

# Effectiveness of NSAIDs and Physiotherapy in Acute Low Back Pain on Pain and Function in Workers of Pakistan Textile Industry

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## ABSTRACT

**Objective:** To determine the effective treatment option in acute low back pain in workers of textile industry of Pakistan.

**Methodology:** A descriptive cross sectional study from March 2018 to August 2018 was conducted at social security hospital Islamabad. Sixty (60) patients with acute low back pain were recruited in the study. They were divided into two groups of thirty (30) each. All the patients filled self-reported questionnaire which includes Oswestry Disability index (ODI), and Visual Analogue scale (VAS). All the outcome measures were taken at baseline and 2 weeks follow up.

**Results:** The mean age of NSAIDs group was  $32 \pm 7.72$  and mean age of NSAIDs & Physio group was  $33 \pm 9.93$  years. The baseline ODI was  $13.50 \pm 7.29$ , and after two weeks for ODI were  $9.63 \pm 7.33$ . The NSAIDs and Physio group showed statistically significant for the ODI after two weeks ( $p < 0.05$ ) and VAS after two weeks treatment follow up ( $p < 0.05$ ).

**Conclusion:** It was concluded that NSAIDs along with physiotherapy is more effective than NSAIDs alone. The LBP was significantly associated with smoking, sleep disturbance, education (Primary), work shift (day shift) and type of labor (unskilled).

**Key Words:** Low back pain, NSAIDs, Visual analogue scale, Manual material handling.

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## INTRODUCTION

Low back pain (LBP) is the leading cause of disability and absence from the work place all over the world. It is a common reason for hospital visits in America. About one quarter adults reported LBP in U.S.A<sup>1</sup>.

Absents from work affects the productivity and costs the health care. In 2006 the estimated cost was \$100 billion in USA for LBP hospital care. The pain on lumber region (L1-L5) vertebra is taken as low back area, and pain in this region is sometime says low back pain. Acute LBP persists less than 4 weeks and may be due to the muscle spasm, disc pathology or facet joint syndrome<sup>2</sup>. Manual material handling (MMH) workers are more prone to develop LBP due to the wrong biomechanics and ergonomics<sup>3</sup>. Repetitive trunk flexion movement, spinal loading, manual material handling and vibration are the common risk factors for LBP in workers in all sectors. In textile industry, the workers are more prone to spinal loading and MMH with wrong biomechanics and ergonomics<sup>4</sup>. There is a lack of biomechanical and ergonomic evaluation of our industry<sup>5</sup>. Non-steroidal anti-inflammatory drugs (NSAIDs) have shown moderate effects of pain improvement in acute low back patients.<sup>6</sup> Little SD 2007<sup>7</sup> demonstrated the postural education for acute low back pain. They suggested

that physical therapy and functional activities are helpful in low back pain. Early physiotherapy is beneficial for low back pain.

A physical therapist may play important role in minimizing the low back pain risk factors by posture education in workers. In order to reduce the musculoskeletal risk factors a physical therapist should be engaged in industries and dispensaries for patient education about material handling, and to teach correct ergonomics.

Physiotherapy is much effective in chronic low back pain. It is one of the interventions which enhance the function and minimize pain in musculoskeletal injuries. The rationale of this study was to investigate the effectiveness of physiotherapy in acute low back pain in patients who were textile industry workers. Physiotherapy approach was expected to reduce the dependence on medicine for relieving pain.

## METHODOLOGY

A short survey was conducted at social security hospital Islamabad, Pakistan from March 2018 to August 2018 and study was approved by the institutional review board. Sixty (60) patients with acute LBP participated in the study and signed the consent form. Patients had low back pain were

recruited in the study and divided into two groups. Convenient sampling technique was used for patient's selection. The patients between 20-60 years of age of both gender groups were included in the study. Patients having acute LBP with pain and dysfunction were included. Patients having Oswestry disability index > 20 were included. Patients with pain >4 on VAS (Visual Analogue scale) working in Pakistan textile industry were included only. Patients with acute onset of low back pain were included. Patients having any lumbar spine surgery, tumor history, fracture, spondyloarthropathy, and congenital anomaly were excluded. Red flags to SWD (short wave diathermy) like tumor, metal in body and heat sensitivity were excluded. Contraindication of NSAIDs drugs and patients with history of kidney pain were excluded.

All the Patients of acute low back pain were assessed by orthopedic surgeon and referred to physiotherapy department for physiotherapy treatment. Oral NSAIDs were recommended by orthopedic surgeon. There were two groups under treatment. The group 1 included NSAIDs with Physiotherapy and group 2 include only NSAIDs treatment. In oral NSAIDs either Diclofenac sodium 50mg or Diclofenac Potassium 50mg was used along with muscle relaxant (orphenadrine 50mg, Tizanidine 2mg). In oral NSAIDs treatment group, NSAIDs were recommended two times a day for 5 days along with muscle relaxants, with any combination of above mentioned salts<sup>6</sup>.

In physiotherapy session, short wave diathermy (SW-400 S, ITO Japan) was given at low back area with co-planner method by using large capacitor electrode for 15 minutes<sup>9</sup>. Sustained stretching exercise of gluteus muscle, hamstring muscles and erector spinae was given for 30 seconds with 10 repetitions of 2 sets. Strengthening exercise of lumbar extensors with 10 repetitions of 2 sets<sup>10</sup>. Patient education for postural correction was also given at end of the session. Data was collected with the help of self-reported questionnaire which included Oswestry Low Back Pain Disability Questionnaire (ODI), and Visual Analogue scale (VAS). All the outcome measures were taken at baseline and 2 weeks follow up. IBM SPSS 20.0 software was used for data analysis. Descriptive statistics was used for frequency counts to summarize the information. Paired sample t-Test was used to compare the baseline demographics and between groups treatment effects, Alpha level of significance was 0.05. The study was approved from institutional review board.

**RESULTS**

Sixty (60) patients of low back pain were assessed for eligibility. They were divided into two groups of thirty (30) each. The mean age of NSAIDs group was

32±7.72 and mean age of NSAIDs & Physio group was 33±9.93 years. There were 28(93.3%) male and 2 (6.7%) female in NSAIDs group and 25(83.3%) male and 5(16.7%) female in NSAIDs and Physio group. The baseline ODI was 13.50 with SD 7.29, and VAS was 2.33 with SD 0.889. The results after two weeks for ODI were 9.63 with SD 7.33 and VAS were 1.20 with SD 0.924. The 56.7% patients were used Diclofenac sodium & Tizanidine in group 1 and 50% patients used Diclofenac sodium & Tizanidine in group 2. The demographic and work related information was collected from two groups (**Table I**). The NSAIDs and Physio group shows statistically significant for the ODI after two weeks 13.5±7.2 (*p*<0.05) and VAS after two weeks treatment follow up 2.3±.83 (*p*<0.05). (**Table II**)

**TABLE I: DEMOGRAPHIC AND WORK RELATED INFORMATION IN PAKISTAN TEXTILE INDUSTRY WORKERS (n=60)**

Variables	NSAIDs & Physio Group (n=30)	NSAIDs Group (n=30)
Age (year)	33±9.93	32±7.72
Gender (m)	28(93.3%)	25(83.3%)
Gender (f)	2 (6.66%)	5(16.66%)
BMI (Kg/m <sup>2</sup> )	28.56±2.58	28.13±1.63
<b>Duration of LBP</b>		
1-2days	8(26.6%)	3(10%)
3-4days	10(33.3%)	15(50%)
5-7days	12(40%)	12(40%)
<b>Location of LBP</b>		
Whole low back reg.	12(40%)	19(63.3%)
Right side of back	4(13%)	2(6.7%)
Left side of back	4(13%)	2(6.7%)
Low back with sacral reg.	10(33%)	7(23.3%)
<b>Pain Radiation</b>		
Radiation to hip	8(26.7%)	5(16.7%)
Radiation to knee	6(20%)	4(13%)
Radiation to toe	4(13%)	3(10%)
No radiation	12(40%)	18(60%)
<b>Type of NSAIDs + Muscle Relaxants</b>		
Diclofenac sodium & Tizindine	17(56.7%)	15(50%)
Diclofenac Potassium & Tizindine	9(29.3%)	8(26.7%)
Diclofenac sodium & Ophedramine citrate	4(13%)	7(23.3%)
<b>Smoker</b>	8(26.6%)	11(36.7%)
<b>Employment Status</b>		
Full time (8h)	23(76.7%)	27(90%)
Part time (4 h)	1(3.3%)	
Overtime (12h)	6(20%)	3(10%)

<b>Work shift</b>		
Day shift	22(73.3%)	24(80%)
Night shift	8(26.7%)	6(20%)
<b>Sleep duration</b>		
4hour	2(6.7%)	3(10%)
6hour	15(50%)	13(43.3%)
8hour	13(43.3%)	11(36.7%)
>10hour		3(10%)
<b>Education</b>		
Primary	14(46.7%)	15(50%)
Middle	4(13.3%)	2(6.7%)
High	8(26.7%)	9(30%)
Only know reading	1(3.3%)	3(10%)
Illiterate	3(10%)	1(3.3%)
<b>Labor type</b>		
Unskilled worker	21(70%)	25(83.3%)
Skilled worker	9(30%)	5(16.7%)

people were at more risk of developing low back pain. Unskilled workers 25(83%) were more prone to low back pain due to wrong handling of the load. Another factor related to low back pain was education of the workers, as less educated 38(63.3%) worker did not understand the manual load handling ergonomics. These results were same with another cross sectional study done by Wang M et al<sup>11</sup> which demonstrated the risk factors associated with low back pain in taxi drivers. Work related factors were associated with increase low back pain. In our study day shift workers were more prone to have low back pain as compared to previous study of Meng F et al<sup>12</sup>. Our study shows the better results with NSAIDs and Physiotherapy as compared to NSAIDs alone. Physiotherapy techniques like stretching exercise increase the length of shorted muscles which helps in normal functional mobility of

**TABLE II: PRE & POST TREATMENT COMPARISON IN TERMS OF PAIN (VAS) AND FUNCTION (ODI)**

Paired Differences								
Study Group		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
					Lower	Upper		
NSAIDs & Physio Group	VAS at Baseline - VAS after 2weeks	2.33333	.88409	.16141	2.00321	2.66346	14.456	.000
	ODI at Baseline - ODI after 2 weeks	13.5000	7.29549	1.33197	10.7758	16.2241	10.135	.000
NSAIDs Group	VAS at Baseline - VAS after 2weeks	1.20000	.92476	.16884	.85469	1.54531	7.107	.007
	ODI at Baseline - ODI after 2 weeks	9.63333	7.33665	1.33948	6.8937	12.3728	7.192	.009

**DISCUSSION**

There was a substantial improvement in both groups in terms of pain and function. The NSAIDs & Physio group shows statistically significant ( $p < 0.05$ ) improvement over NSAIDs group in terms of pain and function. The improvement in NSAIDs group was also significant but other group proceeded. The NSAIDs & Physio group was clinically significant in term of pain, VAS ( $p < 0.05$ ), and in term of function, ODI ( $p < 0.05$ ). Major strength of this study was that it represented low back pain in the textile industry workers of Rawalpindi and Islamabad region of Pakistan. Our study showed that NSAIDs with physiotherapy treatment by using stretching exercise and short wave diathermy (SWD) was more effective treatment option over NSAIDs alone.

There were risk factors (work shift) associated with low back pain, which may increase the incidence of low back pain. The increased BMI  $28.56 \pm 2.58$  was associated with low back pain. Day work shift 24(80%)

muscular system. The shortwave diathermy which is a heating modality, warm up the muscles and related soft tissues and to minimizes the pain and improve function in low back pain patients<sup>13</sup>. Stretching exercise were effective with other techniques to improve function in low back pain by Grunnesjö MI 2011<sup>14</sup>.

Lau PM 2008<sup>15</sup>, in his study revealed that early physiotherapy with medicine was effective treatment option in low back people. Oliveira CB et al<sup>16</sup> in 2018 demonstrated that physiotherapy and NSAIDs were effective combination therapy option in low back pain, and our study has shown same results. Takashi N 2017<sup>17</sup> proved that NSAIDs was effective in low back patients in terms of pain but not in terms of function. Yusuf S 2017<sup>18</sup> in their study demonstrated that, NSAIDs with aerobic exercise is much effective then NSAIDs alone in low back pain, our study also shows the NSAIDs with physiotherapy is effective in terms of pain and function.

## CONCLUSION

It was concluded that NSAIDs along with physiotherapy is more effective than NSAIDs alone. The LBP was significantly associated with smoking, sleep disturbance, education (Primary schooling), work shift (day shift) and type of labor (unskilled worker). This is a single center study, large scale studies are recommended. This study focuses the textile industry alone, future studies in other industrial sectors are recommended. Follow up period of the study should be large for future studies.

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