

# Different groups of patients with low back pain

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**SUMMARY.** A method of distinguishing between three categories of patients with low back pain as seen in general practice is described. It was found that the main discriminatory factors were based on restricted movement and on a past history of psychiatric illness. The experimental findings are discussed and compared with previous published works.

## Introduction

IN the past 30 years, many investigators have looked at the psychological aspects of low back pain. There have been few attempts, however, to consider whether there are different groups of back-pain patients characterized by different psychological findings. Walters<sup>1</sup> wrote that the patient's psychic state could influence the pain in one of three ways: (a) by intensifying physiogenic pain; (b) by setting up muscular pain; (c) by evoking the psychogenic regional pain syndrome. Sarno<sup>2</sup> has written on similar lines, using the categories: (1) the somatic pain is intensified by psychic factors; (2) those who have what has been called conversion pain; (3) pain is due to excessive muscle tension. These groups 1, 2, and 3 seem to correspond to groups a, c and b of Walters. In 1977 Sarno<sup>3</sup> presented further data on patients with 'tension myositis', which he claimed is the largest group of patients with back pain.

In the preceding paper<sup>4</sup> I have described the psychological findings in a group of patients with low back pain, as compared with a group of control patients. In this paper I present experimental evidence for the existence of the three groups described by Walters<sup>1</sup> and Sarno.<sup>2</sup>

## Aims

The aim of this study was to try and establish whether different types of patients with back pain existed, by consideration of the separate elements of the history, symptoms, signs and questionnaire findings.

## Methods

The methods of selecting patients for the study and details of the psychiatric questionnaire used have been given in the previous paper.<sup>4</sup>

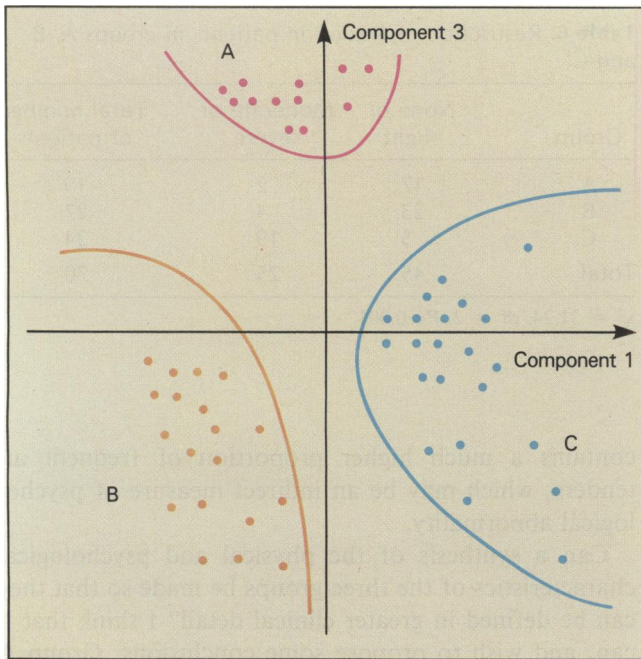
A proforma was completed at the initial consultation for each patient, detailing information in the following areas.

1. *Identification and demographic data.* Name and practice code number, age, sex, marital status, occupation and hence social class (from the *Classification of Occupations*, 1970).<sup>5</sup>
2. *Past history* of low back pain, psychiatric illness and the number of consultations in the previous 12 months (if the patient had been registered in the practice for 12 months or more).
3. *Symptoms* relating to onset of pain, precipitating, aggravating and relieving factors, and the site of pain and its radiation.
4. *Height and weight.*
5. *Examination findings.* Areas of tenderness, amount of straight-leg raising (SLR) possible (in degrees), presence or absence of knee and ankle jerks, areas of sensory loss, movements of the lumbar spine in flexion, extension and lateral flexion—each movement being classified as normal or slight, moderate or severe restriction.
6. *Radiological findings.* Most patients had standard antero-posterior and lateral radiographs taken by one radiographer at the x-ray unit in the Health Centre. The author looked at all the radiographs and they were also reported on by consultant radiologists at Manchester Royal Infirmary. I made a total assessment of normality or abnormality. Certain specific abnormalities—disc space narrowing, presence of osteophytes, etc.—were also recorded.
7. *Psychological findings.* Each patient was asked to complete a 60-item general health questionnaire (GHQ). If this indicated a 'potential psychiatric case' (over the threshold score of 12 and above),<sup>6</sup> the patient's responses to the questionnaire were then used in an attempt to evaluate the significance of this and to determine whether the 'potential psychiatric case' was an 'actual psychiatric case'. Any psychiatric illness present was clinically assessed.

Notes were kept of patient management at the initial consultation and each subsequent consultation.

The data were coded and transferred to punch cards for computer analysis at the University of Manchester Regional Computing Centre. Over 30 items of information relating to history and examination were available on each of the patients. Various techniques of factor analysis were applied to this information to seek out the relationships between items. The technique of principal components was preferred for the analysis. Each component can be described by that pattern of items of history, examination, etc. which have a sizable correlation. Eight principal components were found to 'ex-

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**Figure 1.** The plot of component 3 against component 1 showing the three groups of cases identified.

plain' most of the differences between patients. A graphical representation of a group of cases can be obtained by plotting them with reference to any two principal components and actually looking for clusters of cases on these graphs.

## Results

By plotting all pairs of components, clusters of cases could be visually separated on only one graph, that being the plot of component 3 against component 1. The main factors responsible for component 1 were restriction of movement in various ways, and the main element in component 3 was a past history of psychiatric illness. In this graph, three groups of cases were identified, as shown in Figure 1. The presence or absence of a diagnosis of psychological illness was not clearly differentiated between the three groups.

The three groups of patients, A, B, and C, differed in the characteristics listed in Table 1. The groups showed significant statistical differences in the items SLR right and SLR left (although the clinical significance of this is unclear), social classes III-V, history of psychiatric illness, sudden onset of pain and limitation of flexion (Tables 2-6).

## Discussion

Graphical representation has identified three groups of back pain cases. Group A contains those patients who scored less than average on component 1 but higher than average on component 3; they had little restriction in movement of the back and in general were in the

**Table 1.** Characteristics of groups A, B and C identified by graphical representation.

	Group A	Group B	Group C
Number of patients in group	19	27	24
Percentage of females	63	41	38
Percentage of patients in social classes III-V	95	32	87
Percentage of unmarried patients	16	44	21
Percentage of patients with history of psychiatric illness	89	11	12
Percentage of patients with five or more consultations in previous year	56	29	30
Percentage of patients with sudden onset of pain	22	67	67
Percentage of patients with restricted flexion	10	15	79
Percentage of patients with positive psychological diagnosis	53	48	33
SLR right (mean)	81.1	85.6	62.3
SLR left (mean)	71.8	85.4	71.9
SLR right-SLR left	+9.21	+0.19	-9.58

SLR = straight-leg raising.

**Table 2.** Difference between SLR right and SLR left.

Group	Mean	Standard deviation	Number of patients
A	+9.21	23.35	19
B	+0.19	6.43	27
C	-9.58	15.74	24
Total	+0.71	17.18	70

An F test shows that the difference between the groups is statistically significant ( $P < 0.001$ ).

SLR = straight-leg raising.

lower social classes; they described an insidious onset of back pain and had a history of psychiatric illness. Group C contains those cases which scored highly on component 1—that is, patients who were characterized by a general restriction of movement. Group B contains the remaining patients, those who scored less than average on both component 1 and component 3; they had little restriction in movement of the back and, in general, were of a higher social class (I and II), had no history of psychiatric illness and described a sudden onset to their back pain. There was no restriction to straight-leg raising of either leg.

The main symptom which helps to distinguish between these three groups is the nature of onset of pain—whether sudden or not. Two thirds of the patients in groups B and C had a sudden onset of pain. It would seem that patients who do not have a sudden onset of pain are less likely to be suffering from an acute traumatic lesion, whether of bone, joint, muscle, liga-

**Table 3.** Social class structure of groups A, B and C.

Group	Social classes		Total number of patients
	I and II	III to V	
A	1	18	19
B	15	12	27
C	3	21	24
Total	19	51	70

$\chi^2 = 18.84$ ,  $df = 2$ ,  $P < 0.001$ .

**Table 4.** History of psychiatric illness among patients in groups A, B and C.

Group	History of psychiatric illness		Total number of patients
	No	Yes	
A	2	17	19
B	24	3	27
C	21	3	24
Total	47	23	70

$\chi^2 = 38.93$ ,  $df = 2$ ,  $P < 0.001$ .

**Table 5.** Onset of pain in patients in groups A, B and C.

Group	Onset of pain		Total number of patients
	Sudden	Insidious	
A	4	15	19
B	18	9	27
C	16	8	24
Total	38	32	70

$\chi^2 = 12.04$ ,  $df = 2$ ,  $P < 0.005$ .

ment or disc, and this supposition may be of importance in understanding the cause of their back pain and in its management.

Of the physical signs which help to distinguish between the groups, the most important are the limitation to forward flexion and, to a lesser extent, the amount of straight-leg raising that is possible. Group C patients had by far the highest percentage of restricted flexion and the lowest mean for straight-leg raising.

Although no statistically significant difference could be demonstrated between the three groups with regard to psychological factors, approximately one half of the patients in groups A and B had a positive psychological diagnosis at the time of presentation compared with only one third in group C. There is much more marked variability when the past history of psychiatric illness is considered: just over one in 10 patients in groups B and C had a past history of psychiatric illness compared with almost nine out of ten in group A. Group A also

**Table 6.** Restriction of flexion in patients in groups A, B and C.

Group	Restriction of flexion		Total number of patients
	None or slight	Moderate or severe	
A	17	2	19
B	23	4	27
C	5	19	24
Total	45	25	70

$\chi^2 = 31.24$ ,  $df = 2$ ,  $P < 0.001$ .

contains a much higher proportion of frequent attenders, which may be an indirect measure of psychological abnormality.

Can a synthesis of the physical and psychological characteristics of the three groups be made so that they can be defined in greater clinical detail? I think that it can, and wish to propose some conclusions. Group A patients are perhaps the easiest to define. They tend to be anxious individuals whose description of backache tends to be rather vague and who have few physical signs. Group B patients tend to be more similar to group C than group A. They are not typically over-anxious people, but, for some reason, have a higher than usual degree of psychological abnormality when they present with back pain. As they have fewer physical signs than group C patients, there is a tendency to assume that the physical component of the pain is minimal. Group C patients are at the opposite end of the spectrum from group A patients. These patients have low anxiety, both in the past and when presenting with back pain, and they have marked physical signs.

It is possible to speculate that group C patients are closest to having a purely physical lesion where, in Walters' terms,<sup>1</sup> the psychic state is not influencing the pain. Group B patients may have psychological factors which are 'intensifying physiogenic pain', and group A patients approximate most closely to the group he defined as having muscular pain or, as it has been otherwise defined by Sarno,<sup>2</sup> the group containing the 'uptight' patient with tension myositis.

Back pain is a symptom, not a diagnosis. It appears to have many causes, is part of several different clinical patterns and in all probability requires different management for each type. Unfortunately, in the present state of medical knowledge, we cannot clearly distinguish between the various syndromes of back pain. The present work, based on analysis of the history, symptoms and signs rather than on presumed pathology, may be useful in helping to differentiate between different types of back pain.

## References

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Further details of the techniques of factor analysis used and the principal components obtained can be supplied by the author.

## Resurgence of HDN

Prophylactic vitamin K is not given routinely to every newborn infant in all maternity units. Among the reasons for this may be a belief that haemorrhagic disease of the newborn (HDN) is a rare and benign condition. At a single district hospital six cases of haemorrhagic disease were seen in 17 months (1 in 1,200 live births). All those affected were breastfed, and none had received vitamin K at birth.

Source: McNinch AW, Orme RL'E, Tripp JH. Haemorrhagic disease of the newborn returns. *Lancet* 1983; 1: 1089-1090.

## Dysfunction and lithium therapy

Lithium treatment has been associated with an increasing number of cardiac complications. Emerging among these is cardiac sinus node dysfunction. Other investigators have reported cases of sinus node dysfunction that reversed upon withdrawal of lithium. A case is now reported of sinus node dysfunction associated with lithium therapy that did not reverse to normal after cessation of lithium. Lithium may play a role in inducing dysrhythmias, including sinoatrial node dysfunction.

Source: Rodney WM, Chopivsky P, Hara JH. Lithium-induced dysrhythmias as a marker for sick sinus syndrome. *J Fam Practice* 1983; 16: 797-799.

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