LOW BACK PAIN*

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THE LITERATURE contains many references to low back pain, but few attempts have been made to assess its incidence in the general population. J. D. G. Troup[1] investigating heavy manual workers, remarked on the absence of data on low back disorders in the non-insured members of the population, and in those whose low back disorder was not sufficient to prevent them from working. Dr P. A. Walford[2] assessed the incidence of the various clinical entities which cause low back pain, and he discussed the difficulties in using the nomenclature of World Health Organization's International Classification. Dillane, Fry and Kalton[3] studied the incidence, duration, and cause of acute lower backache in a single suburban practice.

Fifteen practices in this survey lie within the boundaries of Derbyshire, Nottinghamshire and Lincolnshire. One practitioner, previously in the area, moved to Flotta, Orkney, and was included in the survey. Our aims were to measure the incidence of low back pain in this group of 16 general practices, widely different in type and location, to note the age, sex, and seasonal incidence, its relation to occupation, to known recent backstrain, and its effects in terms of time off work. It was essential to define low back pain carefully if our results were to be valuable to others interested in this field. Our definition was pain below the level of the ribs in the back, but not in the abdomen, unilateral, or bilateral. It included root pain in the lower limbs associated with signs in the lumbar spine, for instance, limitation of movements of lumbar spine, with or without limitation of straight leg raising. Any of the following diagnoses were included: Lumbago, sciatica, lumbar disc lesions of all kinds, fibrositis of

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lumbar or gluteal regions, sacro-iliac strain, lumbar spondylosis, arthritis of the lumbar or sacro-iliac regions, strained back, rheumatism of the lumbar region, and backache. If they consulted their doctor with back pain as one of their primary complaints patients were included whether their condition was acute, recurrent, or chronic. The following were excluded: Muscular pains associated with fever, obvious hysteria, pain associated with abdominal or pelvic visceral disease, children aged 14 years or under, and those patients in whom low back pain was not one of the primary symptoms for which the patient was attending. Members of the survey group were asked to use their normal care in questioning, examination, and investigation of cases.

Method

Case record cards were supplied, one of which was completed for each patient with low back pain, whether presenting with first symptoms, or a recurrence. The name, date of birth, sex, date of onset of low back pain, date of first consultation, date of first certificate, and date of final certificate, or of return to normal activity were noted. Enquiry was made into episodes of low back pain involving three or more days off work during the previous five years. The patient's occupation was noted—the specific work undertaken as well as the name of industry (e.g. steel industry—clerk). Three questions were asked of each patient, and they were posed in the same way to all patients in the survey:

1. Does this occupation involve heavy lifting, bending, or twisting?
2. Did you engage in any unusual heavy lifting, bending or twisting at work or otherwise, during the 72 hours preceding the onset of the pain?
3. If so, what?

In addition, there was space on the card for comments when in doubt concerning the relevance of activity or diagnosis. Seventy-two hours was chosen as the time limit, because memory for activities beyond this time might be unreliable.

Each practice provided a census of its population derived from an age–sex register, and continued observations for 12 months. The majority of practices began work on the survey in November 1963, but some commenced later, and all cards were collected in March 1965.

Results

There were 478 male and 348 female patients who consulted one or more times in the period, giving rates of 22.8 and 15.3 per 1,000 respectively (table I). In both sexes the rates were lower in the youngest and oldest patients (15–24 and 65 years of age and over), but were more than twice as high in patients between 25 and 64 years. Most of the patients—306 (64 per cent) men, and 266 (76 per cent) women

TABLE I

REPORTED CASES OF LOW BACK PAIN, ALL PRACTICES, AND RATES PER 1,000 POPULATION

Age	*Males*					*Females*				
	Population	*Reported cases*		*Rates per 1,000*		*Population*	*Reported cases*		*Rates per 1,000*	
		Total	*'New'*	*Total*	*'New'*		*Total*	*'New'*	*Total*	*'New'*
15–24	3,985	42	37	10.5	9.3	4,017	31	24	7.8	6.0
25–44	7,659	188	113	24.5	14.8	7,689	152	111	19.8	14.4
45–64	6,667	210	129	31.5	19.3	7,155	135	105	18.9	14.7
65 +	2,661	38	27	14.3	10.1	3,932	30	26	7.6	6.6
All 15 +	20,972	478	306	22.8	14.6	22,793	348	266	15.3	11.7

A 'new' case is one in which there has been no history of similar complaint in the previous five years.

TABLE II

HISTORIES OF OCCUPATIONAL AND RECENT LIFTING IN REPORTED CASES

Age	*Males*					*Females*				
	Reported cases	*Occupational lifting*		*Recent lifting*		*Reported cases*	*Occupational lifting*		*Recent lifting*	
		No.	*Per cent*	*No.*	*Per cent*		*No.*	*Per cent*	*No.*	*Per cent*
15–24	42	28	*67*	24	*57*	31	13	*42*	11	*35*
25–44	188	141	*75*	85	*45*	152	64	*42*	44	*29*
45–64	210	135	*64*	75	*36*	135	60	*44*	45	*33*
65 +	38	14	*37*	12	*32*	30	8	*27*	9	*30*
All 15 +	478	318	*67*	196	*41*	348	145	*42*	109	*31*

—had not consulted a doctor for the same complaint during the previous five years, that is, they were ' new cases '. In a separate analysis, not shown here, the number of patients reported, and the corresponding rates for all persons 15 years and over in each practice, were compared. As the practices differed in age and sex composition a better comparison is provided by the ratios of the number of cases reported, to the number that would have been expected if the practice had experienced the age-specific rates for all practices as shown in table I. The levels of reporting varied widely, several practices having ratios of over 200 (twice the average rates), and others well below 50 (half the average rate). These differences could be due to three sources of variation, (1) the readiness with which patients consult, (2) the levels of reporting by doctors, and (3) real differences in the incidence of the pathological conditions responsible for the symptoms. It is impossible to determine the contribution each source made to the variation in rates.

Table II shows that 67 per cent of the men and 42 per cent of the women claimed that they had to do heavy lifting, bending, or twisting as part of their normal activities, but only 41 per cent of the men, and 31 per cent of the women claimed that unusual strains of this kind had occurred in the 72 hours before the onset of symptoms. Among the men there was some evidence that recent unusual lifting was more common preceding the onset in the younger than the older patients, but this trend was not seen in the women. In both sexes occupational lifting was naturally less common in those 65 years and over, many of whom had retired, but otherwise there was no trend with age. A separate analysis, not shown here, indicated that the histories of occupational and recent lifting were very similar in old and new patients, i.e., those with and without a history of previous attacks in the last five years.

It is possible to subdivide the patients into four categories by histories of occupational and recent lifting, and these are shown below, with the percentage of patients in each:

Occupational lifting, but no recent lifting;	men	*30*	women	*18*
Occupational and recent lifting;	„	*37*	„	*23*
Recent lifting, but no occupational lifting;	„	*11*	„	*13*
No occupational or recent lifting;	„	*22*	„	*46*

This gives no indication that there was any association between the two kinds of history. A patient reporting an occupational risk was neither more nor less liable to have had a recent experience of severe lifting. This provides no support for the hypothesis that the aetiology is different in active and sedentary workers, or that sedentary workers are particularly at risk when they engage in unusual activity. Twenty-two per cent of the men and 46 per cent of the

women gave no history of occupational or other physical strain.

Table III shows the time off work in the year for patients under 65 years of age. Many of the older patients had retired and could not contribute usefully to this analysis. The younger group, those 15–44 years, had a higher proportion with no lost time, 29 per cent for men, and 46 per cent for women, compared with 18 per cent and 38 per cent for those 45–64 years. As might be expected, more

TABLE III
DAYS OFF WORK FOR PATIENTS UNDER 65 YEARS OF AGE

No. of days off work in the year	*Males*				*Females*			
	15–44 years		*45–64 years*		*15–44 years*		*45–64 years*	
	No.	*Per cent*	*No.*	*Per cent*	*No.*	*Per cent*	*No.*	*Per cent*
None ..	67	*29*	37	*18*	84	*46*	51	*38*
1–7	39	*17*	34	*16*	31	*17*	20	*15*
8–14 ..	42	*18*	33	*16*	24	*13*	18	*13*
15–21 ..	30	*13*	33	*16*	15	*8*	11	*8*
22–28 ..	10	*4*	17	*8*	4	*2*	7	*5*
29 + ..	35	*15*	37	*18*	11	*6*	15	*11*
Not known ..	7	*3*	19	*9*	14	*8*	13	*10*
All periods ..	230		210		183		135	
Median time off work (days)	13.5		16.1		10.4		13.4	

women, largely housewives, than men lost no time. Correspondingly, the proportion losing more than three weeks was less in the younger group, 19 per cent for men, and 8 per cent for women, compared with 26 per cent and 16 per cent for those 45–64 years. The median number of days off work for those losing any time at all was less in women than in men, and in both sexes was less for patients 15–44 years than for those 45–64.

The patients followed a wide variety of occupations, from sedentary to heavy manual, but as there was no information on the occupational grouping of the practices, it was impossible to determine whether any particular type of work carried an increased liability to low back pain. It was possible, however, to examine the influence of recent lifting, and the time off work in heavy and light occupations. For this purpose the classification 'heavy' or 'light' was determined by whether the patient reported that his job did or did not involve heavy lifting.

Table IV shows the proportion of men who reported unusual heavy lifting in the 72 hours preceding the onset of back pain. In both

heavy and light occupations recent lifting was reported most by the younger men, 15–24 years, and least by those 45–64 years of age. At ages 15–24 years, the proportion reporting recent lifting was almost

TABLE IV

HISTORIES OF RECENT LIFTING IN PATIENTS DOING HEAVY AND LIGHT JOBS

Age (years)	*Heavy job*	*Light job*
	Percentage reporting recent lifting	*Percentage reporting recent lifting*
15—24	*58*	*56*
25—44	*49*	*40*
45—64	*40*	*26*

the same in heavy and light occupations, but in the older group, 25–44 and 45–64 years, more recent lifting was reported by those doing heavy jobs. This again provides no support for the suggestion that sedentary workers are particularly at risk when they engage in unusual activity.

Table V shows the average time off work because of low back pain for patients doing heavy and light jobs. As might be expected, the

TABLE V

AVERAGE TIME OFF WORK FOR PATIENTS DOING HEAVY AND LIGHT JOBS

Age (years)	*Heavy job days*	*Light job days*
15—24	12.1	11.3
25—44	16.0	10.0
45—64	21.3	11.9

heavy worker, particularly as he gets older, finds low back pain a greater disability than someone in a light job, and at 45–64 years of age has almost twice as long off work. For light workers the average time off work did not increase with age. Here our findings differ from Dillane, Fry and Kalton.[3] The relationship we find between duration of attacks and age is not likely to be so marked in the largely middle-class population which they studied.

In table VI the new cases, i.e., those without attacks in the previous five years, are classified according to the dates of first consultation. There is a remarkable similarity in pattern of consultation in both

sexes. During the period November 1963–January 1964, there were more first consultations than in any other months. The numbers fell in the next two periods, but showed a slight rise in the period

TABLE VI
DATE OF FIRST CONSULTATION, NEW CASES ONLY

Date	*Males*		*Females*	
	No.	*Per cent*	*No.*	*Per cent*
Nov. 1963–Jan. 1964	95	*32*	82	*32*
Feb. 1964–Apl. 1964	76	*26*	69	*27*
May 1964–Jul. 1964	61	*20*	52	*20*
Aug. 1964–Oct. 1964	66	*22*	56	*22*
Total in 12 months	298		259	

Total patients who consulted outside the 12 months Nov. 1963–Oct. 1964 have been excluded.

August–October 1964. The pattern may represent a true seasonal variation in the onset of the low back pain, and may be worth further examination. It is also possible that the variation may be influenced by changes in the levels of reporting at different stages in the survey.

Discussion

Low back pain is a very common complaint, as is shown by its high incidence of 22.8 per thousand in men and 15.3 per thousand in women. It also represents a serious economic factor since it appears to affect individuals in many different types of occupation, and the average days off work for patients under 65 years of age was approximately two weeks in men and slightly less in women. The lower rates found in men and women between 15 and 24 compared with those between 25 and 64 corresponds to the general clinical experience of those concerned in the management of low back pain. The general trend suggests that a proportion of the population is liable to get low back pain whatever the occupation, and that this liability increases with age at any rate up to 65. While heavy work under cramped conditions is more likely to be associated with low back pain (Troup[1]), this does not necessarily mean that the actual incidence of low back symptoms is necessarily greater in heavy workers than in others. If a man has low back pain, he will not be able to continue to work under cramped conditions, whereas a more sedentary worker, such as a clerk, may well be able to carry on his work, or at least to do so with the help of a support or belt.

The possibility that those not accustomed to heavy work might be more prone to do injury to their backs when they indulge in some

heavy strain, such as unaccustomed gardening, did not prove to be so. Only 11 per cent of men and 13 per cent of women whose normal occupation did not involve lifting experienced some form of unusual strain immediately preceding the incident reported. Men who did normally lift in their occupation gave a history of a recent strain in 37 per cent, and of no particular strain in 30 per cent, and the corresponding figures for women were 23 per cent and 18 per cent respectively. Nevertheless, nearly half of the women (46 per cent) and over one fifth of the men neither lifted in their occupation, nor gave any history of recent strain to the back.

These findings are in agreement with those of an investigation by Holt in Denmark[4], who found no significant difference in lumbago and sciatica in heavy workers compared with light or medium workers. It is known that many patients with low back pain are suffering from one or other variety of intervertebral disc lesion. Recent investigations of age changes in intervertebral discs by Naylor[5] have shown that there is an increasing liability with age for the disc to degenerate and to gain tension, so that it may rupture under progressively less provocation as an individual becomes older. This view would correspond very well with the findings that younger patients between the ages of 15 and 24, though less frequently affected by low back pain, had a history of recent lifting in 57 per cent, compared with 36 per cent in those aged between 45 and 64. The trend suggests that low back pain is to some extent an inevitable disability in many individuals, and that although it may be precipitated by an acute strain to the back, this is not necessarily so. It may occur in an individual who engages in heavy work involving lifting, or in those who do not lift whether or not they sustain any particular strain to the back. It is unlikely that this series discovered all the patients with low back pain in the 16 practices. Some of them would not consult their doctor about it, but the number who did shows that the problem is large, that it represents an extensive source of disability and pain in the population generally, and that its economic effect is significant.

Summary

Low back pain is defined, and its incidence in a population of 45,000 (being the total population aged 15 +) of 16 varied general practices in the North Midlands, is examined in relation to age, sex, season, occupation, and to the occurrence of back strain of severe or unusual kind.

The level of reporting varied quite widely in the different practices and this is discussed. Further study of both the season variation, and of the incidence of low back pain relative to the occupational spectrum of the total population may be useful. The survey does not support the widely-held belief that sedentary workers are particularly

at risk when they engage in unusual activity. Low back pain is widely distributed in a range of light and heavy occupations. It is a disability, the liability to which increases with age up to 65 years, and the loss of work is likely to be greater in heavy workers, though the incidence may not be very different from that in lighter occupations. It constitutes a very serious economic and medical problem.

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Influenza

". . . It does not, like Plague, desert for ages a country which it has once afflicted, nor is it accustomed, like the Sweating-sickness, in any marked manner to limit its attack to particular nations, or races of mankind. There is a grandeur in its constancy and immutability superior to the influence of national habits. . . . The disease, moreover, exhibits in the well ordered mansions of modern days, a phenomena similar to those which it presented in the time when rushes strewed the ground in the presence chambers of our monarchs, and decaying animal and vegetable matter obstructed the porticoes of palaces."

Theophilus Thompson, *Annals of influenza*, London: The Sydenham Society 1852.