

PAIN IN THE BACK: AN ATTEMPT TO ESTIMATE THE SIZE OF THE PROBLEM*

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SUMMARY

British morbidity statistics are reviewed to try to estimate the size of the problem of the painful back. National Insurance figures yield an estimated 13.2 million working days lost in one year, though only 68% of this is identified in routinely published statistics. Other bodies of data (G.P. consultations, outpatient and inpatient flows, spinal supports supplied) indicate use of services by sufferers. The difficulties in retrieval caused by the structure of the International Classification of Diseases (ICD) and the effects of the latest revision of it are examined.

THE painful back has been described as a bore (Hill, 1973), perhaps not least because, like the poor and the homeless, it is always with us. But unlike poverty and housing, which obviously call for social remedies, pain in the back is a symptom referred to physical structures in the body; it therefore has to be admitted as a challenge that medicine must face. The problem is additionally a bore because practitioners are relatively unsuccessful in responding to the therapeutic challenge, be they orthodox or heterodox in their approach, and despite enthusiastic claims to the contrary by the optimistic (e.g. Cyriax, 1972). We all prefer to avoid acknowledging failure, but difficulties rarely disappear by virtue of being ignored. This paper is offered in the belief that an attempt to get the measure of a problem is often a useful contribution to promoting attack. It essays quantification of the prevalent impression that morbidity due to back troubles is a considerable community burden.

SOURCES AND METHODS

NATIONAL INSURANCE

Each year the Department of Health and Social Security (DHSS, 1968) prepares diagnostic breakdowns of the numbers of claims for sickness and injury benefit and the numbers of working days claimed for, based on a sample of all claims. The proportion sampled was 5% up to and including the year 1968-9 and 2½% thereafter. The diagnostic categories used are those of the International Classification of Diseases (ICD) and we list the ones we have used in Table I. For some of these, we have had to obtain the figures by special request from the DHSS since they do not appear in the regular tabulations. In instances where we required to estimate fourth digit subdivisions of ICD categories and DHSS were only able to supply totals for three-digit categories, we used a sample of some 40 000 hospital discharges (being a subset of the 1970 Hospital Inpatient Enquiry (HIPE) data) to estimate the relevant fraction. We give these fractions below, using $n()$ to denote the number of discharges assigned to the specified category:

$$\frac{n(712.4)}{n(712)} = \frac{7}{175} = 0.040$$

$$\frac{n(713.1)}{n(713)} = \frac{59}{215} = 0.274$$

* Based on a paper presented to the first scientific meeting of the Society for Back Pain Research at Leeds on 15th June 1972.

TABLE I

ICD (EIGHTH REVISION) CATEGORIES RELEVANT TO THE PAINFUL BACK AND THEIR AVAILABILITY IN 1969/70* NATIONAL INSURANCE DATA, WITH SEVENTH REVISION NUMBERINGS TO AND COMPARISONS WITH EARLIER DATA

	ICD/8 categories	ICD/7 categories
<i>Given in routine DHSS tabulations</i>		
†Sciatica	353	363
†Lumbago	717.0	726.0
Displacement of intervertebral disc	725	735
<i>Additional categories supplied by DHSS</i>		
Affection of sacroiliac joint	726	736
Back pain n.o.s.	728.9	787.5 (part)
Spinal curvature	735	745
<i>Three-digit categories of partial relevance, also supplied by DHSS</i>		
Rheumatoid arthritis	712	722
includes: ankylosing spondylitis	(712.4)	(722.1)
Osteoarthritis	713	723
includes: that of spine	(713.1)	(723.1)
Ankylosis of joint	727	737
includes: that of spine	(727.0)	(737.0)
Vertebrogenic pain syndrome	728	‡
includes: pain in thoracic spine	(728.5)	(787.5, part)
low-back pain	(728.7)	(787.5, part)

* 2 June 1969-30 May 1970.

† Routinely tabulated for sickness benefit only: figures for injury benefit were supplied by DHSS.

‡ No corresponding category in ICD/7.

$$\frac{n(727.0)}{n(727)} = \frac{3}{10} = 0.300$$

$$\frac{n(728.7)}{n(728.0-728.8)} = \frac{21}{23} = 0.913$$

INDUSTRIAL SURVEYS

Use is made of Anderson's (1971) results, which are compiled from surveys on men in various industries carried out by the Arthritis and Rheumatism Council's Industrial Survey Unit in Edinburgh.

GENERAL PRACTICE

Data have been used from the study carried out by the College of General Practitioners and the General Register Office (Logan and Cushion, 1958) which used records from 106 practices in England and Wales for a twelve-month period in 1955-6, and from the study by Partridge and Knox (1969) on seven practices in Fife, Scotland, for twelve months in 1964-5.

HANDICAP

Estimates have been used for the numbers of permanently handicapped and impaired persons in Great Britain with various conditions, produced by the Government Social Survey from a national sample of households (Harris, 1971).

HOSPITAL INPATIENTS

Data are used from the 1970 Hospital Inpatient Enquiry (HIPE) (DHSS and OPCS, 1972) which is based on a one in ten sample of all discharges from and deaths in hospitals in England and Wales in that year.

OTHER DATA

Data on outpatient attendances and numbers of spinal supports supplied have been obtained from DHSS and the Scottish Home and Health Department.

RESULTS

NATIONAL INSURANCE

Table II shows our aggregated estimates for spells commencing and days off work due to the painful back in the working population of Great Britain, namely 391 thousand spells and 13.2 million days. Only 67% of spells and 68% of the days appear in the routine tabulations. The rates of spells per thousand persons per year (sickness and injury combined) are 22.6 for males and 11.0 for females. The rates of days off per thousand persons are 747 for males and 421 for females.

The effect of ICD revision

At the eighth revision most of the categories were unchanged in definition, though there was a general renumbering. The only major changes concerning the painful back were in the handling of ill-defined symptoms, which under the seventh revision formed part of 787 (symptoms referred to the limbs and back), and under the eighth were transferred to the new category 728 (vertebrogenic pain syndrome), 787 being restricted to symptoms in the limbs and joints. Besides the vague symptoms 728 contains more specific syndromes indicative of vertebrogenic myelopathy, which were classified elsewhere under the seventh revision. Fig. 1 shows diagrammatically the spells of sickness incapacity in men in 1967-8 (the last year the seventh revision was used) and in the three subsequent years. There was a sharp fall in lumbago with the introduction of the eighth revision and the only likely explanation seems to be that some of the spells formerly coded to lumbago are now being coded to 728.7 or 'lumbalgia'. Since 728 is not identified in the routine National Insurance tabulations but grouped with miscellaneous musculoskeletal disorders the over-all effect of the eighth revision has been to produce an apparent but quite artefactual fall in back morbidity.

Duration of spells of sickness incapacity

Table III shows the distribution of the duration of spells for the main categories. Though one might expect some overlap in the usage of the various terms, their average durations show a plausible gradient in severity; spells diagnosed as displaced disc or sciatica tend to be longer.

TABLE II

SPELLS OF INCAPACITY COMMENCING AND DAYS OF WORK LOST DUE TO THE PAINFUL BACK IN THE YEAR 1969/70, DERIVED FROM SICKNESS AND INJURY BENEFIT STATISTICS FOR GREAT BRITAIN

Category with ICD/8 number	Males		Females	
	Spells (thousands)	Days (millions)	Spells (thousands)	Days (millions)
<i>Sickness:</i>				
From routine DHSS tabulations				
Sciatica (353)	51.60	1.84	6.68	0.21
Lumbago (717.0)	102.32	1.91	13.80	0.26
Displaced disc (725)	67.48	3.56	9.24	0.65
Additional categories supplied by DHSS				
Affection of sacroiliac joint (726)	0.16	0.01	—	—
Back pain n.o.s. (728.9)	63.92	1.35	12.40	0.26
Spinal curvature (735)	0.48	0.07	0.08	0.01
Estimated four-digit categories				
Ankylosing spondylitis (712.4)	0.32	0.09	0.11	0.05
Osteoarthritis of spine (713.1)	9.70	1.06	1.52	0.21
Ankylosis of spine (727.0)	0.20	0.03	0.01	0.01
Low-back pain (728.7)	31.48	0.77	4.46	0.16
<i>Injury:</i>				
From routine DHSS tabulations				
Displaced disc (725)	9.12	0.46	1.32	0.09
Additional categories supplied by DHSS*				
Sciatica (353)	0.24	0.01	0.04	0.001
Lumbago (217.0)	1.04	0.02	—	—
Back pain n.o.s. (728.9)	1.48	0.04	0.16	0.01
Estimated four-digit categories*				
Osteoarthritis of spine (713.1)	0.23	0.01	0.01	0.002
Low-back pain (728.7)	1.28	0.04	0.15	0.006
Sickness from routine tabulations	261.56	8.98		
and Injury: additional categories	80.00	1.78		
(both sexes) estimated categories	49.47	2.44		
Total sickness and injury (both sexes) ..	391.03	13.20		

* There were no spells of injury incapacity attributed to sacroiliac affection; curvature, or ankylosis of spine; or ankylosing spondylitis.

INDUSTRIAL SURVEYS

Anderson (1971) reported that out of 2684 men (mainly heavy manual workers) examined in industrial surveys, 52% were judged to be suffering from rheumatic diseases. Twelve per cent of the men had disc disease, which accounted for 51% of the time lost from work with rheumatic disease in the previous year. Eighteen per cent had vague pains in the back or neck, which accounted for 15% of the rheumatic work loss. Of those men with disc disease, 43% had consulted their G.P.s in the preceding year and 37% had been referred to outpatients at some time in the past, these two proportions being higher than for any other of the main categories of rheumatic disease. Twelve per cent had been admitted as inpatients at some time. The rates for time off work due to disc disease and vague back pain were 174 and 51 weeks per 1000 men respectively.

OTHER MORBIDITY STATISTICS

The main figures for back pain in general practice, inpatient discharges, and handicapped persons are summarized in Table IV.

TABLE III
SICKNESS INCAPACITY IN MALES: DURATION OF SPELLS, 1969/70

Category with ICD/8 number	Mean length of spells (working days)	Percentage distribution of lengths of spells			
		≤ 2 weeks	2-8 weeks	2-6 months	> 6 months
Lumbago (717.0)	18.7	50	45	4.4	0.5
Back pain n.o.s. (728.9) ..	21.2		(not available)		
Rest of vertebrogenic pain ..	24.4		(not available)		
syndrome (728, excl. 728.9) ..	35.6		54	14	
Sciatica (353)	35.6	30	47	19	2.2
Displaced disc (725)	52.8	28			5
Estimated total painful back	32.6		(not available)		
All rheumatic diseases* ..	38.7	45	43	9	3
All causes of incapacity ..	33.1	56	35	7	2

* Here and elsewhere in this paper, rheumatic diseases are defined as the following ICD/8 categories: 274, 353, 390-392, 710-718, 722, 724-738, 787. Certain bone diseases (720, 721, 723) are included if the detail of breakdowns does not permit them to be excluded—they are only a small fraction of the total.

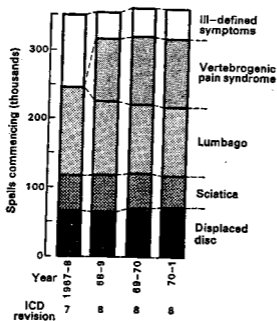


FIG. 1.—Spells of sickness incapacity in males in Great Britain: effect of changes between seventh and eighth ICD revisions

TABLE IV

THE PAINFUL BACK AS IT APPEARS IN GENERAL PRACTICE, HOSPITAL INPATIENTS, AND HANDICAPPED PERSONS

	Country	Number (thousands)	Percentage	
			of all rheumatic complaints	of all morbidity
General Practice* consultations	GB	3147	21.1	2.0
patients consulting	GB	1126	23.8	4.2
Hospital discharges and deaths†	E & W	34	19.7	0.7
Handicapped persons‡	GB	79	7.5	2.4

*Rates for patients aged 15+ consulting and consultations by them in one year applied to the population of Great Britain. ICD/7 categories 363, 722.1, 726.0, 735, 787.5 (Logan and Cushion, 1958).

† HIPE 1970. ICD/8 categories 353, 725, 726, 728, 735 (DHSS and OPCS, 1972).

‡ Estimates from the Government Social Survey for the ICD/7 categories 363, 726.0, 735, 745, 787.5 (Harris, 1971).

General Practice

When applied to the population of Great Britain, the rates given by Logan and Cushion (1958) would indicate that about 1.1 million persons aged 15 and over consult their G.P.s with back pain each year, and they make a total of 3.1 million consultations. The rates from Partridge and Knox (1969) in their Fife study would indicate only 542 thousand patients consulting, but aside from the possibility that the Scots may visit their doctors less often than the English, the two figures are not directly comparable. Partridge and Knox counted new cases, whereas Logan and Cushion included cases carrying over from the preceding year; the figure quoted by the former authors also relates only to symptoms in the lumbar region.

Outpatient attendances

Unfortunately there are no routine statistics for outpatients subdivided by diagnosis. Figures are available for different specialties, however, and it has been estimated that 35% of the patients seen in one orthopaedic clinic were suffering from pain arising in the spine (Arden, 1972). If this figure applied in all orthopaedic clinics in Britain it would imply 487 thousand new outpatients each year, or 4.6 per cent of new patients in all specialties.

Inpatient discharges and operations

In 1970 there were an estimated 34 thousand discharges in identifiable back-pain categories in England and Wales. Some of the statistics produced by HIPE are available for displaced discs but not for other relevant categories; these are shown in Table V. Thus the average patient with a slipped disc has an even chance of being admitted in under three weeks, though it is evident from the higher mean-waiting-time that some have to wait more than six weeks. Once in hospital, the average patient stays in for 2-3 weeks. The estimated annual number of operations on the disc is 5.1 thousand or roughly one to every three admissions in the disc category.

TABLE V
ADMISSIONS TO HOSPITALS IN ENGLAND AND WALES WITH
DISPLACED DISC (HIPE, 1970): SUMMARY OF STATISTICS

Annual number of discharges and deaths	14.5 thousand
Median waiting time for admission	3.0 weeks
Mean waiting time for admission	6.3 weeks
Median duration of stay	16.7 days
Mean duration of stay	19.8 days
Average number of beds used daily	783
Beds used daily per million population	16.0
Discharge rate per million population per year	300
Annual number of operations on discs	5.1 thousand

Handicapped persons

The household survey carried out by the Government Social Survey (Harris, 1971) indicates that there are 79 thousand persons in Great Britain permanently impaired with back ailments.

Spinal supports

The NHS supplied 259 thousand spinal supports in Great Britain in 1969. For some reason, the Scots only take about half as many per head of population as the English; they also use less of other orthopaedic appliances (Benn and Wood, 1972a).

DISCUSSION

THE SIZE OF THE PROBLEM

Of the various bodies of data available, the National Insurance figures yield the fullest estimate of the morbidity in the community in terms of person-days of disability. Our estimate of 13.2 million days lost due to the painful back is by any standard a serious amount, as it makes up 3.6% of all sickness and injury incapacity, and is not inconsiderable compared with such major time-losers as bronchitis and emphysema (39 million days), influenza (26 million), and ischaemic heart disease (17 million). It constitutes a greater loss of time than strikes [6.8 million days in 1969, 11.0 million days in 1970 in the U.K. (Central Statistical Office, 1971)]. Comparisons of this sort have led Cochrane (1972) to remark, somewhat provocatively, that "if strikes are a threat to the economy, the NHS must be a disaster". The industrial surveys showed even higher loads of morbidity: 225 weeks per 1000 men per year, compared with 747 days per 1000 men from the National Insurance figures. Presumably this is because heavy manual workers have a lot more disability than the average. However, we should not forget that the employed population are only a part of the whole community; there are also housewives, the elderly, and the retired. The numbers of persons consulting their G.P.s (1.1 million) and going to outpatients (0.49 million at a rough estimate) exceed the number of spells of sickness and injury (391 thousand), which shows that National Insurance figures do not give us the whole story.

THE USE OF SERVICES

The other bodies of data relate to smaller and more severely disabled groups of people. By considering them in order we can gain a profile of the way sufferers in the community make use of general and specialist services. Out of ten thousand persons onl

19 will be permanently impaired with back pain by the Social Survey's criteria; 273 will consult their G.P. with back pain in one year. Of these, one in 2.3 will go to outpatients, one in four will get a spinal support, one in thirty will be admitted as an inpatient, and one in two hundred will have an operation on a disc. Of those admitted, 67% go into orthopaedic departments, 9% to neurosurgery, and the rest to other departments; these percentages have been estimated from 1967 HIPE tabulations in the manner described by Benn and Wood (1972b). Le Vay (1967) estimated from a questionnaire survey of orthopaedic surgeons and neurosurgeons that 57% of disc operations are done by orthopaedic surgeons and 43% by neurosurgeons. He estimated that 39% of orthopaedic surgeons refer cases to a neurosurgeon instead of doing the operation themselves—this would account for the proportion of operations done by neurosurgeons being higher than the proportion of patients admitted to their care.

This pattern of use of services can be regarded in two ways. From the point of view of the sufferers in the community, only a minority of them receive specialist attention. From the point of view of the specialist, he is only seeing the 'tip of the iceberg', the numerically minor albeit the clinically more serious part, of the total morbidity.

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