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ORIGINAL PAPER

BACKACHE IN PREGNANCY

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SUMMARY

Replies to a questionnaire showed that, amongst 180 women delivered in The London Hospital, 48% experienced backache during pregnancy; in one third of these it was severe. The prevalence of back pain increased with both increasing age and increasing parity, and it was difficult to separate the relative contributions of these two factors. No evidence was found of an association between backache during pregnancy and height, weight, 'obesity index', weight gain, or baby's weight. Analysis of aggravating and relieving factors indicates some differences between backache in the pregnant and 'mechanical' back pain in the non-pregnant. Slightly less backache was reported amongst patients attending antenatal physiotherapy classes but the figures do not provide clear evidence of any protective effect of this attendance.

IT is common knowledge that backache is a relatively frequent complaint amongst pregnant women. This is generally assumed to be related to factors such as altered posture, relaxation of ligamentous structures in the spine and pelvis and possibly direct pressure from the enlarging uterus (Bushnell, 1949; Sands, 1958; Rhodes, 1958; Epstein, 1959; Spankus, 1965). However, there appear to have been few, if any, factual studies into this complaint, and it seemed worth enquiring further into the details of backache in pregnancy. Our aim was to determine the incidence of backache, to test whether antenatal training influenced the incidence and severity of the complaint, and to discover whether the pattern of pregnancy backache differed from this complaint in the non-pregnant as this might provide clues to the mechanism of this symptom.

METHODS

A questionnaire was handed to all patients delivered in the labour wards of The London Hospital during the period May 1973 to August 1973. Each woman received the questionnaire within 24 hours of delivery, and the completed forms were either collected from the patient in the ward or (in the case of a few mothers discharged 48 hours after delivery) returned by mail. Each patient was offered the assistance of a trained physiotherapist or midwife in interpreting and answering the questions.

Patients who had received antenatal relaxation and exercise instruction had obtained this by attending the routine classes at The London Hospital Department of Physiotherapy (normally given during the fifth to eighth month of pregnancy). These consist of a series of eight classes of one hour each during which the women were taught both individually and as a group, through discussion, demonstration and supervised practice, the following:

1. Anatomy and physiology of pregnancy and labour.
2. Relaxation in a variety of positions.

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3. Physical methods of coping with stress and discomfort in the first stage of labour, including breathing techniques.
4. Pelvic floor contractions.
5. Abdominal muscle contractions and pelvic tilting.
6. Prophylactic back education ('back life') including posture, lifting techniques, working position, and other methods of avoiding or alleviating backache.

In selecting women to attend antenatal classes, preference was given to primigravidae, and attendance depended on motivation and ease of travelling to the hospital etc.

RESULTS

A total of 180 forms were handed out and all of these were returned and used for analysis (100% completion rate). The mean age at the time of delivery was 26 years (S.D. ±5.6, range 15–42 years) and their parity is indicated in Table I. On average they

TABLE I

PARITY OF WOMEN ANSWERING THE QUESTIONNAIRE

No. of previous children	Patients	Percentage of patients
0	101	56.1
1	52	28.9
2	12	6.7
3	7	3.9
4	3	1.7
5	3	1.7
6	1	0.6
7	1	0.6
	180	

started their families when 24 years old, and left 2.4 years between pregnancies. The mean weight of the babies delivered during this pregnancy was 3.2 kg (S.D. ±0.63 kg). During the period of this study approximately two thirds of the patients delivered in The London Hospital came from the immediate local catchment area (in which virtually all deliveries were as in-patients) and one third were referred from further afield because of obstetric or other problems.

The numbers, ages and parity of women complaining of backache are indicated in Table II. Just under half complained of backache judged to be at least 'troublesome',

TABLE II

INCIDENCE OF BACKACHE

Backache	No.	Percentage	Mean age	'Mean parity'
None, or nothing worth troubling about	93	52	25.5	0.57
Troublesome pain, not severe	60	33	25.6	0.85
Severe pain	27	15	28.7	1.22

while in one third of these it was 'severe'. Thirteen patients (7%) did not reply to this question and it has been assumed that they did not have any pain. These patients have therefore been grouped with the 80 (44%) who indicated 'nothing worth troubling about', giving a total of 93 (52%) with little or no pain. This assumption is supported by the internal consistency of the patients' replies.

Fig. 1 shows the relationship between back pain, and age and parity. It appears that both increasing age and increasing parity are associated with an increased prevalence of

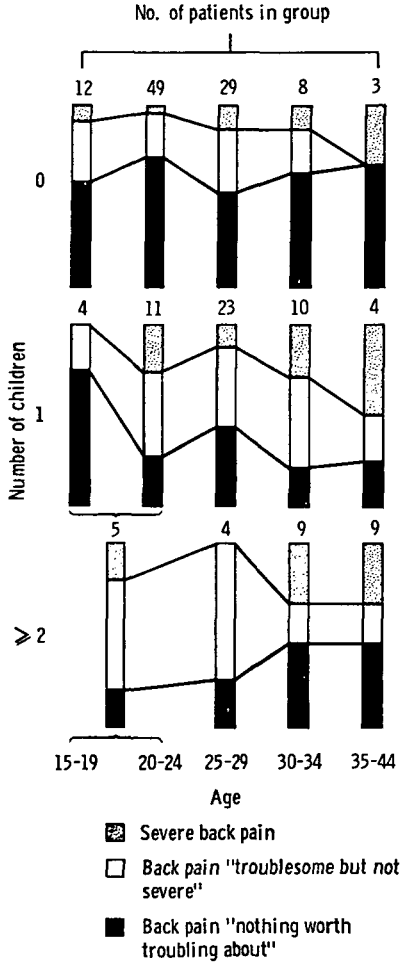

FIG. 1.—Prevalence of back pain amongst pregnant women in different age-groups and of different parity.

severe back pain. To test this impression, multiple regression with a logistic transform of the prevalence rates was used. Because of the high correlation between parity and age ($r = 0.5$) it was very difficult to separate out with confidence their individual contributions to the prevalence of backache in pregnancy. However, the best summary of our

findings is that the prevalence of severe backache increases by roughly 5% for every 5 years of the patient's age ($0.02>P>0.01$). Further, there is some evidence not reaching statistical significance that the risk of severe backache increased after the first pregnancy but not with any succeeding pregnancies once the patient's age had been accounted for.

No statistically significant changes in the prevalence of 'troublesome but not severe' back pain with age or parity were found.

The proportion of patients without backache ('no back pain worth troubling about') fell from 63% in first pregnancies, to 36% in women during their second pregnancy ($0.01>P>0.001$). Further pregnancies did not (statistically) significantly change this prevalence, nor could any association with age be demonstrated.

Table III shows the month in which women complaining of mild or severe backache first noted this symptom. The pain radiated down one or other leg in 36 (41% of those with backache) and down both legs in 18 (21%). Backache tended to be worse in the evenings, but was also common in bed at night (Table IV).

TABLE III

MONTH OF ONSET OF BACKACHE

Month of pregnancy	'Mild' pain	'Severe' pain	Total	Percentage of total
1	0	0	0	0.0
2	3	3	6	6.9
3	4	5	9	10.3
4	7	1	8	9.2
5	7	2	9	10.3
6	18	4	22	25.3
7	11	5	16	18.4
8	5	3	8	9.2
9	1	1	2	2.3
Unspecified	4	3	7	8.1
Total	60	27	87	100.0

TABLE IV

TIME OF DAY OR NIGHT WHEN BACKACHE TENDED TO BE MOST TROUBLESOME

Time	Number of patients
Early morning	6
Evening	40
Day	10
Night	26

Table V sets out the replies to direct questions about whether any particular factors either aggravated or relieved the backache.

The importance of postural and weight-transmitting factors is demonstrated by the proportion of women who obtained relief from a cushion in the small of the back when sitting and the numbers who obtained relief from lying or sitting. Analgesic tablets and

TABLE V
RELIEVING AND AGGRAVATING FACTORS*

Relieving factors			Aggravating factors		
	No.	Percentage		No.	Percentage
Analgesics	17	19.5	Fatigue	28	32.2
Hot-water bottle	7	8.1	Bending	20	23.0
Hot bath	12	13.8	Lifting	21	24.1
Cushion behind back	42	48.3	Making beds	26	29.9
Standing	6	6.9	Washing-up	11	12.6
Sitting	17	19.5	Ironing	29	33.3
Lying	26	29.9	Bowel action	1	1.1
Walking	3	3.4	Intercourse	3	3.4
			Coughing	4	4.6
			Sneezing	2	2.3
			Turning in bed	6	6.9
			Standing	37	42.5
			Sitting	18	20.7
			Lying	10	11.5
			Walking	18	20.7

* Total number of patients complaining of significant backache = 87.

hot baths helped some. Three patients added a note to the effect that having the back rubbed was helpful. The aggravating factors were variable and included activities connected with weight-bearing and, perhaps predictably, tiring household chores involving bending and lifting. Some found that sitting increased the pain. Sexual intercourse (which may aggravate backache due to local gynaecological abnormalities) was noted as an aggravating factor by only three patients.

Seventy-four patients (41%) noted that backache present during pregnancy was also felt during labour. A number of patients had noted backache following delivery (mild 62; severe 9), but the very short follow-up and the multiplicity of factors operating make these figures of doubtful significance.

Analysis of the answers to the questionnaire provided no evidence of an association between backache during pregnancy and any of the following factors:

Obesity index at start of pregnancy (weight divided by height squared—Benn, 1971; Gouldbourt and Medalie, 1974)
Weight before delivery
Gain in weight during pregnancy
Patient's height
Baby's birth weight.

Sixty-three of the patients (of whom 55 were primigravidae and the remaining 8 had one previous delivery) attended antenatal relaxation/exercise classes. In about half those who attended the classes and reported backache, the onset of this symptom preceded the classes. Fig. 2 shows that patients who attended these classes fared rather better than the rest in the matter of backache, but the differences are slight and do not reach statistical significance.

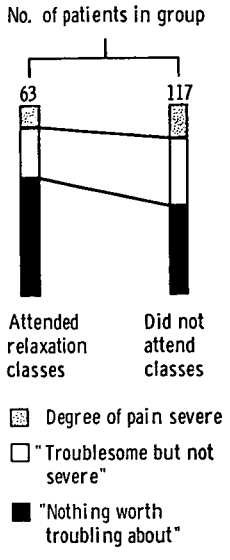

FIG. 2.—Comparison of the prevalence of mild and severe back pain in pregnancy amongst women who did or did not attend antenatal classes.

DISCUSSION

The questionnaire technique employed in this study was felt to be particularly appropriate as it was completed during a period when the subjects had both enough time to consider the questions and expert advice in their interpretation. The 100% completion rate and the absence of selection factors likely to influence backache make it probable that these patients are a representative sample of pregnant women in East London attending a Health Service hospital.

The answers revealed that just under half the patients complained of backache, usually beginning during the fifth to eighth month, and that 15% rated the pain 'severe'. In about half the affected patients the pain radiated down one or both legs. Analysis of the factors which either aggravated or relieved the pain suggests that the backache depended on posture and position of the spine, but that favourable and unfavourable positions differed between patients. Positions such as lying, sitting or standing were aggravating factors for some patients, while they relieved others. Activities which commonly precipitate the pain associated with lumbar disc lesions in the non-pregnant (sneezing, coughing and turning in bed) were uncommon aggravating factors. Tiring household chores tended to worsen the pain. However, weight-bearing was certainly not a clear-cut influence on backache; more women noted aggravation by sitting than by walking, and in 14 patients lying down actually provoked the pain. It is difficult to know what interpretation to put on the observation that a high proportion of the women with backache noted a similar pain during labour (separate from labour pains). This particular question could with advantage have been more detailed. Pregnancy backache appearing at this time might reflect additional stretching of relaxed pelvic ligaments during labour or, alternatively, postural pain due to the position the woman may be required to adopt. It is also difficult to know how to interpret the observation that pregnancy backache tended to be most troublesome in the evenings and in bed at night. This might reflect the

influence of fatigue and postural factors. However, Glynn and Lloyd (1975) have shown that people reporting pain tend to demonstrate a diurnal rhythm, with the pain worsening as the day passes.

No evidence was obtained that backache was related to factors such as body weight, obesity, weight gain during pregnancy or weight of the baby. Because the age of these patients was so closely related to their parity, it proved difficult to separate the influence of these two factors on back pain. Severe back pain appeared to increase with age, while the proportion of women with freedom from significant back pain ('no back pain worth troubling about') fell from 63% during the first pregnancy to 36% in the second pregnancy, and further pregnancies did not significantly change this prevalence. Whether this latter effect should be interpreted as indicating some connective tissue (ligamentous?) 'giving way' during the first pregnancy or delivery which, like the visible cutaneous striae, may remain with the woman for the rest of her life, is a matter for speculation. Certainly this study suggests that pregnant women provide a group of subjects in whom at least some aspects of low back pain can effectively be studied.

Disappointingly, attendance at these routine antenatal classes did not significantly reduce the incidence of backache. The slight tendency for less backache amongst those who attended might well be expected on the basis of selection, motivation being a factor in determining which patients attended. It should be pointed out, however, that the group treated here (mostly young primigravidae) were those least likely to suffer from severe backache, and the classes tended to be given at a stage in pregnancy when the patients were already developing backache. Finally, there are of course other reasons why antenatal classes are desirable.

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REFERENCES

BENN, R. T. (1971) "Some Mathematical Properties of Weight-for-height Indices used as a Measure of Adiposity". *Br. J. Prev. Soc. Med.* **25,** 42–50.

BUSHNELL, L. F. (1949) "Postural Pains of Pregnancy. Part I: Parietal Neuralgia of Pregnancy". *West. J. Surg.* **57,** 123–7.

EPSTEIN, J. A. (1959) "Symposium on Treatment of Low Back Pain and Sciatic Syndrome during Pregnancy". *New York J. Med.* **59,** 1757–68.

GLYNN, C. J. and LLOYD, J. W. (1975) "The Diurnal Variation in Perception of Pain". *Proc. R. Soc. Med.* **69,** 369–72.

GOULDBOURT, U. and MEDALIE, J. H. (1974) "Weight–height Indices". *Br. J. Prev. Soc. Med.* **28,** 116–26.

RHODES, P. (1958) "Orthopaedic Conditions Associated with Childbearing". *Practitioner* **181,** 304–12.

SANDS, R. X. (1958) "Backache of Pregnancy. A Method of Treatment". *Obstet. Gynaecol.* **12,** 670–76.

SPANKUS, J. D. (1965) "The Cause and Treatment of Low Back Pain during Pregnancy". *Wis. Med. J.* **64,** 303–4.