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

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Summary
A sample of ten pregnant Caucasian women, with an average age of 31.8 ±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 ±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.

INTRODUCTION
Low back pain occurs during pregnancy, particularly in the third trimester1,3,6, Berg et al7 stated that 49% of pregnant women in their study experienced such pain, while Mantle et al8 found 48% of their sample had low back pain. Fast et al9 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 scale2; the four-point descriptive scale2; the numerical (1-10) rating scale5- the visual analogue scale2,4, and the eight-face pictorial pain scale4, . Each of these scales has advantages and disadvantages. For example, the descriptive scales are of value in literate subjects2,4, while the pictorial scales are best used by those subjects with limited education or with language difficulties2,4,5.

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 al4). The VAS has been used extensively to measure different types of pain2,4, while the PPS has been similarly used in populations which may have found the VAS difficult to use for cultural and/or educational reasons4,5.

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.

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

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This study was part of an undergraduate project completed in the Department of Physiotherapy.
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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.) (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 ± 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 (r=0.84) existed between the VAS and the PPS pain ratings.

<table>
<thead>
<tr>
<th>CASE</th>
<th>AGE (YEARS)</th>
<th>VAS (cms)</th>
<th>PPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35.4</td>
<td>0.8</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>30.6</td>
<td>2.3</td>
<td>4(D)</td>
</tr>
<tr>
<td>3</td>
<td>34.0</td>
<td>2.1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>34.0</td>
<td>2.9</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>29.5</td>
<td>0.8</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>22.4</td>
<td>6.9</td>
<td>6(F)</td>
</tr>
<tr>
<td>7</td>
<td>34.1</td>
<td>4.0</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>40.7</td>
<td>3.0</td>
<td>6(F)</td>
</tr>
<tr>
<td>9</td>
<td>22.9</td>
<td>7.6</td>
<td>8(H)</td>
</tr>
<tr>
<td>10</td>
<td>34.1</td>
<td>0.4</td>
<td>4</td>
</tr>
<tr>
<td>MEAN ± SD</td>
<td>31.8 ± 2.5</td>
<td>3.1 ± 2.5</td>
<td>MEAN = 5 (E)</td>
</tr>
</tbody>
</table>

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., when testing subjects with a poor education or from another cultural group. We agree with Liggins 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 (r=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 ± 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. 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


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