | 7 |
| >10,000 | 0 | 2 | 3 | 3 | 8 |
| Total | 3 | 7 | 8 | 16 | 34 |

Analysis

First, analysis of some characteristics of attendance was performed for the 34 practices separately. This information is too voluminous to be included here but is available on request. Considerable interpractice variability was found.

In addition, special conditions relating to bus routes, car-parking facilities and practice registration policy that were indicated by many of the practices made detailed comparisons impracticable.

The second part of the analysis is aimed at answering questions about the attendance of the patients at all the practices collectively. The method of analysis is to perform a X^2 test on the various two-way tabulations (contingency tables) of interest and to extract particular areas of interdependence between variables—this is done by observation of the direction and relative size of the discrepancy from an expected value calculated on the assumption of independence of the variables. Where the results warranted it, some of the variables were grouped by reference to the individual cell deviations in order to ease interpretation.

Results

Factors affecting the distance a patient has to travel

The two factors affecting the distance that a patient has to travel to the practice (size and type of practice) are likely to be interrelated. However, as the sample size is small the precise nature of this inter-relation and its influence on the distance travelled by the patient is undeterminable. Analysis of these two factors was therefore done separately.

TABLE 2
CLASSIFICATION OF PRACTICE SIZE BY THE DISTANCE TRAVELLED BY THE PATIENT

| <i>Distance travelled</i> | <i>Size of practice</i> | | | | | |
|---------------------------|-------------------------|-----------|-----------|-------------|---------|------|
| | <2500 | 2501-5000 | 5001-7500 | 7501-10,000 | >10,000 | |
| <1 mile | 342 | 464 | 325 | 391 | 399 | 1921 |
| 1-2 miles | 57 | 154 | 176 | 148 | 223 | 758 |
| 2-3 miles | 38 | 38 | 98 | 86 | 101 | 361 |
| 3-5 miles | 31 | 20 | 69 | 47 | 57 | 224 |
| >5 miles | 21 | 11 | 21 | 19 | 14 | 86 |
| | 489 | 687 | 689 | 691 | 794 | 3350 |

List size

Analysis of Table 2 indicated a highly significant interaction (X^2 , $p < 0.001$) between the distance travelled and the size of the practice. Inspection of this interaction indicated the combination of categories shown in Table 3.

TABLE 3
THE PERCENTAGES OF PATIENTS WHO HAD TO TRAVEL A DISTANCE GREATER THAN 1 MILE TO PRACTICES WITH A LIST SIZE GREATER OR LESS THAN 5000 PATIENTS

| <i>Distance travelled</i> | <i>Size of practice</i> | | |
|---------------------------|-------------------------|-------|----------------------|
| | <5000 | >5000 | <i>All practices</i> |
| <1 mile | 68.5 | 51.3 | 57.3 |
| >1 mile | 31.5 | 48.7 | 42.7 |

Further analysis of the sample showed an average travel distance of 1.11 miles (SD=1.19 miles) in the smaller (<5000) practices whereas that of the larger (>5000) practices was 1.43 miles (SD=1.28 miles).

TABLE 4

CLASSIFICATION OF THE TYPE OF PRACTICE AND THE DISTANCE TRAVELLED BY THE PATIENT

| <i>Distance travelled</i> | <i>Rural</i> | <i>Rural-urban</i> | <i>Urban-residential</i> | <i>Urban-industrial</i> | <i>Total</i> |
|---------------------------|--------------|--------------------|--------------------------|-------------------------|--------------|
| < 1 mile | 143 | 377 | 469 | 932 | 1921 |
| 1-2 miles | 25 | 188 | 207 | 338 | 758 |
| 2-3 miles | 30 | 72 | 54 | 205 | 361 |
| 3-5 miles | 62 | 42 | 36 | 84 | 224 |
| > 5 miles | 31 | 18 | 24 | 13 | 86 |
| Total | 291 | 697 | 790 | 1572 | 3350 |

Practice type

There was a highly significant interaction (X^2 $p < 0.001$) between the type of practice and the distance that a patient had to travel (Table 4). Inspection of this interaction indicated the reduction of data outlined in Table 5.

TABLE 5

THE PERCENTAGES OF PATIENTS WHO HAD TO TRAVEL DISTANCES GREATER OR LESS THAN TWO MILES TO RURAL AND NON-RURAL PRACTICES

| <i>Distance travelled</i> | <i>Rural</i> | <i>Non-rural</i> | <i>All practices</i> |
|---------------------------|--------------|------------------|----------------------|
| < 2 miles | 57.7 | 82.1 | 80.0 |
| > 2 miles | 42.3 | 17.9 | 20.0 |

Further analysis of the data demonstrated the following average travel distances to the various practice types:

| | |
|-------------------|----------------------------|
| Rural | 2.12 miles (SD=1.92 miles) |
| Rural/urban | 1.33 miles (SD=1.23 miles) |
| Urban/residential | 1.23 miles (SD=1.22 miles) |
| Urban industrial | 1.21 miles (SD=1.18 miles) |

Factors affecting mode of transport

The overall percentage for the different modes of transport of the patients to the practice centre were as follows:

| | |
|-----------------|------|
| Walked | 45.6 |
| Car (driver) | 18.1 |
| Bus | 16.2 |
| Car (passenger) | 14.7 |
| Taxi | 0.4 |
| Other | 4.7 |
| Not known | 0.3 |

The influence of distance travelled, type of practice, time of attendance and use of appointment systems on these figures was investigated.

Distance travelled

Analysis of Table 6 showed a significant (X^2 , $p < 0.001$) interaction between the mode of transport of a patient and the distance he had to travel to the practice. Inspection of this analysis demonstrated that the interaction was due to the number of people living less than one mile from the practice centre, who walked (Table 7).

TABLE 6
CLASSIFICATION OF MODE OF TRANSPORT AND DISTANCE TRAVELLED BY THE PATIENT

| <i>Mode of transport</i> | <1 mile | 1-2 miles | 2-3 miles | >3 miles | Total |
|--------------------------|---------|-----------|-----------|----------|-------|
| Walker | 1337 | 167 | 23 | 4 | 1531 |
| Bus | 90 | 223 | 158 | 74 | 545 |
| Car driver | 202 | 190 | 100 | 118 | 610 |
| Car passenger | 180 | 138 | 74 | 97 | 489 |
| Other | 110 | 35 | 7 | 15 | 167 |
| Total | 1919 | 753 | 362 | 308 | 3342 |

TABLE 7
THE PERCENTAGES OF PATIENTS WHO WALKED OR USED OTHER MEANS OF TRANSPORT INFLUENCED BY THE DISTANCE TRAVELLED

| <i>Mode of transport</i> | <1 mile | >1 mile |
|--------------------------|---------|---------|
| Walk | 69.7 | 13.6 |
| Other | 30.3 | 86.4 |

Type of practice

The number of patients in the sample who used various forms of transport are listed in Table 8, with regard to the different types of practice. The significant interaction (X^2 ,

TABLE 8
THE MODE OF TRANSPORT OF THE PATIENT AS INFLUENCED BY THE TYPE OF PRACTICE

| <i>Mode of transport</i> | Rural | Rural-urban | Urban-residential | Urban-industrial | Total |
|--------------------------|-------|-------------|-------------------|------------------|-------|
| Walker | 98 | 278 | 362 | 800 | 1538 |
| Bus | 8 | 98 | 123 | 318 | 547 |
| Car driver | 98 | 151 | 159 | 207 | 615 |
| Car passenger | 69 | 127 | 168 | 180 | 494 |
| Other | 20 | 41 | 32 | 76 | 170 |
| Total | 293 | 695 | 794 | 1581 | 3363 |

$p < 0.001$) between these two variables was, on inspection, reduced to the form shown in Table 9, where it is seen that a relatively high percentage of patients in urban industrial

TABLE 9
PERCENTAGES OF PATIENTS WHO TRAVELLED TO THE PRACTICE BY WALKING OR BY BUS ACCORDING TO WHETHER OR NOT THE PRACTICE CENTRE WAS LOCATED IN AN URBAN-INDUSTRIAL AREA

| <i>Type of practice</i> | | | |
|--------------------------|------------------|-------|------|
| <i>Mode of transport</i> | Urban-industrial | Other | All |
| Walk or bus | 70.7 | 54.3 | 62.0 |
| Car or other | 29.3 | 45.7 | 38.0 |

practices either walked or travelled by bus. There was also a relatively low number of patients in rural practices who walked or travelled by bus, these patients frequently travelling by car.

Other factors

The only influence of time of consulting sessions on mode of attendance was the relatively high number of car passengers in the evening. There was no significant interaction between the mode of attendance and whether or not an appointment system was in operation.

Patients who were accompanied to the practice

A quarter (25 per cent) of patients were accompanied but this figure was not influenced by any of the practice variables. If it is assumed that all children (19 per cent of the total, see Tables 10, 11 and 12) were accompanied, then about six per cent of adults were also accompanied.

TABLE 10

THE RELATION BETWEEN TIME OF ATTENDANCE AND AGE GROUP OF MALE PATIENTS

| <i>Age group</i> | <i>Time of consulting session</i> | | | |
|------------------|-----------------------------------|------------------|----------------|------------|
| | <i>Morning</i> | <i>Afternoon</i> | <i>Evening</i> | <i>All</i> |
| 0-4 | 92 | 62 | 40 | 194 |
| 5-14 | 73 | 17 | 50 | 140 |
| 15-44 | 260 | 24 | 177 | 461 |
| 45-64 | 236 | 29 | 128 | 393 |
| Over 65 | 107 | 18 | 37 | 162 |
| Total | 768 | 150 | 432 | 1350 |

TABLE 11

THE RELATION BETWEEN TIME OF ATTENDANCE AND AGE GROUP OF FEMALE PATIENTS

| <i>Age group</i> | <i>Time of consulting session</i> | | | |
|------------------|-----------------------------------|------------------|----------------|------------|
| | <i>Morning</i> | <i>Afternoon</i> | <i>Evening</i> | <i>All</i> |
| 0-4 | 70 | 42 | 35 | 147 |
| 5-14 | 85 | 22 | 46 | 153 |
| 15-44 | 470 | 177 | 325 | 972 |
| 45-64 | 280 | 52 | 128 | 460 |
| Over 65 | 162 | 34 | 58 | 254 |
| Total | 1067 | 327 | 592 | 1968 |

TABLE 12

THE RELATIONSHIP BETWEEN SEX AND AGE GROUP OF PATIENTS ATTENDING (PERCENTAGES)

| <i>Age group</i> | <i>Male</i> | <i>Female</i> |
|------------------|-------------|---------------|
| 0-4 | 14.4 | 7.4 |
| 5-14 | 10.4 | 7.7 |
| 15-44 | 34.14 | 48.9 |
| 45-64 | 29.1 | 23.2 |
| Over 64 | 12.0 | 12.8 |

The relation between time of attendance and sex and age of the patient

The pattern of attendance of different age groups of patients is shown in Tables 10 and 11 for male and female respectively and significant interactions (X^2 , $p < 0.001$) between age group and time of session were noted.

Of the patients in this sample 40 per cent were male and 60 per cent were female. The analysis according to sex and age is contained in Table 12 where it is seen that relatively more adult female patients attend and more male children attend than the equivalent age groups of the opposite sex. Table 13 shows that more patients attend in the morning

TABLE 13
THE PERCENTAGE OF EACH AGE GROUP ATTENDING AT THE DIFFERENT SESSIONS

| <i>Age group</i> | <i>Morning</i> | <i>Afternoon</i> | <i>Evening</i> |
|------------------|----------------|------------------|----------------|
| 0-4 | 47.5 | 30.5 | 22.0 |
| 5-14 | 53.9 | 13.3 | 32.8 |
| 15-44 | 51.0 | 14.0 | 35.0 |
| 45-64 | 60.5 | 9.5 | 30.0 |
| Over 65 | 64.7 | 12.5 | 22.8 |
| Overall | 55.0 | 14.3 | 30.7 |

and evening than in the afternoon. The older patients particularly favour the evening whereas a relatively greater proportion of young children attend in the afternoon. Young adults have a slightly greater tendency to attend in the evening than other age groups. These findings are borne out by the percentages of the different age groups of patients attending at the different sessions (Table 14). The only notable difference between the sexes with regard to time of attendance was that proportionally more adult female than male patients attend in the afternoon.

TABLE 14
THE PERCENTAGES OF THE DIFFERENT AGE GROUPS OF PATIENTS ATTENDING AT EACH SESSION

| <i>Age group</i> | <i>Morning</i> | <i>Afternoon</i> | <i>Evening</i> | <i>Overall</i> |
|------------------|----------------|------------------|----------------|----------------|
| 0-4 | 8.8 | 21.8 | 7.3 | 10.2 |
| 5-14 | 8.6 | 8.2 | 9.4 | 8.8 |
| 15-44 | 39.8 | 42.1 | 49.0 | 43.0 |
| 45-64 | 28.1 | 17.0 | 25.0 | 25.5 |
| Over 64 | 14.7 | 10.9 | 9.3 | 12.5 |

Discussion

The survey

One advantage of this survey over Hutchinson (1969) was that it covered a greater variety of practice types and sizes. However, the sample size of 34 practices is probably too small to make any useful generalisation or comparisons between different practice characteristics and their influence on patient-attendance.

For example, the distance that a patient has to travel may be influenced by the list size or by the type of practice. The disentanglement of these two variables would be aided by a larger sample of practices and an appropriate experimental design. In addition, as only 100 patients were observed in each practice and as there is some doubt about the basis of selection, there is the very real possibility that the sample was not representative of that practice. The validity of the results is therefore in considerable doubt.

The results

The results of this survey mainly confirm the suspected pattern of travel characteristics of patients. There were few major differences between these results and those obtained by Hutchinson, one being the smaller proportion of accompanied patients in the present survey.

A main factor affecting the distance that a patient had to travel appeared to be list size—the critical dividing point being 5,000 patients. As would be expected, the type of practice also influenced average travel distance which decreased from the rural practices to the urban industrial ones. A more extensive survey would, however, be necessary to differentiate between the practice size and type variables.

The main factor affecting mode of transport was the distance that a patient had to travel, the critical distance being one mile which appeared, predictably, to be the approximate limit for walking, with a few exceptions. Possibly the lack of appropriate bus services contributed to the relatively high proportion of rural car travellers. Similarly the frequency of buses in inner urban areas may have contributed to the relatively high proportion of patients using this mode of transport. The relation between time of consulting session and mode of transport probably reflects the general incidence of one-car families.

That more female than male patients attend the consulting sessions may be interesting; however, this may only have a marginal influence on the planning of facilities. The relation between time of attendance and sex and age of a patient is probably not of great administrative interest, although the provision of special clinics could benefit from research taking into account these patient-variables.

Package programmes

This form of survey is one of a series of package programmes for administrative and clinical research in general practice which are being developed in the Department of Engineering Production, University of Birmingham and the Research Unit of the Royal College of General Practitioners. These programmes are aimed at simplicity of recording and analysis by manual methods in the practices concerned and by computer methods where larger scale surveys are conducted.

The survey may therefore be of value for practices where information relevant to planning of location and facilities is required—given that other constraints such as availability of land are not over-riding. Another possible application of this package programme may be for decisions about the provision of transport services, particularly in rural practices (Canvin, 1972).

Recorders

Dr R. J. F. H. Pinsent: Research Unit of the Royal College of General Practitioners.
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REFERENCES

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APPENDIX 1

ROYAL COLLEGE OF GENERAL PRACTITIONERS RESEARCH UNIT

Going to the doctor

PRACTICE CODE.....

Would you please complete the following questionnaire so that we can standardise our information about the practices taking part.

1. Name of principal.....
2. Address of practice centre
3. Number of doctors (including partners, assistants and trainees) involved in the work of the practice.....
4. Total list (NHS patients only).....
5. Would you describe your practice as: Ruralyes/no
 Rural, urban residentialyes/no
 Urban residentialyes/no
 Urban residential industrialyes/no
 Industrialyes/no
6. Do you operate from more than one practice centreyes/no
7. Is your practice on the dispensing listyes/no
8. Do you have an appointment system for practice sessionsyes/no
9. Is this complete?yes/no
10. Do you have local authority staff attached to your practice (specify)
11. Do patients see these members of your staff by appointment?yes/no
12. Do you operate special clinics within the practice? (eg antenatal, childcare) (specify)
13. Do patients attend these by appointment?yes/no
14. Any more particular features of your practice which you think might influence the way patients reach you? If so, could you please give us a short narrative account of these

Please send this completed questionnaire, with your recording sheets, to:
 Mrs P. J. Jones, Royal College of General Practitioners, General Practice Research Unit, c/o Birmingham Regional Hospital Board, 146, Hagley Road, Birmingham, B16 9PA.

APPENDIX 2

ROYAL COLLEGE OF GENERAL PRACTITIONERS RESEARCH UNIT

Going to the doctor

Please complete the form when the patient arrives.
Please insert a tick in the appropriate box.

| | | | | | | | | | | | | | |
|--------------------|------|--------------------------|---|--------------------------|-------|-----------------------------|---------------------------------------|--------------------------|-----|--------------------------|----|--------------------------|------------------------------|
| | | | | | | <u>Office use only</u> | | | | | | | |
| Sex | Male | <input type="checkbox"/> | Female | <input type="checkbox"/> | | 1. <input type="checkbox"/> | | | | | | | |
| Age | 0-4 | <input type="checkbox"/> | 5-14 | <input type="checkbox"/> | 15-44 | <input type="checkbox"/> | 45-64 | <input type="checkbox"/> | 65+ | <input type="checkbox"/> | NK | <input type="checkbox"/> | 2. <input type="checkbox"/> |
| Type of session | | | Open | <input type="checkbox"/> | | | By appointment | <input type="checkbox"/> | | | | | 3. <input type="checkbox"/> |
| | | | | | | | Special clinic | <input type="checkbox"/> | | | | | |
| Time of session | | | Morning (before 1.00 p.m.) | <input type="checkbox"/> | | | Afternoon (1.00 p.m.-4.30 p.m.) | <input type="checkbox"/> | | | | | 4. <input type="checkbox"/> |
| | | | Evening (4.30 p.m. onward) | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | |
| Mode of attendance | | | Walked | <input type="checkbox"/> | | | By bus | <input type="checkbox"/> | | | | | |
| | | | <input type="checkbox"/> | | | | By car (or motorcycle) as driver | <input type="checkbox"/> | | | | | 5. <input type="checkbox"/> |
| | | | <input type="checkbox"/> | | | | By car (or motorcycle) as driver | <input type="checkbox"/> | | | | | |
| | | | <input type="checkbox"/> | | | | By taxi | <input type="checkbox"/> | | | | | |
| | | | <input type="checkbox"/> | | | | Other (eg by train, bicycle, by pram) | <input type="checkbox"/> | | | | | |
| Distance from home | | | Under 1 mile | <input type="checkbox"/> | | | 1-2 miles | <input type="checkbox"/> | | | | | |
| | | | 2-3 miles | <input type="checkbox"/> | | | 3-5 miles | <input type="checkbox"/> | | | | | 6. <input type="checkbox"/> |
| | | | Over 5 miles | <input type="checkbox"/> | | | Not known | <input type="checkbox"/> | | | | | |
| Patient came | | | Alone | <input type="checkbox"/> | | | Accompanied by adult | <input type="checkbox"/> | | | | | 7. <input type="checkbox"/> |
| Reason for coming | | | Patient attended to get repeat prescription | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | |
| | | | Patient attended to get certificate only | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | 8. <input type="checkbox"/> |
| | | | Patient attended to see doctor only | <input type="checkbox"/> | | | | <input type="checkbox"/> | | | | | |
| Practice code | | | | | | | | | | | | | 9. <input type="checkbox"/> |
| | | | | | | | | | | | | | 10. <input type="checkbox"/> |