

## Role of Acupuncture in Back Pain- Experience in the Department of Physical Medicine, CMH Dhaka

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### Abstract

**Introduction:** Back pain is one of the common causes of pain after headache and a major debilitation in adult. Low back pain includes dorsal pain at anywhere between 12th thoracic vertebrae and lower buttock up to gluteal folds or anus. In United States, as many as one third of the population suffer from chronic pain conditions. Acupuncture is a recommended treatment for back pain. The action of acupuncture is an analgesic and considered a valuable asset in the specialty of pain management.

**Objective:** To evaluate the role of acupuncture on back pain and to follow up the quality of life in patients with back pain.

**Materials and Methods:** This was a prospective experimental study and was carried out at the Department of Physical Medicine, Combined Military hospital (CMH), Dhaka Cantonment from June 2015 to December 2015. A total of twenty two patients were enrolled and were randomly selected who received conservative treatment for pain management for 4 to 6 weeks and did not get improvement. Needling was done at acu-points on average of 15 to 20 needles for a period of 15-30 minutes for three days in a week for 06 weeks. The concise assessment was done for effectiveness in pain management.

**Results:** The result was observed in terms of the VAS (Visual analog scale) and disability scale. Relief of pain was noted to complete or to moderate in 58% of the cases. After 02 months of acupuncture treatment,

60% patients had relief of pain. After 06 months of acupuncture treatment, about 30% patients remained moderate to complete pain free.

**Conclusion:** Acupuncture remains one of the alternative medicine disciplines and there is mounting evidence of its effectiveness. Most of the patients were benefitted with acupuncture treatment regime after failure of conservative treatment for duration of 4-6 weeks for back pain.

**Key-words:** Acupuncture, Back Pain, Visual Analog Scale(VAS), Electro Acupuncture (EA), Bladder (BL), du mai (DU).

### Introduction

Back pain is a symptom and not a disease. It has been termed as "an illness in search of disease"<sup>1</sup>. Spondylosis or degenerative arthritis affecting the spine is the most common cause of back pain<sup>2</sup>. Low back pain is considered to include dorsal pain located at anywhere between the 12th thoracic vertebrae and lower buttock up to gluteal folds or anus<sup>3</sup>. Spondylosis may be applied nonspecifically to any and all degenerative conditions affecting the discs, vertebral bodies and or associated joints of lumbar spine<sup>4</sup>. Common causes include tumors, postoperative adhesion, skeletal disease and spinal dysraphisms. The role of inflammation of the nerve roots is less certain<sup>5,6</sup>. There is symptom or pain to be exacerbated with rest or walking, standing, and/or maintaining certain postures, and relieved with activities or sitting or lying<sup>7</sup>. Conservative treatment used for back pain include physical therapy<sup>8</sup>; analgesic,

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non-steroidal anti-inflammatory<sup>9</sup>; and epidural steroid injections<sup>10</sup>. Many patients suffer from the symptoms even while using all of the above mentioned treatments repeatedly. Finally some patient undergoes surgical treatment option. Even though there may be a chance of recurrence of symptoms even after surgery and none of the treatments is curative. Acupuncture is a type of complementary and alternative Medicine. It has been accepted worldwide mainly for treatment of acute and chronic pain. Studies on the mechanisms of action have revealed that endogenous opioid peptides in the central nervous system play an essential role in mediating the analgesic effect of electro acupuncture (EA)<sup>11</sup>. A study by Kasuya et al<sup>12</sup> found that acupuncture is an effective treatment strategy for back pain. Also, Wang<sup>13</sup> showed that the therapeutic effect of EA on the senile radical sciatica is significantly better than transcutaneous electrical nerve stimulation.

### Materials and Methods

This study was designed to evaluate the role of acupuncture in patients with back pain who were directly reported or referred to physical Medicine department between June 2015 and December 2015 at Combined Military Hospital Dhaka. Twenty-two patients with symptoms of back pain whose disease was confirmed by imaging or electro diagnosis were randomly selected. Inclusion criteria includes patients with symptoms of back pain for at least 6 months that did not respond to medication or physical therapy or had not already experienced any acupuncture before. Exclusion criteria include patients with diabetes mellitus, severe hip or knee osteoarthritis or accompanying peripheral neuropathy, and any severe diseases that required surgery.

The study was approved by the Ethical Committee of Directorate General of Medical Services, Bangladesh Armed Forces. Before enrollment the patient received detailed written and verbal information regarding the aims of the study. Patients completed questionnaire during or before acupuncture sessions and they were provided all information and supports.

Acupuncture was used as an alternative treatment method in patients based on inclusion and exclusion criteria. Fifteen to twenty needle insertions were done per patient per session. The acupoints used included bilateral BL-23, BL-25, BL-26, BL-37, BL-40, BL-54, BL-57, BL-60, DU-3, DU-4 and DU-20;

the depth of insertion was 2.5 cm in the muscle and intradermal in DU-20. The acupuncture protocol was the same for all the patients. According to the needle type, metal needle size was 25 mm or 40 mm (Dong Bang, Shangdong, China). Each patient was recruited for 10 sessions of acupuncture. There were three sessions per week. The needles retention time in the points was 15 to 20 minutes. Patients did not receive other treatments in the course of acupuncture and there was no control group. With proper sterility and confidentiality acupuncture was performed in a quiet and comfortable room. Information was given to all patients regarding mild drowsiness, mild pain and a very little chance of bleeding at the site of acupuncture.

Pain and quality of life were evaluated using a visual analogue scale (VAS) and Short Form-36 Health Survey (SF-36) before and immediately after the intervention and also after 6 weeks of acupuncture. The VAS is a horizontal line and is determined by measuring in mm from the left to right of the line to the point that the patient marks. The SF-36 is multipurpose tool and consists of eight scales like physical function, physical role, bodily pain, general health, vitality, social functioning, emotional role, and mental health. Each scale can be measured using a 0 to 100 score.

According to sample size calculation formula and for comparison of the means in the two groups a sample size of 22 patients was selected. The statistical analysis of the data was performed using SPSS version 15. The results related to the continuous variables are presented as mean standard deviation, median, and interquartile range and those related to the quantitative or categorical data are shown as percentage and frequency. Statistical analyses were performed using paired t test and repeated measure test and  $p < 0.05$  was considered as statistically significant.

### Results

The study was done in the Department of Physical Medicine at Combined Military Hospital, Dhaka during the period from June 2015 to December 2015. Initially, 30 patients were enrolled in the study but among them eight did not continue the acupuncture sessions. Four of them were left as they were from far distance areas and could not attend because of their miscommunication and traffic jam. Another four left for unknown reasons. Finally, 22 patients were enrolled in the study and

among them no patients failed to report in the follow-up process. There were 10(41.7%) men and 12(58.3%) women in this study and the mean age of the patients was  $48.2 \pm 10.8$  years. Demographic, social, and clinical characteristics of the study patients are shown in Table-I. In this study, 12(58.3%) patients were married and 16(66.6%) patients had lower education. Twelve (50.0%) patients had used non-steroidal anti-inflammatory drug as the treatment for their condition. The mean VAS score in patients before the intervention was  $7.9 \pm 1.3$  and  $4.3 \pm 2.1$  immediately after, which showed a significant decrease ( $p < 0.001$ , 95% confidence interval=0.63-2.46, mean difference =2.06. The mean score 6 weeks later was  $3.08 \pm 2.3$ , which was also significant ( $p=0.01$ , 95% confidence interval=0.30-0.19, mean difference=2.58). Muscle twitch response was usually observed after the intervention. There were no major complications in this study. Two patients reported minor irritation and redness at the sites of acupuncture, which was self-limited. In the assessment of the quality of life, there were eight aspects. Five aspects of SF-36 score including emotional role, general health, physical role, social functioning and mental health were associated with significant ( $p < 0.05$ ) improvement immediately after acupuncture. However, the comparison of scores before the intervention and 6 weeks later showed significant improvements in five aspects including emotional role, vitality, general health, bodily pain and physical functioning (Table-II, Table-III and Fig-1).

**Table-I:** Demographic, social and clinical characteristics of the study patients

| Variable                                   | Study population (n=22) |                |
|--|-------------------------|----------------|
| <b>Sex</b>                                 | Age (Y)                 | $8.2 \pm 10.8$ |
|  | Female                  | 13(59.1)       |
|  | Male                    | 09 (40.9)      |
| <b>Marital status</b>                      | Single                  | 2(9)           |
|  | Married                 | 19(86.3)       |
|  | Others                  | 1(4.5)         |
| <b>Severity of the condition</b>           | Mild (VAS < 6)          | 2(9)           |
|  | Moderate (VAS 6-8)      | 09 (40.1)      |
|  | Severe (VAS > 8)        | 11(50)         |
| <b>Previous treatment of the condition</b> | NSAIDs                  | 13(59.1)       |
|  | Physical therapy        | 09 (40.9)      |
|  | None or missing         | Nil            |

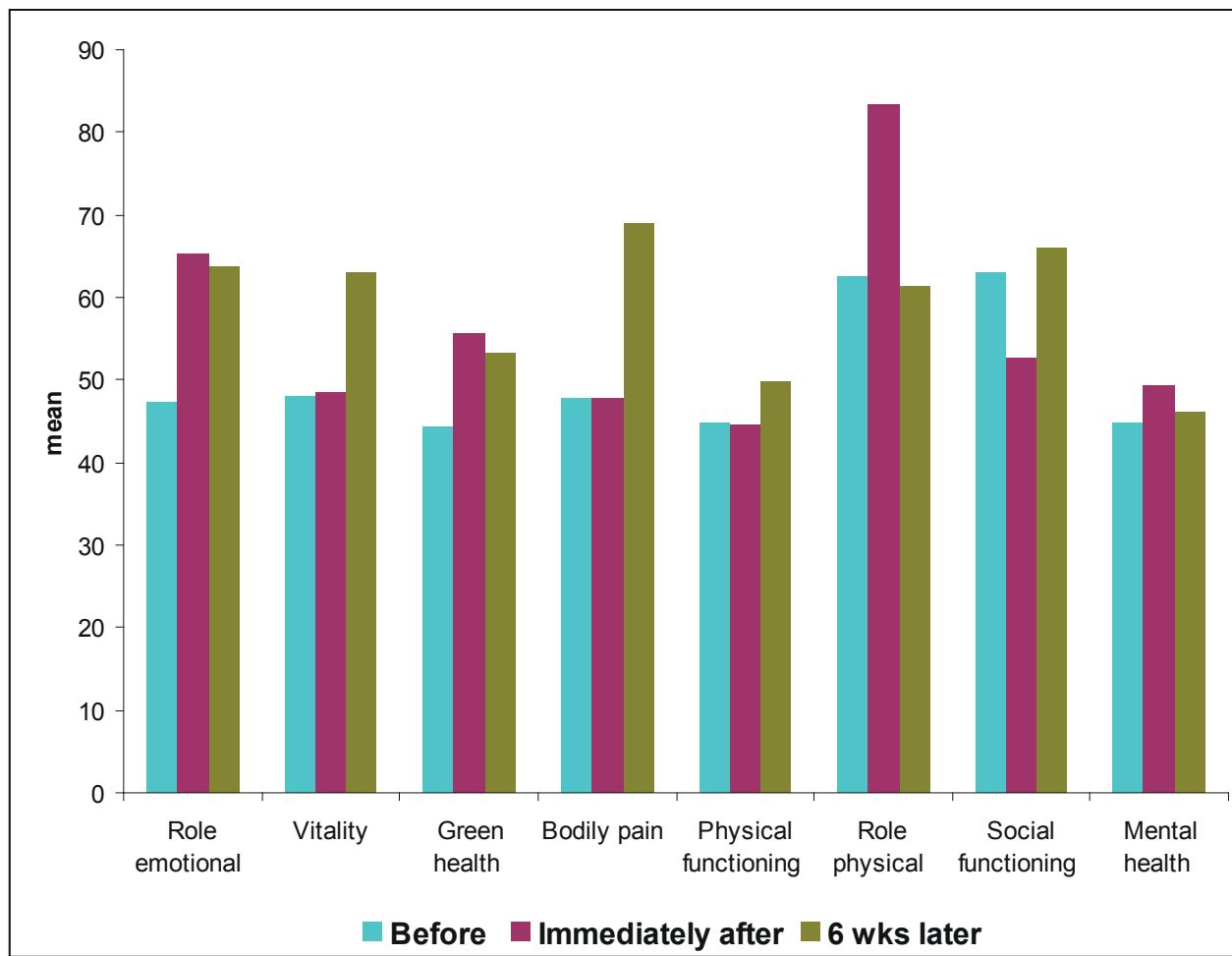
Data are presented as n (%) or mean standard deviation. NSAIDs= non-steroidal anti-inflammatory drugs; VAS = visual analogue scale; y = year.

**Table-II:** Comparison of SF-36 score before and immediately after acupuncture in back pain

| Components of SF36   | Before intervention | Immediate after | Mean difference | P     | CI    |      |
|----------------------|---------------------|-----------------|-----------------|-------|-------|------|
| Role emotional       | $47.2 \pm 9.7$      | $65.2 \pm 7.3$  | 2.07            | 0.001 | 0.63  | 2.46 |
| Vitality             | $48.0 \pm 6.1$      | $48.5 \pm 5.3$  | 0.08            | 0.760 | -0.67 | 0.93 |
| General health       | $44.4 \pm 5.3$      | $55.7 \pm 4.9$  | 2.21            | 0.001 | 0.53  | 2.32 |
| Bodily pain          | $47.8 \pm 4.9$      | $47.8 \pm 6.7$  | 0.08            | 1.00  | -0.80 | 0.80 |
| Physical functioning | $44.8 \pm 5.1$      | $44.6 \pm 6.2$  | 0.03            | 0.900 | -0.74 | 0.85 |
| Role physical        | $62.5 \pm 5.2$      | $83.3 \pm 9.1$  | 2.80            | 0.001 | 0.63  | 2.46 |
| Social functioning   | $63.0 \pm 7.1$      | $52.6 \pm 4.8$  | 1.71            | 0.001 | 0.63  | 2.48 |
| Mental health        | $44.8 \pm 4.7$      | $49.5 \pm 6.0$  | 0.87            | 0.004 | 0.43  | 2.19 |

**Table-III:** Comparison of SF-36 score before and 6 weeks after acupuncture in back pain

| Components of SF36   | Before intervention | 6 weeks later | Mean difference | P     | CI         |
|----------------------|---------------------|---------------|-----------------|-------|------------|
| Role emotional       | 47.2±9.7            | 63.8±5.6      | 2.09            | 0.001 | 0.63 2.46  |
| Vitality             | 48.0±6.1            | 62.9±8.3      | 2.04            | 0.001 | 0.63 2.21  |
| General health       | 44.4±5.3            | 53.3±4.8      | 1.76            | 0.001 | 0.53 2.32  |
| Bodily pain          | 47.8±4.9            | 69.0±5.3      | 4.15            | 0.001 | 0.63 2.44  |
| Physical functioning | 44.8±5.1            | 49.8±4.9      | 0.99            | 0.001 | 0.63 2.51  |
| Role physical        | 62.5±5.2            | 61.4±5.4      | 0.20            | 0.47  | -0.50 1.10 |
| Social functioning   | 63.0±7.1            | 66.1±6.9      | 0.44            | 0.13  | -0.17 1.46 |
| Mental health        | 44.8±4.7            | 46.2±5.7      | 0.26            | 0.35  | -0.41 1.19 |



**Fig-1:** Comparison of score before the intervention, immediately after and 6 weeks later of acupuncture

## Discussion

In this study, acupuncture was associated with improvement of pain in patients with back pain and the effect was persistent 6 weeks after the intervention. Acupuncture was also associated with improvement of quality of life immediately after and 6 weeks. However, there were some limitations in this study. First of all, this study did not use a control group, it was not possible to judge success attributable to the acupuncture intervention. Second, some patients may have improved due to passage of time, expectation or other factors. This study followed patients for only 6 weeks and long-term effects of acupuncture was unknown. In this study female patient were more. In study Shakoor MA et al<sup>14</sup> in Bangabandhu Sheikh Mujib Medical University (BSMMU) found females were

more as because of their nature of repetitive job. A systematic review by Kim et al<sup>15</sup>. On six studies in China, about the effects of acupuncture in patients with back pain found no conclusive evidence of the effectiveness and safety of acupuncture for back pain because of high or uncertain risk of bias and the limited generalizability of the included studies. Systemic reviews showed that for chronic back pain, there is evidence of short-term pain relief and functional improvement for acupuncture compared to no treatment<sup>16,17</sup>; this is in accordance with our results. Another study by Inoue et al<sup>18</sup> in 2012 showed spinal nerve root stimulation by EA improved pain, limb symptoms, and walking distance and the effect was persistent after 3 months; however, their technique was different from that of this study.

Different mechanisms have been proposed for the role of acupuncture in back pain. The role of acupuncture on pain relief could be due to induction of endogenous opioids release in the brain-stem and subcortical and limbic structures<sup>19,20</sup>. Chen et al<sup>21</sup> concluded that acupuncture can relieve the symptoms of the sciatica with an increase in pain threshold. Acupuncture is a low-cost treatment with no major complication, although care should be taken when performing deeper needling to avoid infection or unintentional organ penetration.

## Conclusion

Acupuncture remains one of the alternative medicine disciplines and there is mounting evidence of its effectiveness. Most of the patients in this study were benefitted with acupuncture treatment regime after getting failure of conservative treatment for duration of 4-6 weeks for back pain. Elaborate Study on this subject is required in future.

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