

## ORIGINAL PAPER

# Prevalence and Pharmacologic Treatment of Patients with Low Back Pain Treated at Kosovo Energetic Corporation

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**Introduction:** Low back pain (LBP) is a common complaint among the general population with a subgroup developing chronic and disabling symptoms generating large societal costs. Recurrences and functional limitations can be minimized with appropriate conservative management, including medications, physical therapy modalities, exercise and patient education. **Objectives:** The purpose of this study was to determine the prevalence of low back complaints in industrial workers, to investigate whether individual risk factors involved in the occurrence of LBP, and to determine the most frequent used drug in LBP treatment. **Materials and Methods:** Data for this study were provided from Kosovo Energetic Corporation. A cross-sectional study design was utilized. Self-administered questionnaires were distributed among 228 industrial workers. Patient with LBP underwent a comprehensive clinical, radiological and biochemical evaluation. **Results:** showed that LBP occurred in 63.5% of workers. Individual factors did not show significant associations with LBP. Age (OR=0.99/95% CI 0.95-1.03), weight (OR=1.13/95% CI 0.99-1.06), height (OR=0.97/95% CI 0.91-1.02), and work experience (OR=1.01/95% CI 0.97-1.05) increase odds for LBP but not significantly. The most frequently used drugs in patients included in this study are NSAIDs. In 33 (55.0%) patients for the treatment of LBP two types of drugs are administered. **Conclusion:** Increased physical activity, health promotion and reduced body weight can prevent morbidity from LBP. A continuous consultation with the Clinical Pharmacist demonstrates effective way of dosage and drug re-evaluation for the patients with LBP. **Key words:** LBP, prevalence, drug, treatment.

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## 1. INTRODUCTION

Low back pain (LBP) is a common complaint among the general population with a subgroup developing chronic and disabling symptoms generating large societal costs (1). Associations between physical workload and LBP have been reported in numerous studies (2). Although much research effort has been spent and several risk factors such as heavy lifting, lifestyle and psychosocial factors identified, the etiology of LBP is still unclear (3).

Most research has attempted to determine causal factors to predict and prevent work-related LBP. Common factors included sex, age, work postures and type of work (4, 5).

Recurrences and functional limitations can be minimized with appropriate conservative management, including medications, physical therapy, exercise and patient education (6).

Symptomatic drug therapy aims to achieve analgesic and anti-inflammatory effect. Emotionally unstable patients are given sedatives and myorelax-

ants. And it is also important paravertebral infiltration on the level of compressed spinal root, combined with local anesthetics and glucocorticoids (7).

Initial therapy with acetaminophen, a nonsteroidal anti-inflammatory drug (NSAID), or a cyclo-oxygenase-2-specific inhibitor is recommended. Muscle relaxants can be effective when there is significant muscle spasm present, but benefits must be balanced with their sedative properties (8).

Long-term use of drugs has not shown to be effective and poses serious risk, sometimes with fatal effects (NSAID), toxicity (paracetamol), and drug dependency (muscular relaxant and opioid) (9).

Acute LBP drug therapy leads to short-term pain reduction, but in patients with chronic LBP any benefits would be rare (10).

The mainstay of pharmacologic therapy for acute LBP is acetaminophen or a nonsteroidal anti-inflammatory drug (NSAID). If no medical contraindications are present, a two- to four-week course of medication at anti-inflammatory levels is suggested. Pharmacological treatments of chronic LBP include analgesics, anti-inflammatory drugs and muscular relaxants, but the evidence on their efficacy is not convincing.

For relief of acute pain, short-term use of a narcotic therapy should prompt

a reevaluation of the etiology of a patient's back pain (6).

## 2. OBJECTIVES

The purpose of this study was to determine the prevalence of low back complaints in industrial workers, to investigate whether individual risk factors involved in the occurrence of LBP, and to determine the most frequent used drug in LBP treatment.

## 3. MATERIAL AND METHODS

### 3.1. Study design and data collection

A cross-sectional study design was utilized. Self-administered questionnaires were distributed among industrial workers. They answered to questions under the observation and guidance of the research assistants.

### 3.2. Study population

Subjects from the power plant company were identified as follows: welders, maintenance technicians, electricians, thermal technicians, mechanical field technicians, drivers/crane operators, mining technicians, transmission technicians, firefighters. The principal tasks of workers are: drilling, blasting, mucking/loading, tramping, rock-breaking, supervisory, and engineering. These occupations are directly related to the production and are therefore involved in prolonged standing, twisting and turning, lifting of heavy loads.

### 3.3. Questionnaire survey

The participants completed a self-administered questionnaire at the Institute of Occupational Medicine–Department of Physical Medicine and Rehabilitation in Obiliq. The questionnaire contained questions on individual data including age, gender, height, weight, level of education, job title, and occurrence of LBP in the previous 12 months (1- year prevalence). The main point of interest in the questionnaire was experience of LBP within the past 12 months, and whether or not it was work related. During the past year have you experienced low back problems (backache, pain, and discomfort) where LBP was defined as a pain localized in the lower back without specific underlying cause, between the lower angle of the scapulae and above the buttocks (ICD-9).<sup>[11]</sup> If the answer was no, no further questions were needed. If the an-

swer was yes, the physician asked another questions: did you take medications, what kind of medications did you take and how many kinds of medications did you take?

Patient with LBP underwent a comprehensive clinical, radiological and biochemical (blood analysis) evaluation. They had LBP presenting herniated disc (n=49), lumbar spondylosis n= (60), or facet joint pain, n= (36), diagnosed through clinical and radiographic examination by a physiatrist.

### 3.4. Eligibility criteria

Inclusion criteria are age from 18-65 years, willing and able to give informed consent. Workers with occupational or non-occupational accidents affecting the lower back were excluded from the study.

### 3.5. Ethical clearance

The study had been approved by the Regional Ethical Board at the Institute of Occupational Medicine and by the Research Ethics Committee, University of Prishtina, Kosovo.

### 3.6. STATISTICAL ANALYSIS

All statistical analyses were performed using the Statistical Package for Social Science R. In the statistical analysis differences between normally distributed continuous variables were tested with the Student t-test and differences between categorical variables with the chi-square test ( $\chi^2$ ). Multiple logistic regression model were used to compute adjusted odds ratios (OR) and their 95% confidence intervals (95% CI)

Sex	LBP (yes)		LBP (no)	
	N	%	N	%
Men	135	93.1	79	95.1
Women	10	6.9	4	4.8
Total	145	100	83	100

Table 1. Presence or absence of LBP based on gender

for the various symptoms and causes of with LBP as the dependent variable. Wald statistics were used to estimate the 95% confidence intervals around the odds ratio. Level of statistical significance was set to  $p < 0.05$ .

## 4. RESULTS

During the two months of data collection, 289 workers were interviewed and 61 refused to participate. So 228 questionnaires were completed. The response rate of the questionnaire was 78.9 %.

Table 1 summarizes the prevalence of LBP among workers who participated in the study. Of the 228 workers evaluated, 145 (63.5%) presented with LBP, male patients are 135 or 93.1%, whereas 10 female subjects or 6.9 %. At the same time, 83 (36.4%) did not have LBP; male subjects were 79 or 95.1%, while female subjects were 4 or 4.8%.

Results from Multiple Logistic Regression analysis as related to risk factors are reported in Table 2. Among workers age (OR=0.99/95% CI 0.95-1.03), weight (OR=1.13/95% CI 0.99-1.06), height (OR=0.97/95% CI 0.91-1.02), and work experience (OR=1.01/95% CI 0.97-1.05) increase odds for LBP but not significantly.

Parameters	B	S.E.	Wald	Sig.	O.R.	95.0 % CI for O.R.	
						Lower	Upper
Age	-0.01	0.02	0.27	0.6	0.99	0.95	1.03
Weight	0.03	0.02	3.51	0.06	1.13	0.99	1.06
Height	-0.04	0.03	1.67	0.2	0.97	0.91	1.02
Work experience	0.01	0.02	0.13	0.72	1.01	0.97	1.05

Table 2. Determination of the impact between individual parameters and occurrence of LBP

		Sex		Total	P-value
		M	F		
N (%)		135 (93.1%)	10 (36.7%)	145 (100.0%)	P=0.039
Diagnosis	Facet joint pain	35 (26.3%)	1 (13.6%)	36 (24.8%)	P=0.196
	Spondylosis lumbalis	57 (42.1%)	3 (31.8%)	60 (41.4%)	
	Hernia discii	43 (31.6%)	6 (54.5%)	49 (33.8%)	

Table 3. Diagnosis of the subjects based on gender

Drugs	Diagnosis			Total N (%)
	Facet joint pain N (%)	Spondylosis lumbalis N (%)	Hernia disci N (%)	
Total	36 (100.0)	60 (100.0)	49 (100.0)	145 (100.0)
NSAID	33 (92.3)	57 (95.7)	43 (87.5)	133 (91.7)
Sedative	11 (30.8)	13 (21.7)	27 (54.2)	51 (35.1)
Corticosteroide	8 (23.1)	8 (13.0)	14 (29.2)	30 (20.6)
Narcotic opioid	-	-	37 (75.0)	37 (25.5)
Myorelaxant	6 (15.4)	39 (65.2)	20 (41.7)	65 (45.0)

Table 4. Drugs used in concordance with diagnosis

Drugs	Diagnosis			Total N (%)
	Facet joint pain N (%)	Spondylosis lumbalis N (%)	Hernia discii N (%)	
One drug	14 (38.5)	3 (4.3)	-	17 (10.0)
Two drugs	22 (61.5)	57 (95.7)	6 (12.5)	85 (55.0)
Three drugs	-	-	43 (87.5)	43 (35.0)
Total	36 (100.0)	60 (100.0)	49 (100.0)	145 (100.0)

Table 5. Number of drugs used based on diagnosis

Among 49 or 33.8% of patients terminal diagnosis was Disc Hernia, along with 60 or 41.4% Spondylosis lumbalis, and at 36 or 24.8% Facet Joint Pain without significant gender difference, ( $P>0.05$ ). (Table 3).

On three dominant diagnoses the most used drugs are NSAIDs, whereas sedatives and opioid narcotics are frequently used during the treatment of Disc Herniation (Table 4).

The most frequently used drugs on patients included in this study are NSAID with 91.7% followed by myorelaxant drugs 45%, sedatives 35.1%, opioid narcotics 25.5% and corticosteroids 20.6% (Figure 1).

On 85 or 55.0% of patients dual medicine treatment is administered, on 43 patients or 35.0% triple medication treatment is administered and on 17 patients or 10.0% single medication was administered. Only on patients suffering from Herniated Disc triple drug treatment is administered. At subjects going through Lumbar Spondylitis (95.7%) dual drug treatment is administered, and meanwhile, Facet Joint Pain was treated with single drug administration (Table 5).

## 5. DISCUSSION

This cross-sectional investigation attempted to examine the preva-

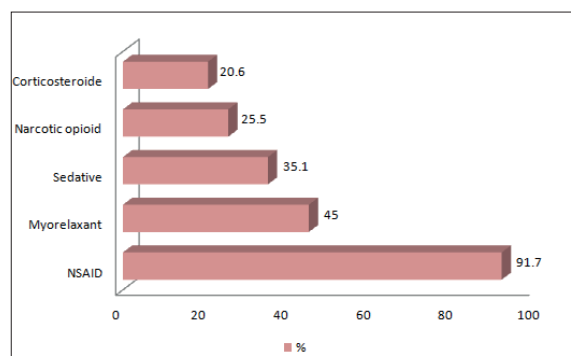


Figure 1. The range of used drugs

lence of LBP among power plant workers. The hypothesis that was considered in this study was that the prevalence of LBP in power plant workers would be high since they comprise a unique occupational group characterized by heavy physical labor with high levels of force being exerted. The LBP prevalence among power plant workers was 63.5%. The findings of this study agree with previous studies on the prevalence of LBP in working populations being between 60-85% (12, 14).

According to the literature, the main predictors of back pain include physical stress (e.g., prolonged lifting, driving, forceful or repetitive movements involving the back), psychosocial stress (e.g., high perceived workload and time pressure, low control and lack of social support at work), personal characteristics (e.g., psychological status and tobacco use), and physical characteristics (e.g., obesity and height) (15, 16). Male and female workers sub-

jected to heavy physical demands showed an earlier onset of LBP in comparison with the general population (13).

No association was found between weight and height and the prevalence rate of LBP. This is in agreement with the findings of other researchers (17). Individual characteristics such as age, height, weight, duration of employment, were not predictive for low back complaints leading to absence from work (18, 19).

There is conflicting evidence regarding the effectiveness of different types of treatment for reducing pain and disability in patients with LBP. One systematic review and two subsequent RCTs found that advice to stay active reduced sick leave and chronic disability compared with no advice or traditional medical treatment (including analgetics as required and advice to rest) (20).

Recent studies suggest that acupuncture is more effective than no treatment or sham treatment, is as effective as other medical interventions of questionable value (for example, TENS and NSAID for chronic back pain), but is less effective than massage (21).

The evidence that NSAID relieve pain better than placebo is strong. Muscle relaxants relieve pain more than placebo, strong evidence also shows, but side effects such as drowsiness may occur (22).

In our study 97.1% of subjects are treated with NSAID, whereas 30% with opioid analgesic. In the study of Sadhra et al [20] 85% of the miners reportedly used strong oral analgesics, 11% received parenteral (injectable) analgesic, with 3% and just 1% using mild and topical analgesics respectively.

Moreover, there is conflicting evidence about whether NSAIDs are superior to other drug treatments (paracetamol, opioids, muscle relaxants) for treatment of LBP. One systematic review found no significant difference among NSAIDs or between NSAIDs and other drug treatments in pain relief. Three small RCTs identified by a systematic review found no significant difference in symptoms or return to work between an opioid analgesic, paracetamol (acetaminophen), and NSAIDs (20). Acetaminophen is recommended dosages (i.e., up to 4 g per day in patients without



liver problems) can be a helpful adjunct and avoids the renal and gastrointestinal toxicities of NSAIDs.

One systematic review of 51 randomized controlled trials comparing NSAIDs with placebo found strong evidence that NSAIDs significantly improved pain control. There is strong evidence that various NSAIDs are equally effective. Opioids should be considered a second- or third-line analgesic option and should be used only for a short period for most patients. Several small studies have shown no significant advantage of opioid use in symptoms relief or return to work when compared with NSAIDs or acetaminophen (24).

As reported in other studies (25, 27), this study also found that patients that received more than one drug in the treatment of severe pain have had better improvement rate compared with the others that have received only one drug. A randomized paper concluded that in patients suffering with chronic LBP the use of NSAID in combination with Vitamin B is far more effective for pain reduction than the sole use of NSAID (25).

Further, two meta-analyses provide strong evidence that muscle relaxants are helpful in the treatment of nonspecific acute LBP (26, 27). For example, patients receiving cyclobenzaprine (Flexeril) were significantly more likely to report improvement in LBP symptoms at two weeks than patients receiving placebo. Muscular relaxants can reduce pain to a moderate degree. The review (2 higher-quality RCTs, 222 people) reported that tetrazepam 50 mg three times daily significantly reduced pain and increased overall improvement compared with placebo after 10 to 14 days (27).

The findings from the present study are in the agreement with the results of two RCT (28, 29) that epidural steroid injections may be helpful in patients with radicular symptoms that do not respond to two to six weeks of conservative therapy, while they found no clinically important results about epidural corticosteroid injections in people with chronic back pain without sciatica. Randomized trials have demonstrated short-term (i.e., weeks to months) but not long-term improvement in pain

and disability with epidural steroid injections (30).

## 6. CONCLUSION

It was concluded that LBP occurred at a high rate in this company. The most administered drugs are NSAIDs. Majority of workers with LBP used two types of drugs.

Increased physical activity, health promotion, reduced body weight can prevent morbidity from LBP. A continuous consultation with the Clinical Pharmacist demonstrates effective way of dosage and drug re-evaluation for the patients with LBP.

**CONFLICT OF INTEREST: NONE DECLARED**

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