

# Risk-Disposing Habits of Lowback Pain amongst Welders and Panel Beaters in Owerri, South-East Nigeria

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## ABSTRACT

**Objective:** Low back pain (LBP) incidence among craftsmen is relatively high. This study assessed the risk disposing habits of LBP among metal workers in Owerri, South-east Nigeria.

**Study design:** A prospective cases-control study design

**Method:** From August 15th to September 30th, 2012, a surveillance exercise was carried out. 50 cases and 50 non-cases were matched from the identified cases and non-cases. Frequency matching was done. Data analysis was done using descriptive and inferential statistics of chi square and 2by2 contingency table.

**Results:** Habits of alcohol consumption (OR = 2.45, CI = 1.10 - 5.47;  $p < 0.03$ ), awkward posture at home (OR = 6.12, CI = 2.46- 15.33;  $p < 0.001$ ) were significantly associated with lowback pain. However, habits such as sleeping late, having multiple sex partners, sex frequency, diet, smoking and exercise were not significantly associated with LBP (OR < 1,  $p > 0.05$ ).

**Conclusion:** The incidence of lowback pain is associated with some risk disposing habits.

**Keywords:** Low Back Pain, Metal Worker, Welders, Panel Beaters, Cigarette Smoking, Alcohol Consumption

## INTRODUCTION

Lowback pain (LBP) being the most common musculoskeletal problem in the work place<sup>1</sup>, is a major cause of work- related disability<sup>2</sup>, which is associated with major costs in terms of health resource usage, worker disability and absenteeism<sup>3</sup>. Lowback pain is the most prevalent musculoskeletal condition and the most common cause of disability in developed

nations<sup>4</sup>. Furthermore, the economic, societal and public health effects of LBP appear to be increasing.

Sanya et al<sup>5</sup> found point and 12 - month prevalence of LBP among industrial workers in a major south-west Nigeria city to be 59.7% and 59.5% respectively. The lifetime prevalence of LBP in developed countries is reported to be up to 85%<sup>6</sup>. The relative contributions of physical and psychological risk factors to the occurrence of back disorders and back pain remain inconsistent in the literature. Prevention programs frequently focus on the recognized biomechanical factors, workload and organizational issues with minimal or no effort at identifying and controlling the risk disposing habits<sup>7</sup>.

Presently, there is dearth of data on the relationship between habits and incidence of LBP especially among

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this group of worker - the metal worker, in Nigeria. These groups of craftsmen/workers in our environment often bend/stoop to work. They are thus predisposed to having lowback pain. The primary aim of this study is to determine the risk disposing habits that may contribute or promote the occurrence of low back pain amongst welders and panel beaters.

### METHOD

From August 15th to September 30th 2012, a study was conducted into the population of welders and panel beaters in Owerri South-east, Nigeria. Owerri is the capital of Imo State and is set in the heart of the Igbo-land. Owerri consists of three Local Government Areas (Owerri Municipal, Owerri North and Owerri West). It currently has a population of over 400,000 and is approximately 40 square miles (100 km<sup>2</sup>) in area. It is bordered by the Otamiri River to the east and the Nworie River to the south. It occupies the area lying between coordinates 5.484°N and 7.035°E.

A 6-week surveillance exercise was conducted during which cases and non-cases were identified. The non-cases served as the controls. A simple random sampling was used to select 50 cases and 50 non-cases from identified cases and non-cases. Frequency matching was done. After informed consent was obtained, interviews using structured questionnaire were conducted with the help of trained field research assistants. The Questionnaire was prepared in English and it has three sections. Section A focused on socio-demographic information such as age, marital status etc. Section B sought answer to question on LBP history such as present and past lowback history and section C focussed on personal habits such as usual sleeping time, sleeping posture etc, of respondents. Lowback pain case was defined as pain or discomfort in the lowback area between twelfth rib and gluteal fold (lower 1/3 of the back) with or without pain in one or both legs lasting one day or longer or strong enough to make the worker absent from work, in their life time. The control had no history of lowback pain that met the above definition.

The questionnaire was assessed for content and face validity. It was reviewed by two clinical researchers and two lecturers (one was an epidemiologist) who are knowledgeable in questionnaire design and development to ensure good face and content validity,

with clear, unambiguous question. Confidentiality of information was maintained throughout the study. This research was conducted in compliance with the Helsinki Declaration.

Data was analyzed using SPSS computer software version 17 (SPSS, Inc., Chicago, IL). Both descriptive statistics of mean, standard deviation, frequency and Inferential statistics of chi square and 2 by 2 contingency table were used for analysis. The p-value was set at 0.05.

### RESULTS

Presented in Table 1 is the summary the socio-demographic characteristics of the respondents. The mean age of respondents was 35.19 years (+/-8.976) with the youngest worker aged 19 years and the oldest aged 58 years. The mean duration of practice was found to be 8.25 years (+/- 4.353). Presented in Table 2 is the relationship between lowback pain and various habits of the welders and panel beaters in Owerri. The findings of this study showed respondents who consume alcohol were more than 2 times more likely to have LBP (OR = 2.45; CI = 1.10 - 5.47; p = 0.03). Those who do not engage in organized exercise were almost 2 times more likely to develop lowback pain compared to those who do not (OR = 1.79; CI = 0.80 - 4.01; p = 0.11). No association was found between usual sleeping time and occurrence of lowback pain.

**Table 1: Socio-demographic characteristics of panel beaters/welders in Owerri**

General characteristics	Response	Percentage (%)
Age (Years)	16-29	5
	30-39	42
	40-49	44
	50-59	9
Gender	Male	100
	Female	0
Marital status	Single	38
	Married	62
Work Experience (years)	0-5	15
	>5	85
Educational level	Low	3
	High	97
Body mass index kg/m <sup>2</sup>	<19	1
	19-25	73
	26-30	22
	>30	4

Table 2: Odds ratios for LBP in relation to risk-disposing habits among welders/panel beaters in Owerri

Habits	Response	Total (n)	Proportion %	p-value	Odd Ratio OR	95% CI	
Do you smoke?	No	40	57.5		1	0.27 – 1.36	
	Yes*	60	45	0.15	0.61		
No of cigarette stick (per day)	0	40	57.5		1.00	0.22 – 1.16	
	1-5*	57	42.1	0.07	0.51		
	>5*	4	75	0.48	2.09		0.20 – 21.91
Organized exercise	Yes	41	41.6		1.00	0.80 – 4.01	
	No *	59	55.9	0.11	1.79		
Intensity of exercise	Low	21	33.3		1.00	0.57 – 7.06	
	High *	10	50	0.22	2.00		
Sleeping time (pm)	9-11	96	50.5		1.00	0.06 – 16.12	
	<9*	2	50	0.75	0.98		
	>11*	2	50	0.75	0.98		0.06 – 16.12
Sleeping duration (hours)	8-Jun	92	50		1.00	0.28 – 6.29	
	<6*	7	57.1	0.51	1.33		
	>8 *	1	-		-		-
Sleeping posture	Lying with the chest/Side lying	49	51		1.00	4.31 – 8.56	
	Lying with the back*	9	66.7	0.31	1.92		
	Unsteady*	40	47.5	0.45	0.87		3.76 – 2.00
Sleeping surface	Hard	7	85.7		1.00	0.02 – 1.29	
	Soft*	91	47.2	0.56	0.12		
Usual Working posture at workplace	Sitting to work	-	-				
	Bending/stooping to work*	100	50				
	Squatting to work*	-	-				
	Standing to work*	-	-				
Usual Washing or working posture at home	Sitting to wash/work	61	34.4		1.00	2.46 – 15.33	
	Bending/stooping to wash/work*	38	76.3	<0.001	6.12		
	Squatting to wash/work*	-	-		-		-
	Standing to wash/work*	-	-		-		-
Do you consume alcohol?	No	49	38.8 60.8		1.00	1.10 – 5.47	
	Yes*	51		0.03	2.45		
Consume alcohol (bottles/Day)	0	49	38.8		1.00	1.00 – 5.57	
	1-3*	40	60	0.04	2.37		
	>3*	11	63.6	0.14	2.73		0.71 – 10.72
Have sex partner	No	-					
	Yes *	100					
No. of sex partner	1	13	53.0		1.00	0.35 – 1.25	
	>=2 *	87	23.1	0.04	0.26		
Sex frequency (/ week)	1-3	93	50.5		1.00	0.16 – 3.46	
	>=4*	7	42.9	0.5	0.73		
Extra activities	No	14	42.9		1.00	0.45 – 4.37	
	Yes*	86	51.2	0.57	1.4		
Diet habit	Good	10	80		1.00	0.04 – 1.09	
	Poor *	90	46.7	0.04	0.22		
Foot wear	Low heeled	96	47.9	0.1	1.00	0.61 – 48.40	
	High heeled*	4	83.3		5.44		
Analgesic consumption	Nil	2	45.5			0.28 – 285.5	
	Regularly *	10	90	0.38	9		
	Occasionally*	88	50	0.76	0.83		0.35 – 13.75

\* =exposure factor . Odd ratio (OR) was obtained following 2 by 2 contingency odd ratio analysis

## DISCUSSION

An important finding from this study is that only 2% of the sampled population had no formal educational background. This showed the possibility of relatively high literacy level among metal workers in Owerri South-east Nigeria. However it is left to be explored if this high literacy level translates into good knowledge of health promotion and disease prevention among this population including lowback pain prevention.

This study finding showed association between smoking and occurrence of LBP. From this study, the association found between smoking more than 5 sticks of cigarette per day and occurrence of LBP (OR=2.09, CI= 0.20-21.91,  $p=0.48$ ) compared to non-smoker was not statistically significant. Al-Dubai *et al*<sup>8</sup> in their study of the prevalence and determinants of lowback pain found significant association between smoking and occurrence of LBP. Alkherayf and Agbi<sup>9</sup> found LBP proportion to be higher among daily smokers (23.5%) compared to 15.7% recorded among non-smokers. However, the findings of Tomita *et al*<sup>10</sup> who studied risk factors for LBP among seafood workers showed no significant association between smoking and LBP. Sanya and Ogwumike<sup>11</sup> found no significant association between smoking and occurrence of LBP ( $p = 0.96$ ).

In this present study, an association was found (OR = 1.79) between participating in regular exercise and occurrence of LBP. This however was not statistically significant ( $p>0.05$ ). Nagasu *et al*<sup>12</sup> in their study also found significant association between exercise and LBP occurrence. Vieria *et al*<sup>7</sup> found that not doing exercise increases the chance of having LBP by 2 times (OR = 2.00). However, Sanya and Ogwumike<sup>11</sup> found no significant relationship between doing exercise or not and occurrence of LBP ( $p = 0.96$ ).

The findings of this study showed there was statistically insignificant association between short sleep (<6hours daily) and occurrence of LBP compared to 6 to 8 hours daily sleeping hours. Short sleep was reported to be a risk factor for LBP in previous studies by Nagasu *et al*<sup>23</sup>. Miranda *et al*<sup>13</sup> concluded in their study that occupation loading, health behavior and sleep disturbance are predictors of LBP. However the finding of Tomita *et al*<sup>10</sup> showed no significant association between sleep duration and LBP occurrence. Also according to this study finding, there

was no association between usual sleeping time and the occurrence of LBP; usual sleeping surface and occurrence of LBP. Association was found between usual sleep posture and the occurrence of LBP. Sleeping with back (face up) increases the risk of developing lowback pain by 1.9 times. Back care experts including Physiotherapists often recommend that patients (though not in all cases) or even healthy individuals endeavour to sleep face down or with sides as sleeping face up could predispose them to have LBP.

As for the usual posture of washing and / or working at home, bending to wash/work at home was significantly associated with occurrence of lowback pain. Habitual bending/stooping to wash at home increases the risk of developing lowback pain by 6 times (OR = 6.12, CI = 2.46- 15.33,  $p = <0.001$ ). Lotter *et al*<sup>14</sup> in their meta analysis and Gheldof *et al*<sup>15</sup> have shown in their studies that awkward posture increases the possibility of having lowback pain (OR = 1.68). Those who consume alcohol were more than 2 times more likely to develop LBP. The odd ratio increases with higher dose of alcohol. Miyamoto *et al*<sup>16</sup> also found significant association between LBP and alcohol consumption. Tomita *et al*<sup>10</sup> in their study of seafood workers of Thailand found no significant association between alcohol consumption and occurrence lowback pain. The association found in this study between frequent consumption of analgesic and occurrence of lowback pain was not statistically significant. Those who consume analgesic regularly were 9 times more likely to develop lowback pain compared to those who don't take. Regularly consuming analgesics tend to mask the feeling of pain thereby promoting the progression of the original cause of the pain without due attention for repair or possible curative intervention. The finding of this study showed that no significant association was found between having more than one sex partner and occurrence of LBP (OR = 0.26). Furthermore, no association was found between frequency of sexual bout/week and occurrence of lowback pain (OR = 0.73). Also no association was found between poor diet habit and occurrence of lowback pain (OR = 0.22). The general hypothesis in this environment is that engaging in frequent and / or uncontrolled sexual activities lead to occurrence of LBP. This study finding could not support the hypothesis. This study did not however look into how long an individual might have been involved in sexual activities and its possible impact on LBP experiences.

The lack of significance for some of the habits may probably be an indication that they are not serious factors to be considered in acute/sub-acute experience (incidence) of lowback pain. They may however be very important factors in Chronicity of lowback pain or chronic lowback pain. Unlike many other non-communicable diseases which are often not curable and hence prevalence is always considered, lowback pain could be acute or sub-acute with possibility of a total cure depending on the cause and type of care received. Hence we can talk of both incidence and prevalence for low back pain. One limitation of this study is our inability to compare the effect of duration of habits and age at onsets of habit to the occurrence of lowback pain. Another limitation is the limited time set aside for the surveillance exercise. Future study may consider the effect of duration of habits among the craftsmen to the occurrence of lowback pain.

### CONCLUSION

The findings of this study showed varying association between some risk disposing habits of panel beaters/welders and occurrence of lowback pain. The findings showed the necessity for preventive measures focusing on habits. The result showed the possibility of reducing the burden of LBP by appropriate training and improvement in habits such as avoidance of alcohol intake, bad sleeping postures, high heeled foot wears, adopting good back posture while washing/working at home and participating in organized exercise.

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**Ethical Approval:** Ethical approval was obtained for this study. We comply with the principles laid down in the Declaration of Helsinki.

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