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PSYCHIATRIC AND SOCIAL FACTORS RELATED TO LOW-BACK PAIN IN GENERAL PRACTICE

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SUMMARY

In a study of 1499 patients over six years in a general practice, an association was found between a history of low-back pain and a history of psychological illness, in several demographical groups. The association was strongest in patients of both sexes, aged 35–44, and in women aged 55–74. Patients with a history of low-back pain were more likely to have had a diagnosis of 'anxiety', than non-low-back-pain patients, whereas there was no significant difference in the incidence of 'depression' between those with, and those without, low-back pain.

BACK-ACHE is a common symptom in general practice. The National morbidity survey (Office of Population Censuses and Surveys, 1974) showed that back-ache accounts for about one third of the consultations for diseases of the musculo-skeletal system and connective tissue, and about 1 in 40 of all consultations with a general practitioner.

There is a common belief among many doctors that many cases of back-ache have a large psychological component and several studies have previously investigated the relationship between psychological factors and back pain. Hanvik (1956) used the Minnesota Multiphasic Personality Inventory (MMPI) as a means of differentiating between cases of presumed psychogenic back-ache and cases where there was definite evidence of herniated intervertebral disc. He found statistically significant differences between the two groups on six scales of the MMPI, the 'functional' patients achieving higher scores. Hanvik considered these patients to have a neurotic type of profile, as judged by the scores on the Inventory.

The MMPI was also used by Sternbach *et al.* (1973). Like Hanvik they found elevation of the hypochondriasis and hysteria scales, which is common to most, if not all, psychosomatic disorders, and also a significant elevation on the depression scale. Westrin, Hirsch and Lindegard (1972) investigated 276 patients sick-listed with low-back pain, compared with non-low-back-pain cases as controls. The investigation included a detailed psychiatric inventory, specialist opinion as to the mental status, a comprehensive psychiatric diagnosis, and data regarding psychiatric care received by the patient. They were able to show significant differences in low-back pain patients and controls regarding certain personality factors, but they could not prove a close connection between low-back pain and psychiatric problems. Wolkind and Forrest (1972) investigated 50 male patients attending a physiotherapy department for treatment for back pain. Patients with evidence of intervertebral disc lesions, either on X-ray appearances, or with signs of local nerve pressure, were excluded. The Middlesex Hospital Questionnaire, a self-rating scale of psychoneurotic symptoms and behaviour, was used to measure the prevalence of psychiatric symptoms. Of the 50 patients in this group, 23 had handicapping symptoms. These investigators were further able to show that the questionnaire scores distinguished between those patients with a good, and those with a poor outcome. In a further paper

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by the same authors (Forrest and Wolkind) published in 1974, the questionnaire scores were compared with the questionnaire scores of a normal population of 1288 men employed by the Atomic Energy Authority. The results suggested that there are distinct populations of patients with low-back pain. Forrest and Wolkind postulated that the 'poor-response' group was characterized by a depressive syndrome described principally in somatic terms. In these patients, depression was not recognized and, hence, back-ache can be seen as a 'depressive equivalent'.

Because these studies were carried out on chronic patients who had had back-ache for some considerable time, these findings might not be relevant to the type of patient seen commonly in general practice. There has been surprisingly little study of this aspect of back pain in general practice in the past. Blair (1963) discussed the relationship of psychological illness to back-ache. Of the 67 women who complained of back-ache, 26 showed signs of anxiety and 7 of depression, but none of the men with back pain in the study apparently suffered from psychological illness. Unfortunately he did not consider whether the number of back-ache patients who had psychoneurosis or depression was more or less than one would anticipate from the incidence of psychological illness in his practice. In another study from British general practice, Dillane, Fry and Kalton (1966) did not discuss psychological factors in their patients, despite finding no evident cause for back-ache in 79.3% of males and 88.8% of females. Rutter (1964) found 12 cases of anxiety state in 126 cases of lumbo-sacral back-ache. Whether this is more or less than the number of cases one would expect from his practice was not stated.

In view of this lack of knowledge of the incidence of psychological illness in patients with low-back pain as seen in general practice, I have been carrying out several studies into this area. One study will be reported here.

The purpose of the study was to determine whether patients who had low-back pain were more likely to have consulted with manifest psychological illness, including the psychoses, anxiety neuroses, depressive neuroses, personality disorders, alcoholism etc. Although this is perhaps a crude and insensitive measure, I felt that it might give some indication of a possible correlation between low-back pain and psychological illness, and whether any demographical or other factors could be identified which would provide pointers for closer scrutiny.

METHODS

The practice is based on a health centre in an inner city area with six doctors and attached staff caring for approximately 12 000 patients. The patients are largely working-class but with a high proportion of students and some middle-class patients in the suburbs. There appears to be quite a high proportion of patients with multiple social problems as one might expect from the location of the practice. Radiography and pathology services are readily available.

I read all the records of patients registered with me, and summarized those on which low-back pain or a psychological diagnosis was recorded during the years 1969-74 inclusive. Patients who were in the practice for less than a year were excluded. The chi-squared test was used as a test of statistical significance, and when this indicated a significance at the 5% level or less the strength of the association was worked out using the contingency coefficient (C), except in a few cases when the numbers were so small that the contingency coefficient could not be calculated. In these few instances the Kappa coefficient (K) was used instead. A note was made of the diagnosis arrived at in each case of psychological illness.

As well as analysing the results for the group as a whole, the group was sub-divided according to age, sex, and marital status and similar analyses were carried out on all sub-groups. To obtain the age cohorts, the age of each patient at December 31st, 1974 was used.

RESULTS

Over-all, among the 1499 patients there is a statistically significant association between an episode or episodes of low-back pain and an episode or episodes of psychological illness occurring in the same patient within the six-year period 1969-74. Tables I and II show the results for different marital-status groups of men and women. There is

TABLE I

MALE PATIENTS, GROUPED BY MARITAL STATUS, AND HISTORY OF LOW-BACK PAIN (LBP) AND PSYCHOLOGICAL ILLNESS

	Total in group	No. with LBP only	No. with psychological illness only	No. with both	<i>P</i>
Single	421	10	43	7	<0.001*
Married	219	30	45	15	N.S.
Widowed	9	0	3	1	<0.05
Separated or divorced	17	1	8	2	<0.025
Not known	190	7	10	0	—
Total	856	48	109	25	<0.001

N.S. = not significant.

χ^2 test of probability was used throughout, except in the case of widowed, and separated or divorced males, when Fisher's Exact Probability Test was used because of the smaller numbers involved.

* If patients aged 0-14 years are excluded from this category, the result is still statistically significant ($P < 0.01$).

TABLE II

FEMALE PATIENTS GROUPED BY MARITAL STATUS, AND HISTORY OF LOW-BACK PAIN (LBP) AND PSYCHOLOGICAL ILLNESS

	Total in group	No. with LBP only	No. with psychological illness only	No. with both	<i>P</i>
Single	263	7	37	8	<0.001*
Married	258	21	69	29	<0.01
Widowed	59	3	25	4	N.S.
Separated or divorced	23	1	13	4	N.S.
Not known	40	0	3	0	—
Total	643	32	147	45	<0.001

N.S. = not significant.

χ^2 test used throughout.

* If patients aged 0-14 years are excluded from this category, the result is still statistically significant ($P < 0.01$).

an association between a history of low-back pain and a history of psychological illness in single people of both sexes and in married women but not married men. Although the numbers are small there appears to be an association in widowed and separated and divorced men, but not in these marital-status categories in women.

Tables III and IV show the results for the different age-groups, male and female. There seems to be no significant association of low-back pain and psychological illness in older men. The only age-groups where an association has been demonstrated are the

TABLE III

MALE PATIENTS GROUPED BY AGE, AND HISTORY OF LOW-BACK PAIN (LBP), AND PSYCHOLOGICAL ILLNESS

Age-group (years)	Total in group	No. with LBP only	No. with psychological illness only	No. with both	P
0-14	126	0	2	0	—
15-24	280	9	23	6	<0.001
25-34	168	10	25	1	N.S.
35-44	65	3	12	7	<0.01
45-54	82	9	18	5	N.S.
55-64	61	7	11	4	N.S.
65-74	56	7	16	2	N.S.
75+	11	2	1	0	—
Not known	7	1	1	0	—
Total	856	48	109	25	<0.001

N.S. = not significant.
 χ^2 test used throughout.

TABLE IV

FEMALE PATIENTS GROUPED BY AGE, AND HISTORY OF LOW-BACK PAIN (LBP) AND PSYCHOLOGICAL ILLNESS

Age-group (years)	Total in group	No. with LBP only	No. with psychological illness only	No. with both	P
0-14	105	1	2	0	—
15-24	125	4	24	4	N.S.
25-34	93	6	26	7	N.S.
35-44	64	2	17	6	<0.02
45-54	74	10	25	5	N.S.
55-64	75	5	19	14	<0.01
65-74	59	2	15	7	<0.01
75+	45	2	19	2	N.S.
Not known	3	0	0	0	—
Total	643	32	147	45	<0.001

N.S. = not significant.
 χ^2 test used throughout.

15–24, and 35–44 age-groups. In women, there is an association demonstrated in the 35–44, 55–64 and 65–74 age-groups.

The contingency coefficient shows that the greatest association of a history of low-back pain, and a history of psychological illness occurs in men and women aged 35–44, and in women between the ages of 55 and 74. Full results are given in Table V.

Table VI shows the number of episodes of psychological illness in patients who had low-back pain compared with those patients with no low-back pain during this period.

TABLE V

CONTINGENCY COEFFICIENT (C) OF SUB-GROUPS FROM TABLES I–IV IN WHICH χ^2 TEST DEMONSTRATED A STATISTICALLY SIGNIFICANT ASSOCIATION

Sub-group	C	Sub-group	C
Single males	0.18	Single females	0.23
Single males (excluding 0–14 age-group)	0.16	Single females (excluding 0–14 age-group)	0.21
Males aged 15–24	0.22	Married females	0.20
Males aged 35–44	0.36	Females aged 35–44	0.29
All males	0.15	Females aged 55–64	0.33
All patients (male and female)	0.19	Females aged 65–74	0.33
		All females	0.22

Note: The contingency coefficient measures the degree of association in each sub-group between low-back pain and psychological illness. A contingency coefficient of 0 would indicate no association, and, mathematically, the highest possible degree of association is 0.707.

TABLE VI

EPISODES OF PSYCHOLOGICAL ILLNESS IN PATIENTS WITH AND WITHOUT HISTORY OF LOW-BACK PAIN

Psychological Diagnosis	No. of episodes in patients	
	With LBP	Without LBP
Anxiety	72	156
Depression	49	187
'Mixed' anxiety/depression	4	18
Phobic neurosis	0	5
Hysterical neurosis	1	0
Schizophrenia	0	4
Personality disorders	0	5
Alcoholism	2	14
Sexual and marital problems	1	7
Insomnia	3	7
Other	0	9
Total episodes	132	412

Comparing patients with and without LBP, there is a statistically significant difference between the number of episodes of anxiety and depression in the two groups, $\chi^2 = 6.487$, $P < 0.02$.

It can be seen that there is a different proportion of episodes of 'anxiety' compared with 'depression' in the two groups, and the chi-squared test shows that this difference reached statistical significance. The chi-squared test cannot show whether this difference is due to an excess of episodes of anxiety in the low-back pain group or a deficit of episodes of depression.

It can be seen that in patients with low-back pain 54.55% of episodes of psychological illness were diagnosed as caused by anxiety, whereas only 37.86% of such episodes in the non-low-back-pain group were diagnosed as anxiety. The over-all percentage of episodes of anxiety is 41.91% and the standard error of the difference between the proportions is 4.93. As the observed difference between the two groups is 16.69% which is over three times the standard error, the assumption is made that this difference has not arisen by chance. Similarly, it can be shown that 37.12% of the episodes of psychological illness in low-back-pain patients were 'depression', compared with 45.38% in non-low-back-pain patients. The observed difference between the samples is 8.26, whereas the standard error of the difference between the two proportions is 4.96. As the observed difference is less than twice the standard error, the observed difference may well be due to chance.

DISCUSSION

Most studies from British general practice have shown that men are more prone to consult with back pain than women. Dillane, Fry and Kalton (1966), Ward, Knowelden and Sharrard (1968) and Partridge and Knox (1969) all found the consulting rate for men higher than the rate for women. Rutter (1964), however, seems to have treated a slight excess of female patients with back pain.

In a study of a random sample of the residents of Columbus, Ohio using interviews with apparently healthy people, Nagi, Riley and Newby (1973) found that 21% of females reported back pain compared with only 14% of males and, after considering the possible differences due to back-ache caused by menstruation, and back-ache caused by occupational differences they concluded that women were willing to report back pain more readily than men, possibly because of lower pain threshold, and greater anxiety. In this present study, 8.53% of males and 11.98% of females presented with back pain. This may be due to the possibility that there is a higher level of anxiety in women. A study of the results shows that a combination of psychological illness and low-back pain is relatively more common in women than in men.

Dillane, Fry and Kalton (1966) demonstrated that the rate of back-ache reported to general practitioners increased in men and women until the age-group 50-60 and fell sharply thereafter. A similar finding has been shown in the present study. There is a steady rise until the peak prevalence in the 55-64 age-group, with fewer consultations for this symptom in the elderly.

Nagi and his co-workers (1973) have demonstrated the significant difference in the prevalence of back pain in relation to marital status. Single persons had a lower than average, and widowed a higher than average, prevalence of low-back pain. Age and sex composition might explain this, but cannot explain the higher than average prevalence of back pain in divorced and separated persons. Westrin, Hirsch and Lindegard (1972) have also found a higher frequency of broken marriages among the patients with low-back pain, compared with the controls in their study. In my own practice, 20% of separated and divorced patients presented with low-back pain compared with an average of 10% for all patients. It seems likely that the explanation for this finding is not that

marital breakdown is a cause of back pain, but it may be a factor associated with anxiety or depression or the problems in coping with life situations.

There are two implications that may be drawn from data on the diagnosis actually made of psychological illness and low-back pain. The first is rather self-obvious, namely, the patient with a long history of anxiety tends to report low-back pain more readily than people with no history of anxiety. The second implication is that these figures provide no support for the theory of low-back pain being a 'depressive equivalent'. The 'depressive equivalent' theory may be true in the case of the patients studied by Sternbach *et al.* (1973), and Forrest and Wolkind (1974), but in both cases their patients had had low-back pain for many months before the study was carried out. Low-back pain of this duration is not typical of the patients seen in general practice. What has not yet been answered is whether there is a small group of patients who are depressed at the onset of their low-back pain and who tend to have a chronic course, or whether patients with chronic low-back pain tend to become depressed if the pain is slow to clear up. A further study into this problem is in progress, and it is intended to present the results in due course.

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