

LOW BACK PAIN IN PREGNANCY: A COMPARATIVE STUDY OF TWO PAIN-RATING SCALES

Jeanette Mitchell*
Donnè Ness**
Sandra Whitelock***

Summary

A sample of ten pregnant Caucasian women, with an average age of $31,8 \pm 5,7$ years, experiencing low back pain in the third trimester of pregnancy, rated the intensity of their pain on two commonly used pain rating scales: the horizontal visual analogue scale (VAS) and the eight-face pictorial pain scale (PPS). A mean of $3,1 \pm 2,5$ cms was found using the VAS and a mean of 5(E) was obtained on the PPS. A product-moment correlation of the two scales showed a correlation of $0,84$ ($p = 0,001$). This implies that both pain rating scales are able to measure a similar intensity of low back pain in pregnant women.

Opsomming

'n Groep tien swanger Kaukasiese vroue, met 'n gemiddelde ouderdom van $31,8 \pm 5,7$ jaar, wat lae rugpyn gedurende die derde trimester belewe het, het die intensiteit van hul pyn aan twee pynskale wat in algemene gebruik is, gemeet: die horisontale sigbare analoog skaal (VAS) en die agt-gesig geïllustreerde pyn-skaal (PPS). 'n Gemiddeld van $3,1 \pm 2,5$ cms is met die VAS en 5(E) met die PPS gevind. Met 'n produk-moment korrelasie van die twee skale, was 'n korrelasie van $0,84$ ($p = 0,001$) gekry. Dit dui daarop dat altwee pynskale soortgelyke lae rugpyn-intensiteit in swanger vroue kan meet.

Key Words; pregnancy, low back pain, pain-rating scales.

INTRODUCTION

Low back pain occurs during pregnancy, particularly in the third trimester^{1,3,6}, Berg *et al*¹ stated that 49% of pregnant women in their study experienced such pain, while Mantle *et al*⁶ found 48% of their sample had low back pain. Fast *et al*³ stated that 56% of the pregnant women they studied developed low back pain which began between the fifth and seventh month of pregnancy (in the third trimester). None of these studies attempted to quantify the pain.

Quantification of pain can be done using a number of pain rating scales, such as the simple descriptive scale^{2,5}; the four-point descriptive scale²; the numerical (1-10) rating scale⁵; the visual analogue scale^{2,4}, and the eight-face pictorial pain scale^{4,5}. Each of these scales has advantages and disadvantages. For example, the descriptive scales are of value in literate subjects^{2,4}, while the pictorial scales are best used by those subjects with limited education or with language difficulties^{2,4,5}.

As part of a study of pregnant women with low back pain in the third trimester, we decided to measure the intensity of the subjects' pain using two widely different pain rating scales. These were the horizontal visual analogue scale (VAS) and the eight-face pictorial pain scale (PPS) (after Frank *et al*⁴). The VAS has been used

extensively to measure different types of pain^{2,4}, while the PPS has been similarly used in populations which may have found the VAS difficult to use for cultural and/or educational reasons^{4,5}.

The purpose of this study was twofold. Firstly, we proposed to assess whether a literate scale (such as the VAS) and a pictorial scale (the PPS, for example) generated comparable data in a group of educated subjects. Given the differing levels of education in the South African population, both scales need to be used, but must be comparable. The second purpose was to assess the degree of low back pain in pregnancy.

MATERIALS AND METHOD

One hundred and thirty pregnant women attending antenatal classes were interviewed to inform them of the nature of the study and to select a sample of subjects. Questionnaires were used to establish which of the 130 pregnant women interviewed fitted the selection criteria for the study sample. That is, all subjects had to be Caucasian, South African, English-speaking, middle-class women, all of whom had completed the secondary level of education. Each subject was experiencing low back pain in the third trimester of pregnancy only, having had no pain prior to her pregnancy. There was to be no history of musculo-skeletal conditions, and the women were to be aged 20 to 40 years.

Of this population of 130 pregnant women, 21 (16,2%) were experiencing low back pain in the third trimester, 10 of whom were prepared to participate in the study. Informed consent was obtained from each of them.



FIG 1: THE VISUAL ANALOGUE SCALE

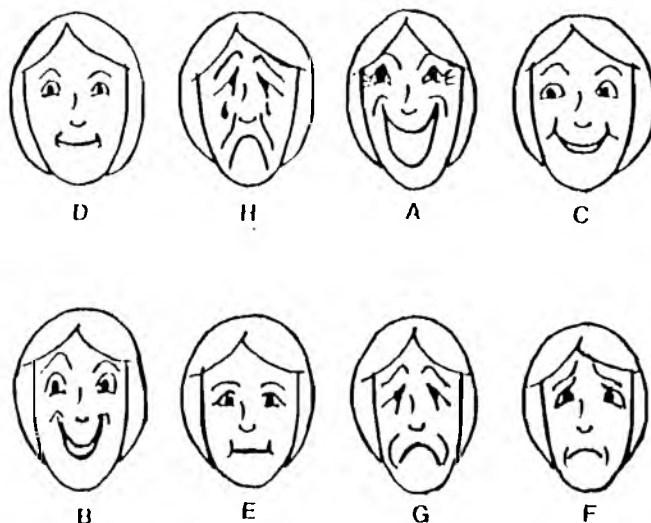


FIG 2: THE PICTORIAL PAIN SCALE (redrawn from Frank *et al*⁴)

* BSc (Physiotherapy), BSc Hons, MSc

** BSc (Physiotherapy)

*** BSc (Physiotherapy)

Correspondence to Jeanette Mitchell, Lecturer, Department of Physiotherapy, University of the Witwatersrand Medical School, 7 York Road, Parktown, Johannesburg 2193


This study was part of an undergraduate project completed in the Department of Physiotherapy

Thanks HPI for giving me the opportunity to work in the States for a year. I loved my job and I couldn't have done it without you.

HPI Health Professionals
812 Oak Street
Winnetka, IL 60093
USA

hize hubbe PT
U. of the Orange Free State '02
Jene, South Africa

If you'd like to work in the US, contact HPI. We've helped more physical therapists find great jobs in America than any other recruiter. Top pay, expert licensing and visa processing. Fees paid by your employer.



The Leader in International Healthcare Recruiting
812 Oak Street, Winnetka, IL 60093 USA
(Reverse Charges) 708-441-8384 Fax: 708-441-8401

CAMBRIDGE COLLOCATION

European Health Care Consultants

VACANCIES in U.K. for Physiotherapists, Occupational Therapists and Speech Therapists.

Also
VACANCIES in Canada
for graduate OT's and Speech Therapists.

Our Recruitment Consultant will be in South Africa in August.

Come for an informal interview between 8am - 2pm:

- JOHANNESBURG** on Saturday 8 August at the Indada Hotel
- DURBAN** on Saturday 22 August at the Royal Hotel
- CAPE TOWN** on Saturday 22 August at The Vineyard Hotel, Claremont

6 Ross Street, Cambridge CB1 3BX England
Tel: 0223-249606 Fax: 0223-414474

Employment Agencies Act 1973 Licence No. SE18181

PPS – Because Professional Practice Takes More Than An Educated Guess

PPS – Professional Cover For Professionals

The best sickness and disability benefits, a tax-free lump sum on retirement, group term life cover, retirement annuity schemes and Profmed – the medical aid scheme tailored for the professional. Available to Graduate Professionals only. So . . . start out right, call PPS today.



The Professional Provident Society of South Africa, P O Box 6268, JOHANNESBURG 2000
Tel No: 29-7863
Fax No: 23-0088

Each of the ten women in the study sample was then asked to mark the intensity of her present pain as a short vertical line on the horizontal 10cm line of the VAS representing "no pain" to "extreme pain" (Fig 1). Following this, an eight-face PPS (redrawn from that of Frank *et al*⁴) (Fig 2) was presented to each subject who was asked to match the intensity of the pain she was feeling to one of the randomly arranged facial expressions depicted. This was recorded as a single letter A to H, synonymous with the numbers 1 (no pain) to 8 (severe pain). By recording the degree of low back pain experienced, firstly on the VAS and then on the PPS, each subject acted as her own control in the comparison of the two pain-rating scales.

STATISTICAL MANAGEMENT OF DATA

Average pain ratings were calculated for each type of pain scale. In addition, the ten VAS pain ratings and the ten PPS pain ratings obtained from the subjects were compared using the Pearson's Product Moment Correlation test.

RESULTS

The pain measurements obtained in the study are shown in Table I.

The average pain rating obtained with the VAS was $3,1 \pm 2,5$ cms and with the PPS was 5(E). On correlating the data, it was found that a highly significant ($p=0,001$) correlation ($Y=0,84$) existed between the VAS and the PPS pain ratings.

TABLE 1: PAIN MEASUREMENTS

CASE	AGE (YEARS)	VAS (cms)	PPS
1	35,4	0,8	5 (E)
2	30,6	2,3	4 (D)
3	34,0	2,1	5 (E)
4	34,0	2,9	5 (E)
5	29,5	0,8	4 (D)
6	22,4	6,9	6 (F)
7	34,1	4,0	5 (E)
8	40,7	3,0	6 (F)
9	22,9	7,6	8 (H)
10	34,1	0,4	4 (D)
MEAN \pm SD	31,8 \pm 2,5	3,1 \pm 2,5	MEAN = 5 (E)
KEY: VAS = visual analogue scale PPS = pictorial pain scale SD = standard deviation			

DISCUSSION AND CONCLUSIONS

Sample size

It is of interest to note that of the 130 women attending antenatal classes, consisting of a ratio of 1:1 second to third trimester pregnancies, less than a quarter (16,2%) of them suffered from low back pain in the third trimester of pregnancy. These women had all been attending the classes since the second trimester, and it is suggested that the emphasis on physical fitness and back care in the classes is responsible for the low incidence of back pain in these women.

Pain rating scales

The VAS was chosen as we felt it to be the most objective of the scales available, although it does require that the subjects are literate. The PPS, however, does not require a high level of literacy in the subjects. For our group of educated subjects we chose to use the letters A to H in this scale, but these letters can be substituted by

symbols, as demonstrated by Frank *et al*⁴, when testing subjects with a poor education or from another cultural group. We agree with Liggins⁵ too, that the PPS may involve an element of emotion, as the subject's choice could be determined in part by how she is feeling while experiencing the low back pain. However, in our sample, this factor did not appear to affect the results markedly.

It must be recognised that there exist both multi-cultural and multi-educational levels in the South African population. This has particular relevance when assessing pain, for example, when it is important to establish that the pain rating scales used will measure the same degree of pain in two or more culturally or educationally different groups of subjects.

Comparison of the VAS and PPS

The significant correlation ($Y=0,84$; $p=0,001$) between the findings of the two scales implies that both scales measured a similar intensity of low back pain in the pregnant women, which may be described as mild to moderate, regardless of whether or not the PPS elicited more emotion in the subject. This fact was not examined further in this study, but it is suggested that 71% (r^2) of the variation found on correlation of the results was due to a comparable pain rating while the remainder (29% variation) may be due partly to the effect of such emotional factors.

Degree of low back pain in pregnancy

This study enables a previously obtained subjective pain-rating in third trimester pregnant women of "mild" to "moderate" to be objectively measured (Table I: VAS = $3,1 \pm 2,5$ cms; PPS = 5(E)). These data also provide a base-line measure of such pain which can be used in comparative studies with other groups of pregnant women and with subjects experiencing other types of pain.

It can be concluded from this study that either scale – the VAS or the PPS – can be used successfully to measure low back pain in middle-class, educated, Caucasian, pregnant women. We do not agree with Frank *et al*⁴ that the PPS is the better scale for pain measurement. We suggest that both scales (the PPS for the uneducated and the VAS for the educated subjects) may be of value in the objective measure of any type of pain in most classes of subjects, provided the language of instruction and the cultural interpretations of pain are understood.

Acknowledgements

This study was approved by the Committee for Research on Human Subjects (No 11/2/90). The authors gratefully acknowledge the participation, in this study, of those pregnant women who attended antenatal classes at the Family and Child Centre, Randburg.

References

- Berg G, Hammer M, Moller-Nielsen J *et al*. Low back pain during pregnancy. *Obstet Gynaec* 1998;71(1);71-75.
- Downie WW, Leatham PA, Rhind VM *et al*. Studies with pain rating scales. *Annals Rheum Dis* 1978;37;378-381.
- Fast A, Shapiro D, Ducommun EJ *et al*. Low-back pain in pregnancy. *Spine* 1987;12(4);368-371.
- Frank AJM, Moll JMH, Hort JF. A comparison of three ways of measuring pain. *Rheum Rehab* 1982;21;211-217.
- Liggins CA. A correlative study of two subjective pain rating scales. *SAJ Physiotherapy* 1989;45(4);100-102.
- Mantle MJ, Greenwood RM, Currey HLF. Backache in pregnancy. *Rheum Rehab* 1977;16;95-101.



New!

Reduce your treatment time drastically with the new cluster head applicators!

LS 2090

**DERMO
COMPACT
DIGITAL**

**ULTRA EFFECTIVE DIGITAL AREA
LASER FLD 09**

**SURFACE
LASER FLA 03
WITH 3 LASER DIODES**

- Special laser applicator for intensive and optimum facial and body treatments.
- Also ideal for joints, reflex zones and laser lymph drainage
- Three laser diodes and a high-capacity ultrared radiator ensure an intensive and optimum photo-simulation of the face or body that is accustomed to light.

Swivelling laser head permits easy and fatigue-free radiating of all body region.

- New polyfrequency spectrum for optimum area treatment.
- Additional bio-stimulation with intensive photo-inductive ultrared light.
- The new poly-spectral multi-tact method of medical electronics considerably intensifies the laser effect.

**INFRARED
LASER
SYSTEM
LSI 2030/90**

- Ultra effective high-capacity compact laser meets the highest requirements.
- First compact laser with special growth and healing frequencies (pituitary glands).
- Digital quartz controlled frequency synthesis.
- Digital polyfrequency spectrum.
- Digital alpha frequency.

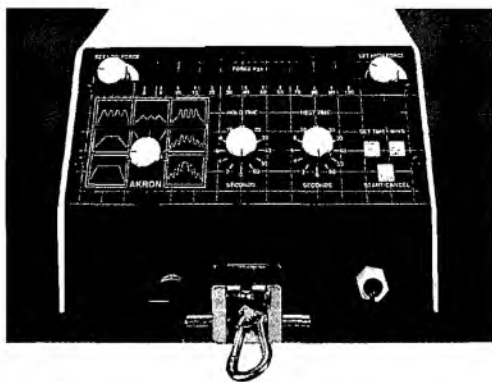
Sole Agents:

LASER-COSMEDTECH C.C.

Laser Equipment for Cosmetic and Medical Treatment
63 Westwoldway Parkwood 2193 Johannesburg S.A. Tel: 442-7578



ATP7 TRACTION MACHINE



The new ATP7 traction machine is available separately or as part of a package. The unit will fit other makes of traction table's or can be wall or stand mounted for cervical traction.

The new design features 7 different treatment modes including static, rhythmic, progressive/regressive and cyclic traction. LED's constantly display the force being applied and also indicate

the high and low force limits that have been set. The machine has many safety features and is easy to operate.

Standard Features

- Seven different traction modes
- Safe and accurate design
- High force setting from 2-100 kgs
- Low force setting from 0-98 kgs
- Constant LED force display
- Constant LED display of high and low force settings
- Self checking and diagnostic facilities
- Variable treatment time from 0-99 mins
- End of treatment time alarm and force release
- Patient safety switch with force release and audio alarm
- Hold and rest timers 0-60 seconds
- Can be fitted to other traction tables
- Can be wall or stand mounted for cervical traction



MEDICAL DISTRIBUTORS

(PTY) LTD (EDMS) BPK

P.O.Box 3378 Johannesburg 2000 Phone 314-3000
P.O.Box 195 Cape Town 8000 Phone 47-4440
P.O.Box 5298 Durban 4000 Phone 37-1501